Springer Texts in Business and Economics

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Introduction to Electronic Commerce and Social Commerce

Fourth Edition

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Preface

The global economic crisis of 2009–2014 forced organizations to reduce expenses in an environment of reduced economic activities. One of the most popular cost-reduction activities is conducting more business online. Actually, we are experiencing one of the most important changes to our daily lives—the move to an Internet-based society. Internet World Stats (**internetworldstats.com**) reported in 2014 that more than 83% of the North American population surf the Internet (Fall 2015). The large number of people on the Internet is one of the major drivers of conducting business online, which is known as electronic commerce, or in its broader scope as e-business.

Electronic commerce (EC) describes the manner in which transactions take place over networks, mostly the Internet. It is the process of electronically buying and selling goods, services, and information. Certain EC applications—such as buying and selling stocks and airline tickets on the Internet—are growing very rapidly, exceeding non-Internet trades. But EC is not just about buying and selling; it is also about electronically communicating, collaborating, and discovering information. It is about e-learning, e-government, e-health, social networks, and much more. Electronic commerce has an impact on a significant portion of the world, including developing countries, affecting businesses, professions, and most importantly people.

WHAT'S NEW IN THIS EDITION?

The following are the major changes in this edition as compared to the third one (by Pearson).

- **Major Updating**. While we did not change the number and names of most of the chapters, we performed a major revision in the content of all chapters.
- **New Coverage** (social media and commerce). This book covers significant amount of social media and social commerce. The topics are covered in all chapters, including the new chapters (7 and 8).
- **New Chapters**. We transferred some of the content of old Chapter 7 (Web 2.0) to Chapter 2 and instead created a new chapter on social commerce marketing. Chapter 8 deals with enterprise-based social media and commerce.
- **New Author**. We welcome Jon Outland who contributed his expertise on social commerce, marketing, and e-marketing to this edition. Jon did the supplemental material for the previous editions.
- **New Tutorial**. A new tutorial (Tutorial B) describes the major EC support technologies including cloud computing, RFID, and EDI.
- **Book Learning Outcomes**. Ten learning outcomes have been added to this preface to help faculty to design the course and students to understand the content.
- **Video Exercises**. Video exercises have been added to most chapters. These exercises require the students to view the videos and answer related questions.

Chapters with Major Changes

- Chapter 1 now includes social networks, media and commerce, sharing economy, social customers, new business models, and other leading-edge topics.
- Chapter 2 has been expanded to include both traditional EC and social media, including augmented reality, virtual reality, and crowdsourcing.
- Chapter 3 has been updated to include some e-marketing topics.
- Chapter 4 contains B2B social commerce and social collaboration.
- Chapter 5 has been expanded to include e-health, robotics, and artificial intelligence applications.
- Chapter 9 includes new coverage of advertising models and strategies.

Chapters with Less Significant Changes

More than 40% of all cases have been replaced and many examples have been added. About 30% of all end-of-chapter material has been updated and/or expanded. Managerial Issues have been updated as are the figures and tables. Duplications have been eliminated and explanations of figures and tables have been made more understandable. New topics have been added to many of the sections to reflect the social media and commerce revolution.

Online Files

The online files are updated and reorganized. The number of online files has been reduced significantly. (They are located at **e-commerce-introduction-textbook.com**)

FEATURES OF THIS BOOK

Several features are unique to this book.

Managerial Orientation

Electronic commerce can be approached from two major viewpoints: technological and managerial. This text uses the second approach. Most of the presentations are about EC applications and implementation. However, we do recognize the importance of the technology; therefore, we present the essentials of selling and buying mechanisms in Chapter 2 and the essentials of security in Chapter 10. We also provide some detailed technology material in the online files, tutorials on the book's website (**e-commerce-introduction-textbook.com**). Managerial issues are also provided at the end of each chapter.

Social Media and Commerce Orientation

Given the importance of social media and commerce, we related all major topics in the book to social media, social networks, and social commerce.

Real-World Orientation

Extensive, vivid examples from large corporations, small businesses, governments, and not-for-profit agencies from all over the world make concepts come alive. These examples show students the capabilities of EC, its cost and justification, and the innovative ways real corporations are using EC in their operations. Examples cover both large and small (SME) companies.

Solid Theoretical Background

Throughout the book, we present the theoretical foundations necessary for understanding EC, ranging from consumer behavior to the theory of marketing and competition. Furthermore, we provide website resources, many exercises, and extensive references to supplement the theoretical presentations.

Most Current Cutting-Edge Topics

The book presents the most current topics related to EC, as evidenced by the many 2014–2016 citations. Topics such as Internet of Thing, augmented reality, drones, robotics, supply chain systems, collaborative commerce, mobile commerce, and EC security are presented from the theoretical point of view as well as from the application side.

Integrated Systems

In contrast to other books that highlight isolated Internet-based systems, we emphasize those systems that support the enterprise and supply chain management. Intra- and interorganizational systems are highlighted as are the latest innovations in global EC and in Web-based applications.

Global Perspective

The importance of global competition, partnerships, and trade is increasing rapidly. EC facilitates export and import, the management of multinational companies, and electronic trading around the globe. International examples are provided throughout the book including many from developing countries.

Online Support

More than 40 files are available online to supplement the text material. These include files on generic topics such as data mining and intranets, cases, technically oriented text, and much more.

Links

There are hundreds of links to Internet resources so learners can get more details and further investigate related topics.

User-Friendliness

While covering all major EC topics, this book is clear, simple, and well organized. It provides all the basic definitions of terms as well as logical conceptual support. Furthermore, the book is easy to understand and is full of interesting real-world examples and "war stories" that keep readers' interest at a high level. Relevant review questions are provided at the end of each section, so the reader can pause to review and digest the new material.

ORGANIZATION OF THE BOOK

The book is divided into 12 chapters grouped into 5 parts. Two tutorials are available as online supplements.

BOOK'S LEARNING OUTCOMES

Upon completion of this book, the reader will be able to:

1. Define all types of e-commerce systems and describe their major business and revenue models.
2. Describe all the major mechanisms that are used in e-commerce.
3. Describe all methods of selling products and services online to individual consumers.
4. Understand all online business-to-business activities including procurement, auctions, and collaboration.
5. Describe EC activities other than trading online, such as e-government, e-learning/training, intelligent systems, and e-health.
6. Relate the support services of payment, security, order fulfillment, and so forth to e-commerce implementation.
7. Describe social media and networks, and social models as facilitators of social commerce.
8. Describe the landscape of social commerce applications including social advertising and shopping, enterprise social commerce, social market research, and crowdsourcing.
9. Understand the legal, social, ethical, and business environments within which e-commerce operates.
10. Describe the global aspects of e-commerce as well as its use in SMEs and in developing countries.

HOW THIS BOOK DIFFERS FROM *ELECTRONIC COMMERCE* EIGHTH EDITION (EC 2015) FROM SPRINGER

This book is derived in part from *Electronic Commerce* 8th edition by Efraim Turban et al., Springer 2015, and from the third edition of *Introduction to EC* by Turban et al., Pearson 2013. The major differences as compared to the EC 2015 book are as follows:

- This book is much smaller (450 pages versus 791 pages; 12 chapters vs. 16 chapters).
- This book has two tutorials vs. five in *EC 2015*.
- There are about 25% fewer cases and online files.
- *EC 2015* is designed for one or two semesters; this book is designed for one quarter or semester.

- *EC 2015* is designed mostly for graduate levels. This book is for undergraduate and industry training.
- *EC 2015* has a strong strategy and research orientations with many more references and Internet links.
- In many places, more technical details, examples, and discussions are available in *EC 2015*.
- Several major topics were eliminated in this book or combined (e.g., payments and order fulfillment is one chapter, instead of two).
- This book includes some simplified cases and examples.

PEDAGOGICAL FEATURES AND LEARNING AIDS

The text offers a number of learning aids for the student:

- **Chapter Outlines**. A listing of the main headings (Content) at the beginning of each chapter provides a quick overview of the major topics covered.
- **Learning Outcomes for the Book**. Learning outcomes for the entire book are available in this preface. They can be used for creating course syllabi.
- **Learning Objectives for Each Chapter**. Learning objectives at the beginning of each chapter help students focus their efforts and alert them to the important concepts to be discussed.
- **Opening Cases**. Each chapter opens with a real-world example that illustrates the importance of EC to modern corporations. These cases were carefully chosen to call attention to the major topics covered in the chapters. Following each case, a short section titled "Lesson Learned from the Case" links the important issues in the case to the subject matter of the chapter. Questions to each case are provided at the end of the chapters.
- **EC Application Cases**. In-chapter cases highlight real-world problems encountered by organizations as they develop and implement EC. Questions follow each case to help direct student attention to the implications of the case material.
- **Figures and Tables**. Numerous attractive figures and useful tables extend and supplement the text discussion.
- **Review Questions**. Each section ends with a series of review questions about that section. These questions are intended to help students summarize the concepts introduced and to digest the essentials of each section before moving on to another topic.
- **Glossary and Key Terms**. Each Key Term is defined in the text when it first appears. In addition, an alphabetical list of key terms appears at the end of each chapter. Definitions of all terms are provided in a glossary at the end of the book.
- **Managerial Issues**. At the end of every chapter, we explore some of the special concerns managers face as they adapt to doing business in cyberspace. These issues are framed as questions to maximize readers' active engagement with them.
- **Chapter Summary**. The chapter summary is linked one-to-one with the learning objectives introduced at the beginning of each chapter.
- **End-of-Chapter Exercises**. Different types of questions measure students' comprehension and their ability to apply knowledge. Questions for Discussion and Topics for Class Discussion are intended to develop critical-thinking skills. Internet Exercises are challenging assignments that require students to surf the Internet and apply what they have learned. More than 250 hands-on exercises send students to interesting websites to conduct research, investigate an application, download demos, or learn about state-of-the-art technology. The Team Assignments and Projects exercises are challenging group projects designed to foster teamwork.
- **Closing Cases**. Each chapter ends with a real-world case, which is presented in somewhat more depth than the in-chapter EC Application Cases. Questions follow each case relating the case to many of the topics covered in the chapter.

SUPPLEMENTARY MATERIALS

The following support materials are also available.

- **Instructor's Manual**. Written by Jon Outland, the Instructor's Manual includes answers to all review and discussion questions, exercises, and case questions.
- **Test Bank**. Written by Jon Outland is an extensive set of multiple-choice, true/false, and essay questions for each chapter. It is available in Microsoft Word.
- **PowerPoint Lecture Notes**. Created by Judy Whiteside, these are oriented toward text learning objectives.
- **Companion Website**. The book is supported by a Companion Website that includes:
  - Two Tutorials: Tutorial 1 on e-CRM, and Tutorial 2 on major support technologies including cloud computing, RFID, EDI, and extranets.
  - Online files for most chapters.

Efraim Turban — Kihei, HI
Judy Whiteside — Charleston, IL
David King — Scottsdale, AZ
Jon Outland — Rapid City, SD

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Contents

Part I

Introduction to E-Commerce and E-Marketplaces

Overview of Electronic Commerce and Social Commerce

1

Contents

Learning Objectives

Upon completion of this chapter, you will be able to:

1. Define electronic commerce (EC) and describe its various categories.
2. Describe and discuss the content and framework of EC.
3. Describe the major types of EC transactions.
4. Describe the drivers of EC.
5. Discuss the benefits of EC to individuals, organizations, and society.
6. Discuss social computing.
7. Describe social commerce and social software.
8. Understand the elements of the digital world.
9. Describe some EC business models.
10. List and describe the major limitations of EC.

OPENING CASE: HOW STARBUCKS IS CHANGING TO A DIGITAL AND SOCIAL ENTERPRISE

Starbucks is the world's largest coffee house chain, with 23,043 retail stores (see **news.starbucks.com/uploads/documents/AboutUs-Company_Timeline-Q42015.pdf**). Many people view Starbucks as a traditional store where customers drop in, place an order, pay for coffee or other products, consume their choices in the store, and go on about their business. The last thing many people think about is the utilization of computers in this business. The opposite is actually true. Starbucks is turning itself into a digital and social company.

For a long time, Starbucks was known as appealing to young people because of the free Wi-Fi Internet access provided in its U.S. and Canadian stores. But lately, the company embarked on several digital initiatives to become a truly tech-savvy company.

Electronic supplementary material: The online version of this chapter (doi:10.1007/978-3-319-50091-1_1) contains supplementary material, which is available to authorized users.

E. Turban et al., *Introduction to Electronic Commerce and Social Commerce*,
Springer Texts in Business and Economics, DOI 10.1007/978-3-319-50091-1_1

The Problem

Starting in 2007, the company's operating income declined sharply (from over $1 billion in 2007 to $504 million in 2008 and $560 million in 2009). This decline was caused by not only the economic slowdown, but also by the increased competition (e.g., from Green Mountain Coffee Roasters), which intensified even during the recession. Excellent coffee and customer service helped, but only in the short run. A better solution was needed.

Starbucks realized that better interaction with its customers was necessary and decided to solve the problem via digitization.

The Solution: Going Digital and Social

In addition to traditional measures to improve its operation and margin, the company resorted to *electronic commerce*, meaning the use of computerized systems to conduct and support its business. The company appointed a Senior Executive with the title of Chief Digital Officer to oversee its digital activities. It also created the Digital Venture Group to conduct the technical implementation.

The Electronic Commerce Initiatives

Starbucks deployed several e-commerce projects; the major ones follow.

Online Store

Starbucks sells many of their products online at **store.starbucks.com**. These offerings include coffee, tea, and Starbucks equipment and merchandise. The store was in operation for years, using a typical shopping cart (called My Bag), but in August 2011, the company completely redesigned the webstore to make shopping more convenient and easy. In addition, customers (individual or companies) can schedule deliveries of standard and special items. Customers can order rare and exquisite coffee that is available only in some U.S. stores. Finally, online customers get exclusive promotions.

The eGift Card Program

Customers can buy Starbucks customized gift cards digitally (e.g., a gift card for a friend's birthday is auto delivered on the desired date). Payments can be made with a credit card, through PayPal, or the Starbucks app for mobile devices. The gift card is sent to the recipient via e-mail or postal mail.

The recipients can print the card and go shopping at a Starbucks physical store, transfer the gift amount to their Starbucks' card, or to a Starbucks gift card.

Loyalty Program

Like airlines and other vendors, the company offers a Loyalty Program (My Starbucks Rewards). Those who reach the gold level receive extra benefits. The program is managed electronically.

Mobile Payments

Customers can pay at Starbucks stores with prepaid (stored value) cards, similar to those used in transportation, or pay using the Starbucks mobile app from smartphones. Shoppers can download an app on their mobile device. Payment is made by selecting "touch to pay" and holding up the barcode on the device screen to a scanner at the register. The system is connected automatically to a debit or credit card. The system works only in company-owned stores.

Social Media Projects

Starbucks realized the importance of social media that uses Internet-based systems to support social interactions and user involvement and engagement (Chapter 7). Thus, it started several initiatives to foster customer relationships based on the needs, wants, and preferences of its existing and future customers. The following are some representative activities.

Exploiting Collective Intelligence

My Starbucks Idea (**mystarbucksidea.force.com**) is a platform in which a community of over 300,000 consumers and employees can make improvement suggestions, vote for the suggestions, ask questions, collaborate on projects, and express their complaints and frustrations. The community generated 70,000 ideas in its first year, ranging from thoughts on the company's rewards cards and elimination of paper cups to ways to improve customer service. The site also provides statistics on the ideas generated, by category, as well as their status (under review, reviewed, in the works, and launched). The company may provide incentives for certain generated ideas. For example, in June 2010, Starbucks offered $20,000 for the best idea concerning the reuse of its used coffee cups. This initiative is based on the technology of *collective intelligence*, also known as *crowdsourcing* (see Chapters 2 and 8), and is supported by the "Ideas in Action" blog. This blog is written by employees who discuss ideas submitted to **blogs.starbucks.com/blogs/Customer**.

Starbucks' Activities on Facebook

Starbucks maintains a strong social media presence on Facebook (**facebook.com/Starbucks**), with over 36 million "Likes" (as of March 2016). The company uploads videos, blog posts, photos, promotions, product highlights, and

special deals. The millions of people who "like" Starbucks on Facebook verify that the company has one of the most popular fan pages (see current statistics at **fanpagelist.com** and at **facebook.com/Starbucks**). Starbucks offers one of the best online marketing communication experiences on Facebook to date as well as mobile commerce engagements. Starbucks posts diversified information on its Facebook page, whether it is content, questions, or updates. The company also advertises on its Facebook page (e.g., contests, events, new products).

Starbucks' Presence on LinkedIn and Google+

Starbucks has a profile on LinkedIn site with over 667,000 followers (March 2016). It provides business data about the company, lists new hires in managerial positions, and advertises available jobs. Starbucks is also active on Google+. It provides business data about the company, shows employee profiles, and advertises available jobs. Note that Starbucks is regularly assessing the cost–benefit of advertising on social networks.

Starbucks' Activities on Twitter

In March 2016, Starbucks had over 11 million followers (Follow@starbucks) on Twitter (**twitter.com/starbucks**). Whenever the company has some new update or marketing campaign, the company posts a tweet (e.g., discounted drinks). By October 2013, Starbucks was the number one retailer to follow on Twitter. In November 2013, Starbucks gave away a $5 gift certificate to 100,000s of their customers who Tweeted a coffee to one of their friends or followers (see **blissxo.com/free-stuff/deals/cash-back-and-rebates/free-5oo-starbucks-gift-card**).

Starbucks' Activities on YouTube, Flickr, Pinterest, and Instagram

Starbucks has a presence on both YouTube (**youtube.com/Starbucks**) and Flickr (**flickr.com/Starbucks**), with a selection of videos and photos for viewing. It also runs advertising campaigns there. Finally, Starbucks has about 7.9 million followers on the photo-sharing company Instagram (**instagram.com/Starbucks**).

Starbucks Digital Network

When customers are at Starbucks, they have more than Wi-Fi, they get access to the Starbucks Digital Network from all major mobile devices, including tablets and smartphones (see **starbucks.com/coffeehouse/wireless-internet/starbucks-digital-network**). The Network, in partnership with Yahoo!, features free premium online content, such as news, entertainment, business, health, and even local neighborhood information channels. In 2014, Starbucks switched to Google Wi-Fi, instead of AT&T, to give their customers faster Wi-Fi and network speeds.

Early Adoption of Foursquare: A Failure

Not all Starbucks social media projects were successes. For example, the company decided to be an early adopter of geolocation by working with Foursquare (Chapter 7). The initiative simply did not work, and the project ended in mid-2010. The company experimented in the UK with a similar location company called Placecast. As of fall 2011, Starbucks had a better understanding of the opportunities and the limitations, so it may decide to try geolocation again with Facebook Places, or it may revive the Foursquare project.

The Results

Starbucks turned sales around by effectively integrating the digital and the physical worlds. In 2010, its operating income almost tripled ($1.437 billion versus $560 million in 2009) and so did its stock price. In 2011, the operating income reached $1.7 billion. Since then, the operating income is increasing rapidly. Sales are lifting due to digital and social media promotions.

The company's social media initiatives are widely recognized. In 2012, it was listed by *Fortune Magazine* as one of the top social media stars (per **archive.fortune.com/galleries/2012/fortune/1205/gallery.500-social-media.fortune/5.html**), and in 2008, it was awarded the 2008 Groundswell Award by Forrester Research. The site is very popular on Facebook where it has millions of fans, (sometimes more popular than pop icon Lady Gaga). Starbucks attributes its success to ten philosophical guidelines that drive its social media efforts.

Sources: Based on Brohan (2015), Panagiotaropoulou (2015), Straut (2015), Loeb (2013), Moth (2013), Allison (2013), Schoultz (2013), Welch and Buva (2015), **mystarbucksidea.force.com**, **blogs.starbucks.com/blogs/Customer**, and **starbucks.com** (accessed March 2016).

LESSONS LEARNED FROM THE CASE

The Starbucks.com case illustrates the story of a large retailer that is converting to be a digital and social enterprise. Doing business electronically is one of the major activities of e-commerce, the subject of this book. The case demonstrates several of the topics you will learn about in this chapter and throughout the book. These are:

1. There are multiple activities in EC, including selling online, customer service, and collaborative intelligence.

2. The case shows major benefits to both buyers and sellers. This is typical in EC.
3. The EC capabilities include the ability to offer products and services in many locations, including overseas, to many customers, individuals, and businesses. You can do so because you can have a larger customer base online, and people can buy from anywhere at any time.
4. In a regular store, you pay and pick up the merchandise or service. On Starbucks.com and other webstores, you order, pay, and the product is shipped to you. Therefore, order fulfillment needs to be very efficient and timely.
5. Being digital can be very useful, but a greater benefit can be achieved by extending it to be a socially oriented enterprise. Both approaches constitute the backbone of electronic commerce, the subject of this book.

In this opening chapter, we describe the essentials of EC, some of which were presented in this case. We present some of the drivers and benefits of EC and explain their impact on the technology. Special attention is provided to the emergence of the social economy, social networks, and social enterprises. Finally, we describe the outline of this book.

1.1 ELECTRONIC COMMERCE: DEFINITIONS AND CONCEPTS

As early as 2002, the management guru Peter Drucker (2002) forecasted that e-commerce (EC) would significantly impact the way that business is done. And indeed, the world is embracing EC, which makes Drucker's prediction a reality.

Defining Electronic Commerce

Electronic commerce (EC) refers to using the Internet and other networks (e.g., intranets) to purchase, sell, transport, or trade data, goods, or services. For an overview, see Plunkett et al. (2015). In addition, watch the video titled "What is E-Commerce?" at **youtube.com/watch?v=3wZw2IRb0Vg**. EC is often confused with e-business, which is defined next.

Defining E-Business

Some people view the term *commerce* as describing only buying and selling transactions conducted between business partners. If this definition of commerce were used, the term *electronic commerce* would be fairly narrow. Thus, many use the term *e-business* instead. **E-business** refers to a broader definition of EC, not just the buying and selling of goods and services, but conducting all kinds of business online such as servicing customers, collaborating with business partners, delivering e-learning, and conducting electronic transactions within organizations. However, others view e-business only as comprising those activities that do not involve buying or selling over the Internet, such as collaboration and intrabusiness activities; that is, it is a *complement* of the narrowly defined e-commerce. In its narrow definitions, e-commerce can be viewed as a subset of e-business. In this book, we use the broadest meaning of electronic commerce, which is basically equivalent to the broadest definition of e-business. The two terms will be used interchangeably throughout the text.

Major EC Concepts

Several other concepts are frequently used in conjunction with EC. The major ones are as follows.

Pure Versus Partial EC

EC can be either pure or partial depending on the nature of its three major activities: ordering and payments, order fulfillment, and delivery to customers. Each activity can be done physically or digitally. Thus, there are eight possible combinations as shown in Table 1.1. If all activities are digital, we have pure EC, if none are digital we have no EC, otherwise we have partial EC.

If there is at least one digital dimension, we consider the situation EC, but only partial EC. For example, purchasing a computer from Dell's website or a book from Amazon.com is partial EC, because the merchandise is physically delivered. However, buying an e-book from Amazon.com or a software product from Buy.com is pure EC, because ordering, processing, and delivery to the buyer are all digital. Note that many companies operate in two or more of the classifications. For example, Jaguar has a 3D application for self-configuration of cars online, prior to shopping (see Vizard 2013).

Table 1.1 Classifications of e-commerce

Activity	1	2	3	4	5	6	7	8
Ordering, payment	P	D	D	D	D	P	P	P
Order fulfillment	P	D	D	P	P	D	P	D
Delivery (shipment)	P	D	P	P	D	D	D	D
Type of EC	Non-EC	Pure EC	Partial EC					

P physical, *D* digital

EC Organizations

Purely physical organizations (companies) are referred to as **brick-and-mortar** (or **old economy**) **organizations**, whereas companies that are engaged only in EC are considered **virtual (pure-play) organizations. Click-and-mortar** (**click-and-brick**) **organizations** are those that conduct some EC activities, usually as an additional marketing channel. Gradually, many brick-and-mortar companies are changing to click-and-mortar ones (e.g., GAP, Target).

Electronic Markets and Networks

EC can be conducted in an **electronic market (e-marketplace)**, an online location where buyers and sellers conduct commercial transactions such as selling goods, services, or information. Any individual can also open a private market selling products or services online. Electronic markets are connected to sellers and buyers via the Internet or to its counterpart within organizations, an *intranet*. An **intranet** is a corporate or government internal network that uses Internet tools, such as Web browsers and Internet protocols. Another computer environment is an **extranet**, a network that uses Internet technology to link intranets of several organizations in a secure manner (see Online Tutorial T2).

SECTION 1.1 REVIEW QUESTIONS

1. Define EC and e-business.
2. Distinguish between pure and partial EC.
3. Define click-and-mortar and brick-and-mortar organizations.
4. Define electronic markets.
5. Define intranets and extranets.

1.2 THE ELECTRONIC COMMERCE FIELD: GROWTH, CONTENT, CLASSIFICATION, AND A BRIEF HISTORY

According to the U.S. Census Bureau (2016), e-commerce sales in 2015 accounted for over 50% of total sales of all manufacturing activities in the United States, over 25% of merchant wholesalers, 7.5% of all retailing (vs. 4.7% in 2011), and 2% of all sales in selected service industries. The grand total of EC in 2015 has been $4000 billion as seen in Figure 1.1. Notice the sharp increase in manufacturing compared to other sectors. In addition, note that EC is growing much faster than the total of all commerce by about 16–17% annually. For a more detailed breakdown, see the U.S. Census Bureau (2013) report as well as Plunkett et al. (2015).

There is a clear trend that online retail sales are taking business from traditional retailers. For example, Wilfred (2014) reported that during the 2013 holiday shopping season online shopping grew 10% a year versus 2.7% of traditional retailers. Today, even more people buy online.

According to *Ecommerce Europe*, September 5, 2012, European online retail sales will double to €323 billion by 2018.

The Content and Framework of E-Commerce

Classifying e-commerce aids understanding of this diversified field. In general, selling and buying electronically can be either business-to-consumer (B2C) or business-to-business (B2B). Online transactions are made between businesses and individual consumers in B2C, such as when a person purchases a coffee at **store.starbucks.com** or a computer at **dell.com** (see Online File W1.1). In B2B, business transactions

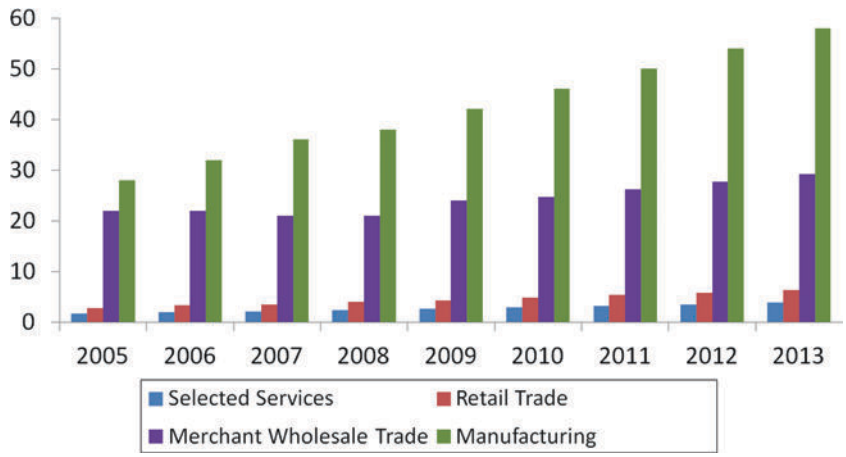

Figure 1.1 E-commerce as percent of total value: (2005–2013) (*Source*: **Census.gov/estats**, accessed March 2016)

are made online between businesses, such as when Dell electronically buys parts from its suppliers. Dell also collaborates electronically with its partners and provides customer service online e-CRM (see Online Tutorial T1). Several other types of EC will be described later in this chapter.

According to the U.S. Census Bureau (2013), the total EC shipments grew 16.5% in a year; ComScore reported that U.S. retail commerce online increased 17% in QI 2012 as compared to a year earlier. EC is growing in all areas. For example, Leggatt (2012) reported that in the UK Domino's Pizza online sales grew about 1000% between 2000 and 2012. Similar results can be found in many industries, companies, and countries (e.g., see periodic reports at ComScore and BizReport) and Ahmad (2014, an Infographic). E-commerce is exploding globally. According to a press release of **ecommerce-europe.eu/press** of May 23, 2013, European e-commerce grew by 19% in 2012 reaching €312 billion. According to Stanley and Ritacca (2014), e-commerce in China is exploding, reaching $600 billion by the end of 2013. Finally, in several developing countries EC is becoming a major economic asset (e.g., see Maitra 2013 for information on India).

An EC Framework

The EC field is diverse, involving many activities, organizational units, and technologies. Therefore, a framework that describes its contents can be useful. Figure 1.2 introduces one such framework.

As shown in the figure, there are many EC applications (top of figure), which will be illustrated throughout the book. To perform these applications, companies need the right information, infrastructure, and support services. Figure 1.2 shows that EC applications are supported by infrastructure and by the following five support areas (shown as pillars in the figure):

1. **People.** Sellers, buyers, intermediaries, information systems and technology specialists, other employees, and any other participants.
2. **Public policy.** Legal and other policy and regulatory issues, such as privacy protection and taxation, which are determined by governments. Included are technical standards and compliance.
3. **Marketing and advertising.** Like any other business, EC usually requires the support of marketing and advertising. This is especially important in B2C online transactions, in which the buyers and sellers usually do not know each other.
4. **Support services.** Many services are needed to support EC. These range from content creation to payments to order delivery.
5. **Business partnerships.** Joint ventures, exchanges, and business partnerships of various types are common in EC. These occur frequently throughout the *supply chain* (i.e., the interactions between a company and its suppliers, customers, and other partners).

The infrastructure for EC is shown at the bottom of the figure. *Infrastructure* describes the hardware, software, and networks used in EC. All of these components require good *management practices*. This means that companies need to plan, organize, motivate, devise strategy, and restructure processes, as needed, to optimize the business use of EC models and strategies.

Classification of EC by the Nature of the Transactions and the Relationships Among Participants

A common classification of EC is by the type of the transactions and the transacting members. The major types of EC transactions are listed below.

Business-to-Business (B2B)

Business-to-business (B2B) EC refers to transactions between and among organizations. Today, about 85% of EC volume is B2B. For Dell, the entire wholesale transaction is B2B. Dell buys most of its parts through e-commerce, and sells its products to businesses (B2B) and individuals (B2C) using e-commerce.

Business-to-Consumer (B2C)

Business-to-consumer (B2C) EC includes retail transactions of products or services from businesses to individual shoppers. The typical shopper at Amazon.com is of this type. Since the sellers are usually retailers, we also call this type **e-tailing**.

Consumer-to-Business (C2B)

In **consumer-to-business (C2B),** people use the Internet to sell products or services to individuals and organizations. Alternatively, individuals use C2B to bid on products or services. Priceline.com is a well-known organizer of C2B travel service transactions.

Intrabusiness EC

The **intrabusiness EC** category refers to EC transactions among various organizational departments and individuals in one company.

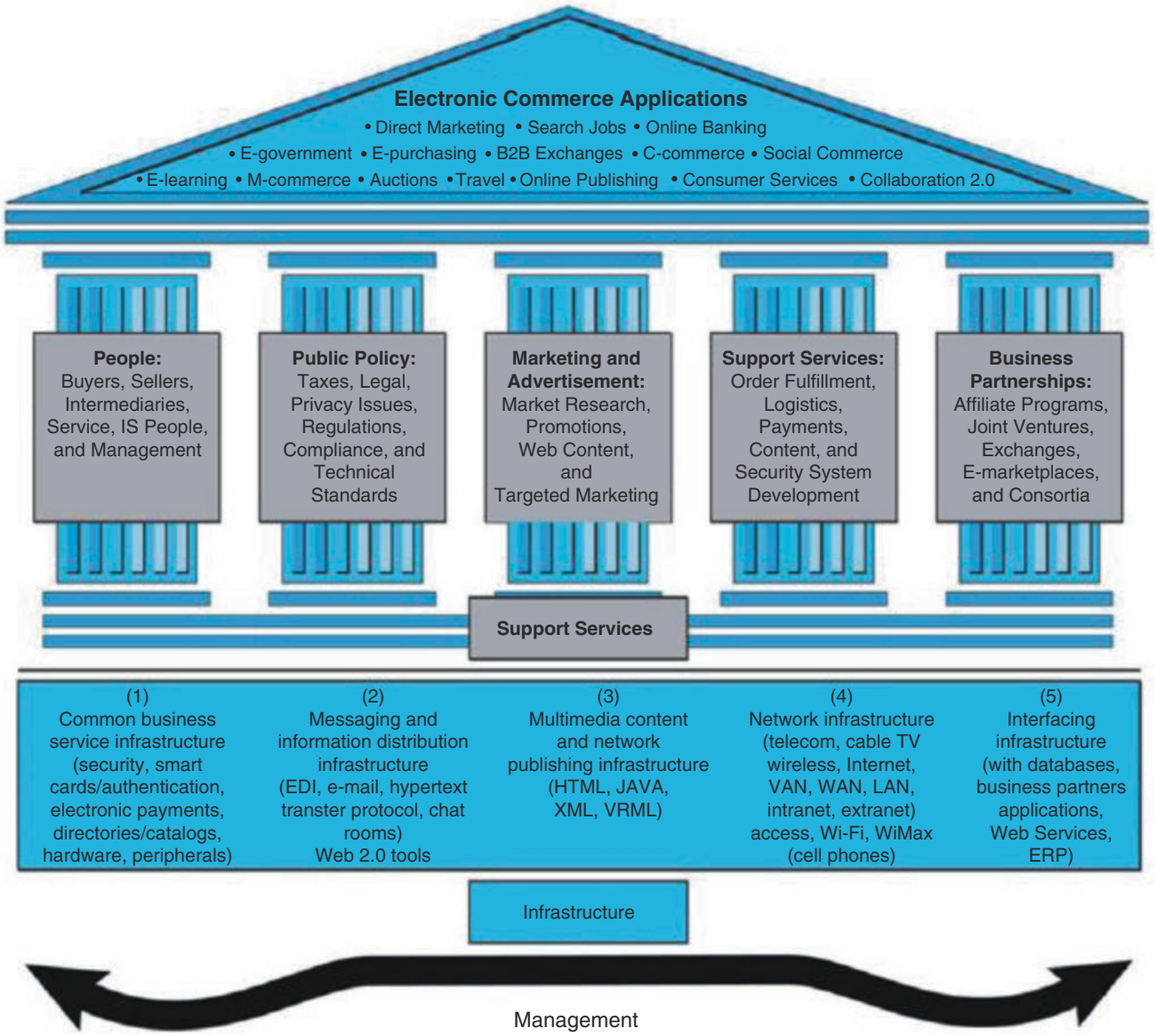

Figure 1.2 A framework for electronic commerce

Business-to-Employees (B2E)

The **business-to-employees (B2E)** category refers to the delivery of services, information, or products from organizations to their employees. A major category of employees is *mobile employees*, such as field representatives or repair employees that go on to customers. EC support to such employees is also called *business-to-mobile employees (B2ME).*

Consumer-to-Consumer (C2C)

In the **consumer-to-consumer (C2C)** EC category individual consumers sell to or buy from other consumers. Examples of C2C include individuals selling computers, musical instruments, or personal services online. EBay sales and auctions are mostly C2C as are the ads in Craigslist.

Collaborative Commerce

Collaborative commerce (c-commerce) refers to online activities and communications done by parties working to attain the same goal. For example, business partners may design a new product together.

E-Government

In **e-government** EC, a government agency buys or provides goods, services, or information from or to businesses (G2B) or from or to individual citizens (G2C). Governments can deal also with other governments (G2G).

The previous categories are illustrated in Figure 1.3. Many examples of the various types of EC transactions will be presented throughout this book.

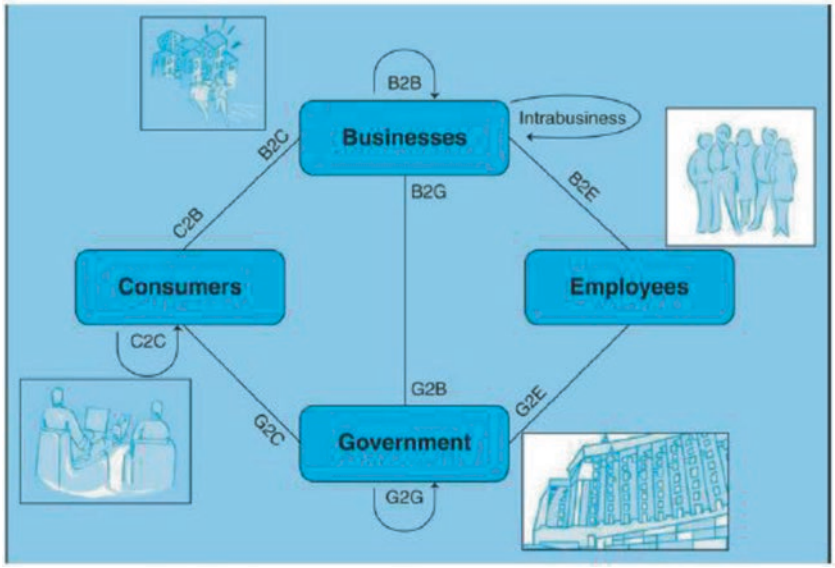

Figure 1.3 Categories of transactions in e-commerce

A Brief History of EC

The pioneering of e-commerce applications can be tracked to the early 1970s when money was transferred electronically, mostly among financial institutions (known as *electronic funds transfer [EFT]*), whereby funds could be routed electronically from one organization to another. However, the use of these applications was limited to large corporations, financial institutions, and a few other daring businesses. Then came *electronic data interchange (EDI)*, a technology used to enable the electronically transfer of routine documents. EDI later expanded from financial transactions to other types of transactions (see Online Tutorial T2 for more on EDI). More new EC applications followed, ranging from travel reservation systems to online stock trading.

The Internet appeared on the scene in 1969, as an experiment by the U.S. government, and its initial users were mostly academic researchers and other scientists. Some users started to place personal classifieds on the Internet. A major milestone in the development of EC was the appearance of the World Wide Web (The "Web") in the early 1990s. This allowed companies to have a presence on the Internet with both text and photos. When the Internet became commercialized and users began flocking to participate in the World Wide Web in the early 1990s, the term *electronic commerce* was introduced. EC applications rapidly expanded. A large number of so-called dot-coms, or *Internet start-ups*, also appeared. Today, all companies in the developing countries have presence on the Web. Many of these sites contain tens of thousands of pages and links. In 1999, the emphasis of EC shifted from B2C to B2B, and in 2001 from B2B to B2E, c-commerce, e-government, e-learning, and m-commerce. In 2005, social networks started to receive quite a bit of attention, as did m-commerce and wireless applications. As of 2009, EC added social commerce channels. An example is the increasing commercial activities on Facebook and Twitter. Given the nature of technology and Internet usage, EC will undoubtedly continue to grow, add new business models, and introduce change. More and more EC successes are emerging. For a comprehensive ready-reference guide to EC including statistics, trends, and in-depth profiles of hundreds of companies, see Plunkett et al. (2015) and **en.wikipedia.org/wiki/E-commerce**.

While looking at the history of EC, one must keep in mind the following:

The Global Nature of EC

EC activities can be seen between and within countries. As a matter of fact, the largest EC company in the word is Alibaba Group of China (see Chapter 2). See also Tse (2015).

The Interdisciplinary Nature of EC

From just the brief overview of the EC framework and classification, you can probably see that EC is related to several different disciplines. The major academic EC disciplines include the following: *accounting, business law, computer science, consumer behavior, economics, engineering, finance, human resource management, management, management information systems, marketing, public administration*, and *robotics*.

The Google Revolution

During its early years, EC was impacted by companies such as Amazon.com, eBay, AOL, and Yahoo!. However, since 2001 no other company has probably had more of an impact on EC than Google. Google-related Web searches are targeting advertisements much better than its competitors. Today, Google is much more than just a search engine; it employs many innovative EC models, is involved in many EC joint ventures, and impacts both organizational activities and individual lives. Google companies are organized under the "Alphabet" name.

Cyber Monday, Singles' Day

An interesting evidence for the growth of online shopping is the volume of shopping during Cyber Monday in the USA and Singles' Day in China (11/11). For the magnitude of Singles' Day in China, in the automotive industry see Li and Han (2013). See also *Ad Age* Staff (2013).

Social Commerce

The explosion of social media and networks, as well as Web 2.0 tools (e.g., wikis, blogs), resulted in new ways of conducting e-commerce by making it social. Several new and modified EC models were created, rejuvenating the field as described in several chapters in the book, especially in Chapter 7, and in Turban et al. (2016).

EC Failures

Starting in 1999, a large number of EC companies, especially e-tailing and B2B exchanges, began to fail. Well-known B2C failures include Drkoop, MarchFirst, eToys, and Boo. Well-known B2B failures include Webvan, Chemdex, Ventro, and Verticalnet. (Incidentally, the history of these pioneering companies is documented by David Kirch in his Business Plan Archive, **businessplanarchive.org**.) A survey by Strategic Direction (2005) found that 62% of dot-coms lacked financial skills, and 50% had little experience with marketing. Similarly, many companies failed to have satisfactory order fulfillment and enough inventory to meet the fluctuating and increasing demand for their products. The reasons for these and other EC failures are discussed in Chapters 3, 4, and 11. As of 2008, many start-ups related to Web 2.0 and social commerce started to collapse (see **blogs.cioinsight.com/it-management/startup-deathwatch-20.html**).

Does the large number of failures mean that EC's days are numbered? Absolutely not! First, the dot-com failure rate is declining sharply. Second, the EC field is basically experiencing consolidation as companies test different business models and organizational structures. Third, some pure EC companies, including giants such as Amazon.com and Netflix, are expanding operations and generating increased sales. Finally, the click-and-mortar model seems to work very well, especially in e-tailing (e.g., GAP, Walmart, Target, Apple, HP, and Best Buy).

For supplementary history, see **plunkettresearch.com/ecommerce-internet-technology-market-research/industry-and-business-data**.

EC Successes

The last few years have seen the rise of extremely successful EC companies such as eBay, Pandora, Zillow, Google+, Facebook, Yahoo!, Amazon.com, Pay Pal, Pinterest, VeriSign, LinkedIn, and E*TRADE. Click-and-mortar companies such as Cisco, Target, General Electric, IBM, Intel, and Schwab also have seen great success. Additional success stories include start-ups such as Alloy.com (a young-adult-oriented portal), Blue Nile (Chapter 2), Ticketmaster, Amazon.com, Net-a-Porter (Case 1.1), Expedia, Yelp, TripAdvisor, and GrubHub (Online File W1.2).

CASE 1.1: EC APPLICATION NET-A-PORTER: DRESS FOR SUCCESS

Will a woman buy a $2000 dress online without trying it on? Net-a-Porter (a UK online retailer, known as "the Net") bet on it and proved that today's women will purchase their dresses (for success) online, especially if the luxury clothing and accessories are international brands such as Jimmy Choo or Calvin Klein (see Pressler 2015).

The Opportunity

When talking about e-commerce (EC), most people think about buying online books, vitamins, CDs, or other commodity items. And this indeed was what people bought in the mid-1990s, when EC began. But in 2000, Natalie Massenet, a fashion journalist, saw an opportunity because of the success of luxury online stores such as Blue Nile (see Chapter 2) and the fact that professional women are very busy and willing to do more purchasing online.

The Solution

Natalie decided to open an online business for luxury fashion. She created a comprehensive, socially oriented, e-tailing site, naming it Net-a-Porter.

According to **net-a-porter.com**, some experts, and the company:

- Opened an e-tailing store
- Offered merchandise from over 350 top designers; most off-line stores offer a few dozen
- Offered its own designs in addition to others
- Arranged global distribution systems to over 170 countries
- Opened physical stores in London and New York to support the online business
- Arranged same day delivery in London and New York and overnight delivery elsewhere
- Organized very fast cycle time for producing and introducing new clothes and other products that match customers' preference
- Devised prediction methods of fashion trends based on customer feedback through social media
- Ran online fashion shows

- Developed superb inventory and sales tracking systems based on dashboards
- Offered an online fashion magazine
- Discovered what customers really want via social networks (Chapter 7) and fulfilled their needs
- Offered large discounts
- Developed a presence on Facebook and app for iPhone
- Has 630,000 followers on Google+ (February 2016)
- Has five million visitors each month (February 2016)
- Experiences 750,000 downloads per month on iPhone
- Started augmented reality shopping windows in several global cities as of 2012 (see **digitalbuzzblog.com/net-a-porter-augmented-reality-shopping-windows**). At this same site, you can watch the video "Window Shop" and download the Net-a-Porter iPhone/iPad app.

In 2010, the company started taking advantage of the social media environment that is changing the fashion industry.

The Results

Customers now come from over 170 countries and revenue and profits are increasing rapidly. Several million visitors come to the site every week. The "Net" became profitable after 1 year, a very rare case in e-tailing. During the economic crisis of 2009, the Net's total sales were up 45%, versus a 14% decrease for one of its major competitors (Neiman Marcus; Web and paper catalog sales). The company was so successful that luxury goods company Richemont Corp. purchased a 93% stake in the business. In October 2015, the company merged with the YOOX Group (**yooxgroup.com**).

In June 2010, when the company celebrated its 10th anniversary, it opened a new website dedicated to menswear. With success comes competition, and the Net's competitors include Bluefly (low prices), Shopbop (an Amazon.com company, but it lacks the Net's prestige), and high-end department stores with their own online stores (Nordstrom, Neiman Marcus). However, the Net has the highest prestige and growth rate. A major threat may come from eBay, which has been reaching out to high-end designers about creating their own virtual stores (hosted by eBay) where they can sell at fixed prices and also use auctions. Finally, note that in late 2010, Amazon.com created MYHABIT that offers designer brands at a discount. To stay on top of the competition, the Net is planning new ventures and expanding its business model to include children's clothes. Net-a-Porter is an example of the revolution that is occurring in the fashion industry. Another example is Polyvore, whose case is presented in Chapter 7. For details on these new business models, see **businessoffashion.com/2012/01/e-commerce-week-the-rise-of-new-business-models.html**.

Sources: Based on Pressler (2015), **en.wikipedia.org/wiki/YOOX_Net-a-Porter_Group** (accessed March 2016).

Questions

1. Why would you buy (or not buy) from Net-a-Porter?
2. Watch the video "The Future of Shopping" (**youtube.com/watch?v=_Te-NCAC3a4**). How would you integrate this development with Net-a-Porter?
3. List both the advantages and disadvantages of the Net's physical stores.
4. It is said that the Net is playing a significant role in transforming how designers reach customers. Explain why.
5. Read the benefits of EC to customers (Section 1.3). Which ones are the most relevant here?
6. What EC capabilities are helping the Net and its designers?
7. Analyze the competition in the high-end fashion market.
8. What is the importance of globalization in this case?
9. Imitators are springing up on all sides. Even eBay and Amazon.com are expanding their fashion e-tailing efforts. What strategy do you suggest for the Net?

SECTION 1.2 REVIEW QUESTIONS

1. List the major components of the EC framework.
2. List the major transactional types of EC.
3. Describe the major landmarks in EC history.
4. List some EC successes and failures.

1.3 DRIVERS AND BENEFITS OF E-COMMERCE

The tremendous explosion of EC can be explained by its drivers and characteristics, benefits, and by changes in the business environment.

The Drivers of E-Commerce

Although EC is only about 23 years old, it is expected to have non-stoppable growth and it expands consistently into new areas of our life. The question is why. What drives EC?

EC is driven by many factors depending on the industry, company, and application involved. The major drivers are shown in the self-explanatory Figure 1.4, together with the section and/or chapter where details are presented.

The Benefits of E-Commerce

There are many benefits of EC and they continue to increase with time. We elected to organize them in three categories:

EC provides benefits to *organizations, individual customers*, and *society*. These benefits are summarized in Table 1.2.

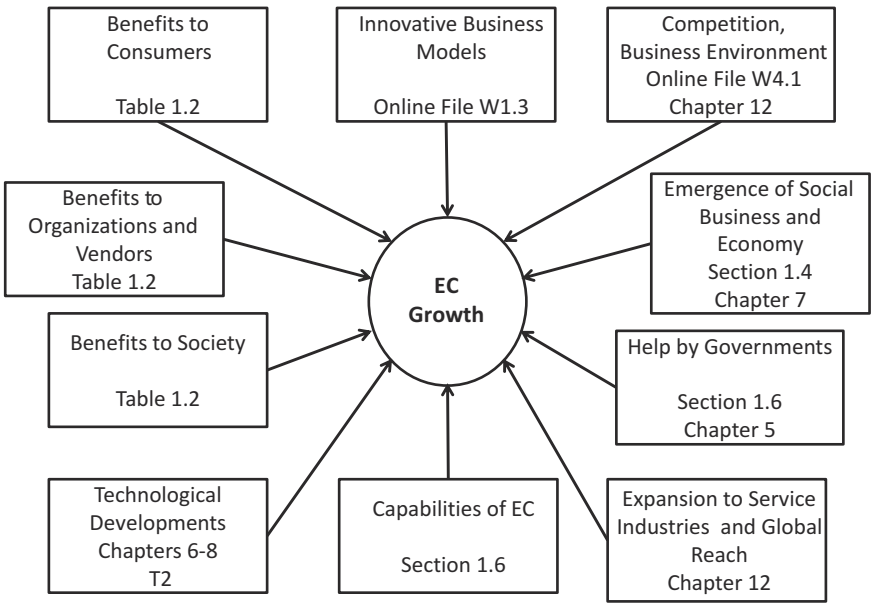

Figure 1.4 The major drivers of e-commerce growth

Table 1.2 Benefits of e-commerce

Benefit	Description
Benefits to organizations	
Global reach	Quickly locating customers and/or suppliers at reasonable cost worldwide
Cost reduction	Lower cost of information processing, storage, and distribution
Facilitate problem solving	Solve complex problems that have remained unsolved
Supply chain improvements	Reduce delays, inventories, and cost
Business always open	Open 24/7/365; no overtime or other costs
Customization/personalization	Make order for customer preference
Ability to innovate, use new business models	Facilitate innovation and enable unique business models
Lower communication costs	The Internet is cheaper than VAN private lines
Efficient procurement	Saves time and reduces costs by enabling e-procurement
Improved customer service and relationship	Direct interaction with customers, better CRM
Help SMEs to compete	EC may help small companies to compete against large ones by using special business models
Lower inventories	Using customization inventories can be minimized
Lower cost of distributing digitizable product	Delivery online can be 90% cheaper
Provide competitive advantage	Lower prices, better service
Benefits to consumers	
Availability	Huge selection to choose from (vendor, products, styles)
Ubiquity	Can shop any time from any place
Self-configuration	Can self-customize products
Find bargains	Use comparison engine
Real-time delivery	Download digital products
No sales tax	Sometimes; changing
Enable telecommuting	Can work or study at home or any place
Social interaction and engagement	In social networks
Find unique items	Using online auctions, collectible items can be found
Comfortable shopping	Shop at your leisure without pushy sales clerks bothering you
Benefits to society	
Enable telecommuting	Facilitate work at home; less traffic, pollution
More and better public services	Provided by e-government
Improved homeland security	Facilitate domestic security
Increased standard of living	Can buy more and cheaper goods/services
Close the digital divide	Allow people in rural areas and developing countries to use more services and purchase what they really like

Opportunities for Entrepreneurs

A major benefit of EC is the creation of opportunities to start a business in an unconventional ways. The new business models permit entrepreneurs to open businesses with little money and experience and grow them rapidly. Many entrepreneurs are making some big money online.

Example: Fish Flops
Madison Robinson was a 15-year-old ninth grader when she opened the business, both online and off-line. She designs the footwear herself. Madison uses her Twitter account and tweets about Fish Flops. After only two years of operation, the business became profitable enough to pay Madison's college expenses. For details, see Burke (2013).

EC as a Provider of Efficiency, Effectiveness, and Competitive Advantage

The benefits of EC may result in significant changes in the way business is conducted. These changes may positively impact corporate operations resulting in a competitive advantage for the firms using EC (e.g., see Khosrow-Pour 2013) as well as more efficient governments and nonprofit organizations.

SECTION 1.3 REVIEW QUESTIONS

1. List the major drivers of EC.
2. List five benefits each to customers, organizations, and society.
3. From your knowledge, describe some technological developments that facilitate EC.
4. Identify additional benefits to society.

1.4 SOCIAL COMPUTING AND COMMERCE

The first generation of EC involved mainly trading, e-services, and corporate-sponsored collaboration. Currently, we are moving into the second generation of EC, which we call E-Commerce 2.0. It is based on Web 2.0 tools, social media, social networks, and virtual worlds—all the offspring of social computing.

Social Computing

Social computing refers to a computing system that involves social interactions and behaviors. It is performed with a set of tools that includes blogs, wikis, social network services, and other *social software tools,* and social marketplaces (see Chapter 7). Whereas traditional computing systems concentrate on business processes, particularly transaction processing and increases in productivity, social computing concentrates on improving collaboration and interaction among people and on user-generated content. In social computing and commerce, people work together over the Internet, consult with specialists, and locate goods and services recommended by their friends.

Example: Social Computing Helps Travel
Advances in social computing impact travel operations and decisions. Travelers can share good travel experiences or warn others of bad experiences using sites such as **tripadvisor.com**. Special travel-oriented social networks such as WAYN are very popular among travelers.

In social computing, information is mostly generated by individuals and is available to all, usually for free. The major implementation tools of social computing are Web 2.0 and social media.

Web 2.0

The term *Web 2.0* was coined by O'Reilly Media in 2004. **Web 2.0** is the second generation of Internet-based tools and services that enables users to easily generate content, share media, and communicate and collaborate, in innovative ways. (For more details, see Edwards 2013.)

O'Reilly divided Web 2.0 into four levels and provided examples of each. For details, see Colby (2008). Karakas (2009) views Web 2.0 as a new digital ecosystem, which can be described through five C's: creativity, connectivity, collaboration, convergence, and community.

The major tools of Web 2.0 are described in Chapter 2, and the applications are described in most other chapters. In addition, browse **enterpriseirregulars.com/author/dion** for an open forum about the Internet, society, collective intelligence, and the future. For Web 2.0 definitions, explanations, and applications, see Shelly and Frydenberg (2010).

Social Media

The term social media has several definitions. A popular definition is that social media involves user-generated online text, image, audio, and video content that are delivered via Web 2.0 platforms and tools. This media is used primarily for social interactions and conversations such as sharing opinions, experiences, insights, and perceptions, and for online collaboration. Therefore, it is a powerful force for socialization. A key element is that users produce, control, and manage content. Additional definitions, descriptions, and references, and a framework are provided in Chapters 2 and 7 and in Turban et al. (2016).

The Difference Between Social Media and Web 2.0

Note that the concept of Web 2.0 is related to the concept of social media; many people equate the two terms and use them interchangeably. However, some people point to the differences. While social media uses Web 2.0 and its tools and technologies, the social media concept includes the philosophy of connected people, the interactions among them, the social support provided, the digital content that is created by users, and so forth.

Example: How Oprah Is Using Social Media to Build Her Business

According to Bertelsen (2014), Oprah Winfrey is integrating social media activities with everything she does, to encourage interactions of people with different platforms (e.g., Facebook, Twitter). Oprah is rewarding people based on their online engagement (e.g., posting comments). She is using Facebook polls, and getting bloggers involved. Oprah is also actively using Twitter to interact with her followers.

Social Networks and Social Network Services

The most interesting e-commerce application in recent years has been the emergence of social and enterprise social networks. Originating from online communities, these networks are growing rapidly and providing many new EC initiatives, revenue models, and business models (see **sustainablebrands.com/news_and_views/blog/13-hot-business-model-innovations-follow-2013**).

A **social network** is a social entity composed of nodes (which are generally individuals, groups, or organizations) that are connected by links such as hobbies, friendship or profession. The structures are often very complex.

In its simplest form, a social network can be described by an image of the nodes and links. The network can also be used to describe Facebook's *social graph* (see description on Facebook.com).

Social Networking Services

Social networking services (SNSs), such as LinkedIn and Facebook, provide and host a Web space for people to build their homepages for free. SNSs also provide basic support tools for conducting different activities and allow many vendors to provide apps. Social networks are people oriented, but increasingly are used for commercial purposes also. For example, many performers, notably Justin Bieber, were discovered on YouTube. Initially, social networks were used solely for social activities. Today, corporations have a great interest in the business aspects of social networks (e.g., see **linkedin.com**, a network used for recruiting, and Facebook for advertising).

The following are examples of representative social network services:

- **Facebook.com**: The most visited social network website.
- **YouTube.com** and **metacafe.com**: Users can upload and view video clips.
- **Flickr.com**: Users share and comment on photos.
- **LinkedIn.com**: The major enterprise-oriented social network.
- **Habbo.com**: Entertaining country-specific sites for kids and adults.
- **Pinterest.com**: Provides a platform for organizing and sharing images.
- **Google+ (plus.google.com)**: A business-oriented social network.
- **MySpace.com**: Facilitates socialization and entertainment for people of all ages.
- **Instagram.com**: Provides a platform for sharing photos and videos.

Social Networking

We define **social networking** as the execution of any Web 2.0 activity, such as blogging or having a presence in a social network. It also includes all activities conducted in social networks.

Enterprise Social Networks

Business-oriented social networks can be public, such as LinkedIn.com. As such, they are owned and managed by an independent company. Another type of business-oriented social network is private, owned by corporations and operated inside them. These are known as *enterprise social networks* (e.g., My Starbucks Idea). These can be directed toward customers or company employees.

Example: A Customer-Oriented Enterprise Social Network

Carnival Cruise Lines sponsors a social networking site (**carnival.com/funville**) to attract cruise fans. Visitors use the site to exchange opinions, organize groups for trips, and much more. It cost the company $300,000 to set up the site, but the initial cost was covered by increased business within a year.

Social Commerce

Social commerce (SC), also known as *social business*, refers to e-commerce transactions delivered via social media. Social commerce is considered a subset of e-commerce by some. More specifically, it is a combination of e-commerce, e-mar-

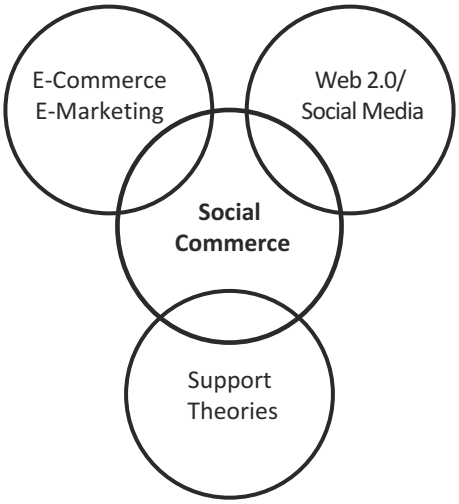

Figure 1.5 The foundation of social commerce

keting, the supporting technologies, and social media content. This definition is illustrated in Figure 1.5. The figure shows that social commerce is created from the integration of e-commerce and e-marketing using Web 2.0/social media applications. The integration is supported by theories such as social capital, social psychology, consumer behavior, and online collaboration, resulting in a set of useful applications that drive social commerce.

We will return to social commerce in Chapter 7.

The following are some examples of social commerce.

- Hilton Garden Inn introduced in 2016 Instagram-based photo map (GFI Travel Guide) to assist in advertising their hotels.
- Dell Computer claims to have made $6.5 million in 2 years by selling computers on Twitter. Also, Dell generates ideas from community members at its *Idea Storm* site.
- Procter & Gamble sells its Max Factor brand cosmetics on Facebook.
- Disney allows people to book certain tickets on Facebook without leaving the social network.
- PepsiCo gives live notifications when its customers are close to physical stores (grocery, restaurants, gas stations) that sell Pepsi products. Then, PepsiCo sends coupons and discount information to the customers.
- Starbucks is using extensive promotions on Facebook including generating ideas from the members via its My Starbucks Idea website (see the opening case for details).
- Mountain Dew attracts video game lovers and sport enthusiasts via Dewmocracy contests. The company also uses the most dedicated community members to contribute ideas. The company used Facebook, Twitter, and YouTube to interact with consumers and engage them.
- In 2010, Target used Twitter to promote their fall fashion show in New York with videos and ads. The show was streamed live on Facebook.
- Levi's advertises on Facebook based on "what people think their friends would like."
- Wendy's uses Facebook and Twitter to award $50 gift cards to people who have the funniest and quirkiest responses to Wendy's published challenges online.

Overall, the vast majority of U.S. companies have a presence on Facebook (see **emarketer.com** for periodic reports). For more applications, see Chapter 7 and Turban et al. (2016). For a free guide, go to **pixtree.com/shoppable-galleries**.

The Major Tools of Web 2.0

Web 2.0 uses dozens of tools such as wikis, RSS feeds, blogs, and microblogs (e.g., Twitter). With microblogging, you can transmit short messages (up to 140 characters) to a list of recipients via the Internet and wireless or wireline devices. As of 2009, Twitter became a major Web 2.0 tool with diversified business applications. Web 2.0 tools are described in Edwards (2013).

SECTION 1.4 REVIEW QUESTIONS

1. Define social computing and list its characteristics.
2. Define Web 2.0 and list its attributes.
3. Define social networks.
4. Describe the capabilities of social network services (SNSs).
5. Describe Facebook. Why is it so popular?
6. What is an enterprise social network?
7. Define social commerce.

1.5 THE DIGITAL AND SOCIAL WORLDS: ECONOMY, ENTERPRISES, AND SOCIETY

E-commerce, including E-Commerce 2.0 is facilitated by developments in the digital and social economy. For an overview, see videos titled "Did You Know" of the latest updated information.

The digital revolution is upon us. We see it every day at home and work, in businesses, schools, hospitals, on the roads, in entertainment. For an overview, see Sidhu (2015). Next, we describe three elements of the digital world: economy, enterprises, and society.

The Digital Economy

The **digital economy**, also known as the *Internet economy*, is an economy based on online transactions, mostly e-commerce. It includes digital wireline or wireless communication networks (e.g., the Internet, intranets, extranets, and VANs), computers, software, and other related information technologies. This digital economy displays the following characteristics:

- Many digitizable products—books, databases, magazines, information, electronic games, and software—are delivered over a digital infrastructure anytime, anywhere in the world, interconnected by a global grid. We are moving from analog to digital, even the media is going digital (TV as of February 2009).
- Information is transformed into a commodity.
- Financial transactions are now digitized and chips are embedded in many products (e.g., cameras, cars). Knowledge is codified.
- Work and business processes are organized in new and innovative ways.
- Disruptive innovation is occurring in many industries (see Manyika et al. 2013).

Table 1.3 summarizes the major characteristics of the digital economy.

The digital revolution also enables many innovations, and new ones appear almost daily, improving business processes and productivity. The digital revolution provides the necessary technologies for EC and creates major changes in the business environment, as described in Section 1.12.

Table 1.3 Major characteristics of the digital economy

Area	Description
Globalization	Global communication and collaboration; global electronic marketplaces and competition
Digitization	Music, books, pictures, software, videos, and more are digitized for fast and inexpensive storage and distribution
Speed	A move to real-time transactions, thanks to digitized documents, products, and services. Many business processes are expedited by 90% or more
Information overload and intelligent search	Although the amount of information generated is accelerating, intelligent search tools can help users find what people need
Markets	Markets are moving online. Physical marketplaces are being replaced or supplemented by electronic markets; new markets are being created, increasing competition
Business models and processes	New and improved business models and processes provide opportunities to new companies and industries
Innovation	Digital and Internet-based innovations continue at a rapid pace. More patents are being granted than ever before
Obsolescence	The fast pace of innovation creates a high rate of obsolescence
Opportunities	Opportunities abound in almost all aspects of life and operations
Fraud	Criminals employ a slew of innovative schemes on the Internet. Cybercons are everywhere
Wars	Conventional wars are changing to cyberwars or are complemented by them
Organizations	Organizations are moving to digital enterprises and social businesses

Sharing Economy

Sharing economy refers to an economic system constructed around the concept of sharing goods and services among the participating people. Also known as "collaborative consumption" and "collaborative economy" such systems appear in different forms and frequently use information technologies in their operations. A well-known example is car sharing. The essentials of this concept are described by Buczynski (2013). For an overview, see Howard (2015).

The major benefits for participants are cost reduction for buyers and the ability to sell more for sellers. Societal benefits include reduction of carbon footprint (e.g., in ride sharing), increase recycling, and increase social interactions. For comprehensive coverage, see **en.wikipedia.org/wiki/sharing_economy**.

Related to the shared economy is the distributed economy where Uber, Airbnb, and crowdsourcing operate (Guides 2015).

Sharing Economy and E-Commerce

Several EC models and companies are based on the concept of the sharing economy. Examples include Uber (for ride sharing), Yerdle (a sharing economy free marketplace), Kickstarter (for crowdfunding), Krrb (a P2P marketplace), and Knok and Love Home Swap for home swapping. Money lending is growing rapidly (lending clubs). Vacation rentals are a large area where home and condo owners provide short-term rentals possibly for an exchange or renting (e.g., see Airbnb, HomeAway, and VRBO).

The Social Impact

The digital revolution is accompanied by social impacts that resulted in part by improved communication and collaboration tools offered by social media. For example, smartphones reduce the digital divide. In addition to productivity improvement in the economy, one can see some major social changes, such as the mass participation in social networks. One impact is the creation of the *social enterprise* (see **centreforsocial-enterprise.com/what-is-social-enterprise**).

The Apps Society

New apps change the way that people communicate, work, and play. People are looking for apps for thousands of new uses.

Example: Swedish Farmers Go Online

According to Willgren (2013), traditional farmers in Sweden created a social network called "Min Farm (My Farm)." The network allows communication between the farmers and their customers. It also allows people that grow their own food to tell their stories and ask for advice. Customer can visit farms and do some shopping there; they can also order online. The network promotes self-sustainability.

The Digital Enterprise

One of the major impacts of EC is the creation of the digital enterprise concept that accompanies the social enterprise.

The term *digital enterprise* has several definitions. It usually refers to an enterprise, such as Amazon.com, Google, Facebook, or Ticketmaster, which uses computers and information systems to automate most of its business processes. The **digital enterprise** is a new business model that uses IT to gain competitive advantage by increasing employee productivity, improving efficiency and effectiveness of business processes, and better interactivity between vendors and customers. The major characteristics of a digital enterprise are listed in Table 1.4, where they are compared with those of a traditional enterprise. See also Olanrewaju et al. (2014).

Note that the term *enterprise* refers to any kind of organization, public or private, small or large. An enterprise can be a manufacturing plant, a hospital, a university, a TV network, or even an entire city. They are all moving toward being digitized.

A digital enterprise uses networks of computers in EC to facilitate the following:

- All business partners are reached via the Internet, or a group of secured intranets, called an extranet, or value-added private communication lines.
- All internal communication is done via an intranet, which is the counterpart of the Internet inside the company.

Most companies' data and EC transactions are done via the Internet and extranets. Many companies employ a **corporate portal**, which is a gateway for customers, employees, and partners to reach corporate information and to communicate with the company.

A key concern of many companies today is how to change themselves into digital (or at least partially digital) enterprises.

The concept of the digital enterprise is related to the smart and intelligent enterprise systems.

Table 1.4 The digital versus brick-and-mortar company

Brick-and-mortar organizations	Digital organizations (enterprises)
Selling in physical stores	Selling online
Selling tangible goods	Selling digital goods online as well
Internal inventory/production planning	Online collaborative inventory forecasting
Paper catalogs	Smart electronic catalogs
Physical marketplace	Electronic marketplace
Use of telephone, fax, VANs, and traditional EDI	Use of computers, smartphones, the Internet, and extranets and EDI
Physical auctions, infrequently	Online auctions, everywhere, any time
Broker-based services, transactions	Electronic infomediaries, value-added services
Paper-based billing and payments	Electronic billing and payments
Paper-based tendering	Electronic tendering (reverse auctions)
Push production, starting with demand forecasting	Pull production, starting with an order (build-to-order)
Mass production (standard products)	Mass customization, build-to-order
Physical-based commission marketing	Affiliated, virtual marketing
Word-of-mouth, slow and limited advertisement	Explosive viral marketing, in particular in social networks
Linear supply chains	Hub-based supply chains
Large amount of capital needed for mass production	Less capital needed for build-to-order; payments can be collected before production starts
Large fixed cost required for plant operation	Small fixed cost required for smaller and less complex plant operation
Customers' value proposition is frequently a mismatch (cost > value)	Perfect match of customers' value proposition (cost ≤ value)

Smart and Intelligent Enterprise Systems

IBM is a leading force in developing smart (or intelligent) computing systems (other companies include SAP, Intel, Oracle, Google, and Microsoft). IBM provides software and knowledge to digital enterprises (including cities). See **ibm.com/smarterplanet/us/en**.

Smart Computing and Integrated Expertise

A major part of IBM's project is based on cloud computing (see Online Tutorial T2). The project created software for efficient, easy to use and flexible computing systems that include a built-in pattern of expertise. The integrated systems are known as "IBM PureFlex" and "IBM PureApplication." For details, see **ibm.com/ibm/puresystems/us/en**. These systems, per IBM, are changing the economics of computing by:

- Helping reduce time-to-market
- Conserving resources and reducing costs

- Consolidating diverse computer system components and applications
- Improving security and reducing human error

All of these contribute to IBM's Smarter Commerce efforts.

The Social Business (Enterprise)

The concept of social business has several definitions and characteristics. We present only a few of them.

The Social Business Forum's Definition

The concept of social business was developed decades ago and was not related to computers. Today, the Social Business Forum defines **social business** as "an organization that has put in place the strategies, technologies and processes to systematically engage all the individuals of its ecosystem (employees, customers, partners, suppliers) to maximize the co-created value." See **2013.socialbusinessforum.com/social-business-manifesto**. The Forum also discusses the implication of this definition and its relevance inside, across, and outside organizations. Note that the efficient creation of value using technology is emphasized. The Forum conducts annual conferences.

IBM's Approach

IBM has been recognized by the research company IDC as the market share leader in social software platform providers. IBM and IDC include in their joint definition the following characteristics: use of emerging technologies such as social software, social-oriented organizational culture, and improvements of business processes. The IBM effort also concentrates on improved collaboration. The basic idea is that social media networks and social customers require organizations to drastically change the way they work to become a social business that can exploit the opportunities created by the digital and social revolutions. IBM is helping organizations become social businesses. (For examples, see **ibm.com/social-business/us/en** and **ibm.com/smarterplanet/global/files/us__en_us__socialbusiness__epw14008usen.pdf**.) IBM has an extensive "social business video library"; two interesting videos are recommended for a better understanding of the concept.

1. "How Do You Become a Social Business"—by Sandy Carter from IBM (3:50 min) at **youtube.com/watch?v=OZy0dNQbotg**.
2. "Social Business @ IBM"—An Interview with Luis Suarez (8:50 min) at **youtube.com/watch?v=enudW2gHek0**.

(In addition, see slide shows embedded in Taft (2012a, b) used in Team Assignments #4 at the end of this chapter. Both are useful for understanding of the concept).

The Social Enterprise

The concept of social business is frequently equated to and sometimes confused with the term *social enterprise*. Many use the two terms interchangeably. The main goal of a **social enterprise** is to focus on social issues. These enterprises generate revenue. The profits do not go to owners and shareholders, but are put back into the company and used toward building positive social change. The Social Enterprise Alliance provides details at **se-alliance.org/why**. It seems that the above definition emphasizes the social goals.

The Digital Revolution and Society

The final, and perhaps most important, element of the *digital world* is people and the way they work and live. Clearly, the digital revolution has changed almost any activity one can think of—work, play, shopping, entertainment, travel, medical care, education, and much more. Just think about your digital phone, camera, TV, car, home, and almost anything else. It is only natural that people are utilizing technology and EC at an increasing rate. Let us take a look at some examples:

- Google has developed cars that drive themselves automatically in traffic (autonomous vehicles). The cars are being tested in several states, including California, and were approved in the state of Nevada in the summer of 2012. See Sparkes (2014) and Bridges and Sherman (2016) on how these will change the world. For a comprehensive discussion, see Bridges and Sherman (2016). For an overview and potential benefits, including safety, see Neckermann (2015). As of 2014, self-driving cars are running in several cities. For details, see Thomas (2014). See also Chapter 6.
- AeroMobile is planning a flying car for 2017 that will have a full complement of e-business features (see Smith 2015).
- As of 2008, high school girls are able to solicit feedback from their friends regarding dozens of different prom dresses that have been displayed by Sears on Facebook.
- Washers and dryers in some college dorms are controlled via the Internet. Students can sign in at **esuds.net** or use their smartphone to check the availability of laundry machines. Furthermore, they can receive e-mail or SMS alerts when their wash and dry cycles are complete. Some systems can even inject premeasured amounts of detergent and fabric softener at the right cycle time.

- Hailing a taxi in South Florida and other major cities is much easier today. As of August 2012 you can e-hail taxi if you have a smartphone with an application by ZABCAB (**zabcab.com**). All you have to do is to push one button. Your exact location (on a map) will appear automatically on the portable device screen of all subscribing taxi drivers. There is no cost for the user. Over 500 million active users download songs, games, and videos on Apple's iTunes store. (A selection of over 50 million songs, TV episodes, etc.). The store also serves 575 million mobile devices users. Total revenue is estimated to reach $11 billion in 2016. The store is considered the most popular music store in the world. Since its inception in 2003, it sold over 30 billion songs by spring 2016. At the same time, the iPhone store offered over 1.1 million apps.
- Ford Company is using "My Ford Touch" system to calculate the fastest, shortest, and most fuel-efficient way to get from a given place to a destination. The system charts a route that avoids congestion (based on historical and real-time traffic data). Results are shown on a dashboard. Initial deployment was in the 2012 model of the Ford Focus.
- A new Japanese hotel is staffed entirely by robots (see Moscaritolo 2015).
- As of 2014, guests in several Starwood Hotels & Resorts can enter their rooms by using a smartphone as a room key.
- An international research project is developing a computerized system that enables monitoring patients at home in real time, conducting a diagnosis, and providing medical advice. The objective is to reduce traffic to medical facilities while increasing the quality of care. The project is managed in Israel with collaboration of experts from several European countries. For details, see **haifa.ac.il/index.php/en**.
- Union Pacific, the largest U.S. railroad company, is using a large number of sensors on their trains and other equipment to collect data that is transmitted via wireless and wireline networks to a data center. There an analysis is performed to determine optimal preventive maintenance by using *predictive analytics*. Over 10 billion data items were collected in 2011 alone. The analysis increased the annual revenue by $35 million. For details, see Murphy (2012).
- Water loss involving many influencing variables in the Valley of the Moon Water District in California has been considerably reduced by using smart analytical computing from IBM.
- Supermarket shoppers in Finland are using camera-equipped smartphones that can scan the bar code of an item to find its ingredients, nutrient value, and exercise time needed to burn the consumed calories.
- Bicycle computers (by Bridgestone Cycle Co.) can automatically keep track of your travel distance, speed, time, and calorie consumption. For cycling communities, see **bikewire.net** and **cyclingforum.com**.
- Champions of the World Series of Poker used to be people in their 50s and 60s who spent years playing the game to gain the experience needed to win. But in 2009, Joe Cada from the USA won the main event at the World Series of Poker, at the age of 21. To gain experience quickly, Cada plays extensively online. Joe McKeehen won in 2015, at the age of 24.

The above list can be extended to hundreds or even thousands of items. For more applications, see Pepitone (2012).

Disruptive Impacts

Digital technologies in general and EC and related technologies such as m-commerce and social commerce may have a disruptive impact on economies, industries, business models, and people (see the "Disruptive Technologies" video of 2013 at **mckinsey.com/insights/high_tech_telecoms_internet/disruptive_technologies**. See also McCafferty (2015). For a 2014 video interview of MIT's Andrew McAfee and McKinsey's James Manyika titled "Why Every Leader Should Care about Digitization and Disruptive Innovation," see **mckinsey.com/business-functions/business-technology/our-insights/why-every-leader-should-care-about-digitization-and-disruptive-innovation**.

The Social Customer

An important component in the digital society is the *social customer*. **Social customers** (sometimes called *digital customers*) are usually members of social networks who share opinions about products, services, and vendors, do online social shopping, and understand their rights and how to use the wisdom and power of social communities to their benefit. The number of social customers is increasing exponentially due to wireless shopping and new online shopping models and opportunities (Chapter 7). The highlights of the social customers are shown in Figure 1.6.

As the figure illustrates, social customers expect better service, are willing to provide feedback, product reviews, and connect with like-minded peers. This new behavior pattern

Being connected, customers realized that they could ask more from companies and share opinions about products and services

Web 2.0 stimulated fundamental changes in consumer behavior

Interactions between customer and brands starting earlier and never ending

New behavior patterns demand a new strategy, better segmentation, new channels and targeted messages and review of current customer facing business processes

Figure 1.6 The social customer (*Source*: Courtesy of F. Cipriani, "Social CRM: Concept, Benefits, and Approach to Adopt," November 2008. **slideshare.net/fhcipriani/social-crm-presentation-761225** (Accessed March 2016; used with permission)

requires a new strategy for both marketing communication and customer service. The social customer is participatory, and has active involvement in the shopping process both as a buyer and as an influencer. Individuals are influenced by friends, friends of friends, and friends of friends of friends. Merchants must understand how these consumers differ from conventional customers, and therefore use appropriate e-commerce marketing strategy as well as superb customer service (e.g., see Turban et al. 2016). Procedures, guidelines, and software are publically available for social CRM (e.g., see **en.wikipedia.org/wiki/Social_CRM**).

IBM's Smarter Commerce initiative is focusing on the digital customer. IBM is developing new software and services that deliver intelligence-guided customer experience (e.g., personalization and targeted advertising based on cloud computing analytics).

SECTION 1.5 REVIEW QUESTIONS

1. Define the digital revolution and list its components.
2. List the characteristics of the digital economy.
3. What is the social economy?
4. Define a digital enterprise and relate it to social business.
5. Describe the social enterprise.
6. Compare traditional and digital enterprises.
7. Describe the digital society.
8. Describe the social customer.
9. Visit **packdog.com** and **entirelypets.com/dogtoys.html**. Compare the two sites and relate their contents to the digital society.

1.6 ELECTRONIC COMMERCE BUSINESS MODELS

One of the major characteristics of EC is that it facilitates the creation of new business models. A **business model** describes the manner in which business is done to generate revenue and create value. This is accomplished by attaining organizational objectives. A key area is attracting enough customers to buy the organization's products or services. Several different EC business models are possible, depending on the company, the industry, and so on. Business models can be found in existing businesses as well as in proposed ones. See Lazazzera (2015).

Note: The January–February 2011 issue of *Harvard Business Review* is dedicated to business model innovations (five articles), including several topics related to e-commerce.

The Structure and Properties of Business Models

A comprehensive business model (for a proposal company) may include some or all of the following components illustrated in Figure 1.7.

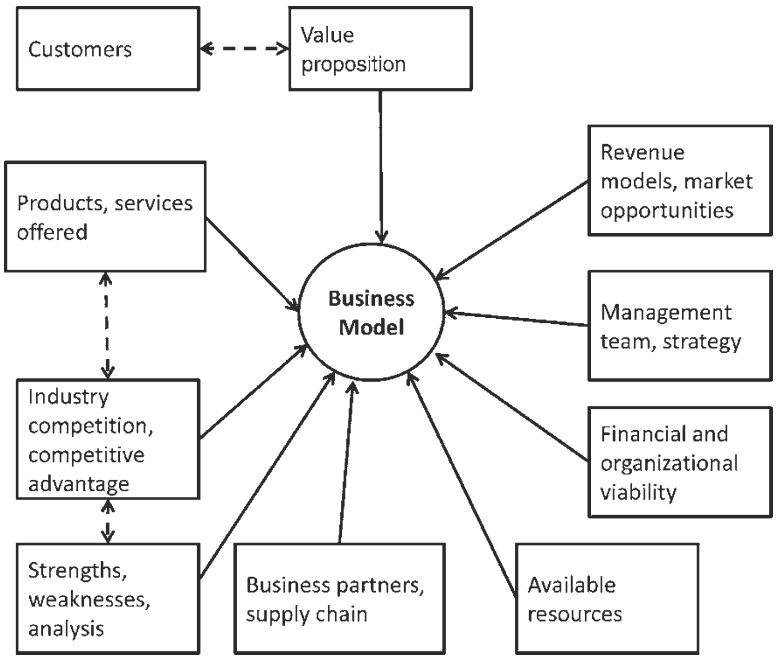

Figure 1.7 The major components of a business model

- A description of the *customers* to be served and their *value proposition*. Also, how these customers can be reached and supported.
- A description of all *products* and *services* the business plans to deliver. Also, what the differentiating aspects of the products are.
- The company's growth strategies.
- A description of the required *business process* and the distribution infrastructure (including human resources).
- A list of the *resources* required, their cost and availability (including human resources).
- A description of the organization's *supply chains*, including *suppliers* and other *business partners*.
- The value-chain structure.
- The relevant markets with a list of the major competitors and their market share. Also, market strategies and strengths/weaknesses of the company.
- The competitive advantage offered by the business model including pricing and selling strategies.
- The anticipated organizational changes and any resistance to change.
- A description of the revenues expected (*revenue model*), sources of funding, and the *financial viability*.

Models also include a *value proposition,* which is a description of the benefits of using the specific model (tangible and intangible), both to the customers and to the organization. A detailed discussion and examples of business models and their relationship to business plans is presented at **en.wikipedia.org/wiki/Business_model**.

This chapter presents two of the models' elements: *revenue models* and *value propositions*.

Revenue Models

A revenue model specifies how the organization, or an EC project, will generate revenue. For example, the revenue model for Net-a-Porter shows revenue from online sales of luxury dresses. The major revenue models are shown in the shaded area that follows.

Sales. Companies generate revenue from selling products or services on their websites. An example is when Net-a-Porter, Starbucks, Amazon.com, or Godiva sells a product online.

Transaction Fees. Commissions are based on the volume of transactions made. For example, when a homeowner sells a house, he or she typically pays a

transaction fee to the broker. The higher the value of the sale, the higher the total transaction fee. Alternatively, transaction fees can be levied *per transaction*. With online stock trades, for example, there is usually a fixed fee per trade, regardless of the volume.

Subscription Fees. Customers pay a fixed amount, usually monthly, to get some type of service. An example would be the fee you pay to an Internet access provider (fixed monthly payments).

Advertising Fees. Companies charge others for allowing them to place a banner on their sites (see Chapter 4).

Affiliate Fees. Companies receive commissions for referring customers to certain websites. A good program is available at Amazon.com.

Licensing Fees. Another revenue source is licensing fees (e.g., see **progress.com/datadirect-connectors**). Licensing fees can be assessed as an annual fee or a per usage fee. Microsoft receives fees from each workstation that uses Windows NT, for example.

Other Revenue Sources. Some companies allow people to play games for a fee or to watch a sports competition in real time for a fee (e.g., see **espn.go.com**).

A company uses its *revenue model* to describe how it will generate revenue and its *business model* to describe the *process* it will use to do so.

Innovative Revenue Models for Individuals

The Internet allows for innovative revenue models, some of which can be utilized even by individuals, as demonstrated by the following example.

Example: Buy Low–Sell High. This strategy has been known for generations, but now you have a better chance. How about buying stuff cheap on Craigslist (or other online classified ad sites) and resell it for a 50–200% profit at an auction on eBay? Try it, you might make money. Some people make it even bigger. The person who bought the domain name **pizza.com** for $20 in 1994 sold it for $2.6 million in April 2008 (one of the many he purchased). The revenue model can be part of the value proposition or it may supplement it.

Value Proposition

Business models also include a value-proposition statement. A **value proposition** refers to the benefits, including the intangible ones that a company hopes to derive from using its business model. In B2C EC, for example, the *customer value proposition* defines how a company's product or service fulfills the needs of customers. In other words, it describes the total benefits to the customer. The *value proposition* is an important part of the marketing plan of any product or service. For 50 value propositions in B2C e-commerce, see CPC Andrew (2012).

Functions of a Business Model

Business models have the following major functions or objectives:

- Describe the supply and value chains.
- Formulate the venture's competitive strategy and its long-range plans.
- Present the customer value proposition.
- Identify who will use the technology for what purpose; specify the revenue-generation process; where the company will operate.
- Estimate the cost structure and amount and profit potential.

Typical EC Business Models

There are many types of EC business models. Examples and details of EC business models can be found throughout this text, and in Rappa (2010). The following are five common models. Additional models are listed in Online File W1.3.

1. **Online direct marketing.** The most obvious EC model is that of selling products or services online. Sales may be from a *manufacturer* to a customer, eliminating intermediaries or physical stores (e.g., Dell), or from *retailers* to consumers, making distribution more efficient (e.g., Net-a-Porter, Walmart online). This model is especially efficient for digitizable products and services (those that can be delivered electronically). This model has several variations (see Chapters 3 and 4) and uses different mechanisms (e.g., auctions). It is practiced in B2C (where it is called *e-tailing*).
2. **Electronic tendering systems.** Large organizational buyers usually make large-volume or large-value purchases through a **tendering (bidding) system,** also known as a *reverse auction*. Such tendering can be done online, saving time and money. Pioneered by General Electric Corp., e-tendering systems are gaining popularity. Indeed, many government agencies mandate that most of their procurement must be done through e-tendering. (Details are provided in Chapter 4.)
3. **Electronic marketplaces and exchanges.** Electronic marketplaces existed in isolated applications for decades (e.g., stock and commodities exchanges). But as of 1996, hundreds of e-marketplaces (old and new) have introduced new methods and efficiencies to the trading process. If they are well organized and managed, e-marketplaces can provide significant benefits to both buyers and sellers. Of special interest are vertical marketplaces that concentrate on one industry. For details see Chapter 4.

4. **Viral advertising and marketing.** According to the viral marketing model (see Chapter 7), people use e-mail and social networks to spread word-of-mouth advertising. It is basically Web-based *word-of-mouth* advertising, and is popular in social networks.
5. **Group purchasing.** Group purchasing is a well-known off-line method, both in B2C and B2B. It is based on the concept of quantity discounts ("cheaper by the dozen"). The Internet model allows individuals to get together, so they can gain the large-quantity advantage. This model was not popular in B2C until 2010 when Groupon introduced a modified model in which people are grouped around special deals, as illustrated in Chapter 7. Note that the model is very popular in China.

A company may use several EC models as demonstrated in Starbucks opening case, the NFL closing case, and the Dell case (Online File W1.1).

Classification of Business Models in E-Commerce

Rappa (2010) classified the EC business models into eight categories:

1. Brokerage: Market makers that charges fee for their services.
2. Advertising: Websites that provide content and charge advertisers for related ads.
3. Infomediary: Provide information and/or infrastructure that help buyers and/or sellers and charge for their services.
4. Merchant: Retailers (such as Walmart or Amazon): These buy the products and sell them at profit.
5. Direct model: Sell without intermediaries.
6. Affiliate: Paying website owners to place banners. Share fees received from advertisers.
7. Community: A social media-based model that utilizes Web 2.0 tools, social networks, and the characteristics presented in Chapter 7.

Rappa (2010) provides examples of each plus their revenue models. In addition, he presents the major varieties in each category.

SECTION 1.6 REVIEW QUESTIONS

1. What is a business model? Describe its functions and properties.
2. Describe a revenue model and a value proposition. How are they related?
3. Describe the following business models: direct marketing, tendering system, electronic exchanges, viral marketing, and social networking/commerce.
4. Identify some business models related to buying and those related to selling.
5. Describe how viral marketing works.

1.7 THE LIMITATIONS, IMPACTS, AND THE FUTURE OF E-COMMERCE

As indicated in Section 1.4 there are some limitations and failures in EC.

The Limitations and Barriers of EC

Barriers to EC are either non-technological or technological. Representative major barriers are listed in Table 1.5.

One important area that may limit some EC project is ethics.

Ethical Issues

Ethical issues can create pressures or constraints on EC business operations. Yet some ethical sites increase trust and help EC vendors. **Ethics** relates to standards of right and wrong. Ethics is a difficult concept, because what is considered ethical by one person may seem unethical to another. Likewise, what is considered ethical in one country may be unethical in another. See Chapter 11.

Table 1.5 Limitations of electronic commerce

Technological limitations	Non-technological limitations
Need for universal standards for quality, security, and reliability	Security and privacy concerns deter customers from buying
The telecommunications bandwidth is insufficient, especially for m-commerce, videos, and graphics	Lack of trust in sellers, in computers, and paperless faceless transactions hinders buying
Software development tools are still evolving	Resistance to change
It is difficult to integrate Internet and EC software with some existing (especially legacy) applications and databases	Many legal and public policy issues are not resolved or are not clear
Special Web servers are needed in addition to the network servers, which add to the cost of EC	National and international government regulations sometimes get in the way
Internet accessibility is still expensive and/or inconvenient	It is difficult to measure some of the costs and benefits of EC
Large-scale B2C requires special automated warehouses for order fulfillment	Not enough customers. Lack of collaboration along the supply chain

Implementing EC may raise ethical issues ranging from monitoring employee's e-mail to invasion of privacy of millions of customers whose data are stored in private and public databases. In implementing EC, it is necessary to pay attention to these issues and recognize that some of them may limit, or even prohibit, the use of EC. An example of this can be seen in the attempted implementation of RFID tags (Online Tutorial T2) in retail stores due to the potential invasion of buyers' privacy.

Overcoming the Barriers

Despite these barriers, EC is expanding rapidly. As experience accumulates and technology improves, the cost–benefit ratio of EC will increase, resulting in even greater rates of EC adoption.

Why Study E-Commerce?

The major reason to study e-commerce is that it is rapidly growing and impacting many business and marketing operations. The percentage of EC of total commerce is increasing rapidly and some predict that most future commerce will be online. Thus, any businessperson or a business student should learn about this field.

This is why the academic area of e-commerce that started around 1995 with only a few courses and textbooks is growing rapidly. Today, many universities offer EC courses and complete programs in e-commerce or e-business (e.g., majors in e-commerce, minors in e-commerce and certificate programs; see University of Virginia, University of Maine, University of Arkansas). Recently, e-commerce topics have been integrated into all functional fields (e.g., Internet marketing, electronic financial markets). The reason for this proliferation is that e-commerce is penetrating more and more into business areas, services, and governments. Finally, it is fascinating field with its innovative business models.

However, there are also some very tangible benefits to increased knowledge of EC. First, your chances of getting a good (or better) job are higher. The demand for both technical and managerial EC skills is growing rapidly, and so are the salaries (e.g., see salary comparison sites such as **salary.com** and **coach.careerbuilder.com**). Hundreds of well-paying open positions are available in areas related to social media, social networking, and social commerce. Second, your chances for a promotion could be higher if you understand EC and know how to seize its opportunities. Finally, it gives you a chance to become a billionaire, like the founders of Google, Facebook, YouTube, Amazon.com, and Alibaba, or to make a great deal of money on eBay. You can make money simply by selling on eBay or your own website. And you can do it even while you are a student. (See **jetpens.com**.) Even some teenagers practice successful EC. An example is Diane Keng, an entrepreneur from Cupertino Monte Vista High School in California, who initiated three Web 2.0 successful start-up companies, making substantial money.

In 2016, a 9-year-old sold thousands of boxes of Girl Scout cookies on the Internet instead of going door-to-door.

There are many other opportunities for young people to make money from EC in addition to the examples in this book and selling on eBay. Experts suggest the following ways to earn extra cash online: (1) sell your craft; (2) make money from your talent; (3) be a nurse on call; (4) write, edit, or proofread; (5) design graphics and websites; (6) tutor kids or adults; (7) give advice; (8) provide customer service; (9) launch a blog; (10) give your opinion (for a fee); (11) search the Internet; and (12) do online tasks. For 55 ways to make money online, see Pantic (2013). See also **shop.com**. Finally, for how to make money on the Internet using EC, see Bates and Money Online (2014).

Many opportunities are available in the areas of social media and commerce.

The Future of EC

Several economic, technological, and societal trends impact EC and shape its direction. For example, most experts agree that the shift from EC to mobile commerce is inevitable. In addition, many believe in the future of social commerce, as a major component of e-commerce (e.g., see Turban et al. 2016). There will be a surge in the use of e-commerce in developing countries (mostly thanks to smartphones and tablets as well as e-payment systems). E-commerce will win its battle against conventional retailing (see the Amazon vs. Best Buy discussion in Chapter 3). Finally, e-commerce will increase its global reach.

EC will impact some industries more than others. This impact is changing with time. For example, major impacts in the past 8 years were felt in travel, retail, stock brokering, and banking. Next, are movies, healthcare, book publishing, and electronic payments. For an interesting review, see Solis (2012).

Today's predictions about the future size of EC, provided by respected analysts such as ComScore, eMarketer.com, and Forrester, vary. For a list of sites that provide such predictions and other statistics on EC, see Table 3.1.

The number of Internet users worldwide was estimated to be around 2.6 billion in winter 2014, up from 2.4 billion in 2012 (see **internetworldstats.com**). With more people on the Internet, EC will increase.

EMarketer forecasted that almost 85% of all Internet users in the USA would shop online in 2016. The repercussions of the 2008–2014 financial meltdown has motivated people to shop online and look for bargains where price comparison is easy and fast (e.g., try to find the price of an item on Amazon.com).

Another important factor is the increase in mobile devices and especially smartphones. EC growth would come not only from B2C, but also from B2B and from newer applications such as e-government, e-learning, B2E, social commerce, and c-commerce. The total volume of EC has been growing every year by 10–16% in spite of the failures of individual companies and initiatives and the economic slowdown.

Finally, different business environment factors facilitate EC (see Online File W1.4).

The future of EC depends on technological, organizational, and societal trends (e.g., see Fei and Chung 2015). Piastro (2010) lists the top 10 trends that are shaping the future of e-commerce and Gartner Inc., publishes a list of the "Top 10 Strategic Technology Trends" every year. See **gartner.com/newsroom/id/2603623** for 2014. Both the 2014 and 2015 lists include several EC topics (e.g., mobile apps, Internet of Things). See also McCafferty (2016) for the top trends of 2016.

A final note: The future of EC depends on the accessibility to the Internet. Facebook's laser drones could bring the Internet to five billion people (see CBS 2015).

SECTION 1.7 REVIEW QUESTIONS

1. List the major technological and non-technological barriers and limitations to EC.
2. Describe some of the benefits of studying EC.
3. How can EC help entrepreneurship?
4. Summarize the major points involved with the future of e-commerce.

1.8 OVERVIEW OF THIS BOOK

This book is composed of 12 chapters grouped into five parts, as shown in Figure 1.8. Additional content, including online supplemental material for each chapter, is available online on the book's website (**ecommerce-introduction-textbook.com**).

The specific parts and chapters of this textbook are as follows:

Part I: Introduction to E-Commerce and E-Marketplaces

This part of the book includes an overview of EC and its content, benefits, limitations, and drivers, which are presented in Chapter 1. Chapter 2 presents electronic markets and their mechanisms, such as electronic catalogs and auctions. This chapter also includes a presentation of Web 2.0 tools of social networks, and some emerging technologies.

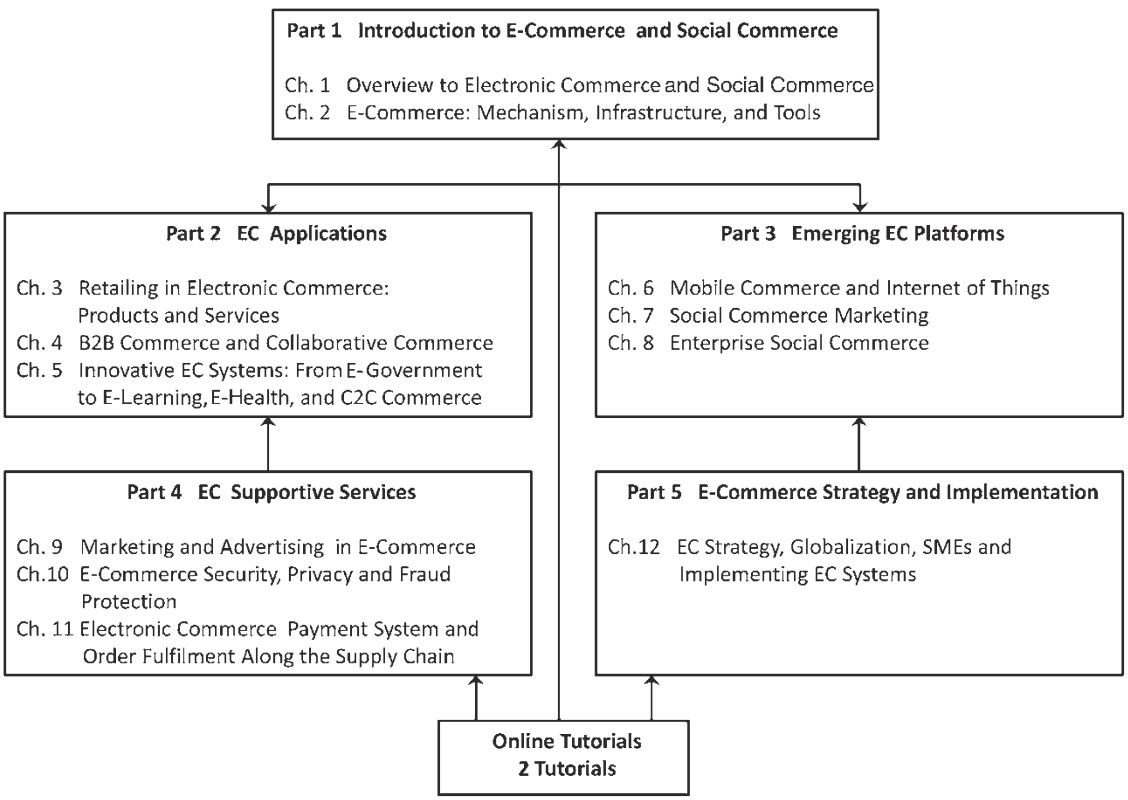

Figure 1.8 Plan of the book

Part II: EC Applications

This section includes three chapters. Chapter 3 describes e-tailing (B2C), including some of its most innovative applications for selling products online. It also describes the delivery of services, such as online banking, travel, and insurance. In Chapter 4, we introduce B2B EC and describe company-centric models (one buyer–many sellers, one seller–many buyers) as well as electronic exchanges (many buyers and many sellers). E-government, e-learning, management-health, and C2C are the major subjects of Chapter 5.

Part III: Emerging EC Delivery Platforms

In addition to traditional EC delivery platforms, described in Part II we present in the three chapters of Part III the following topics: Chapter 6 covers the area of mobile commerce and ubiquitous computing. In Chapter 7 we cover the area of social commerce and social media marketing. The part concludes with enterprise social commerce and other applications (Chapter 8).

Part IV: EC Support Services

Part IV examines the issues involving the support services needed for EC applications in three chapters. Chapter 9 explains consumer behavior in cyberspace, online market research, and Internet advertising. Chapter 10 delves into EC security and fraud protection. Chapter 11 discusses electronic payments and order fulfillment.

Part V: EC Strategy and Implementation

Part V includes one chapter. Chapter 12 examines e-strategy and planning, including going global and the impact of EC on small businesses. It also deals with implementation issues and the regulatory environment.

Online Mini Tutorials

Two tutorials are available at the book's website (**ecommerce-introduction-textbook.com**).
T1 e-CRM
T2 EC Technology: EDI, Extranet, RFID, and Cloud Computing

Online Supplements

A large number of online files organized by chapter number support the content of each chapter.

They are available at **ecommerce-introduction-textbook.com**.

MANAGERIAL ISSUES

Some managerial issues related to this introductory chapter are as follows.

1. **Why is B2B e-commerce so essential and successful?** B2B EC is essential for several reasons**.** First, some B2B models are easier to implement than B2C models. The volume and value of transactions is much larger in B2B than in B2C, and the potential savings are larger and easier to justify. In contrast with B2C, which has several major problems, ranging from channel conflict with existing distributors to fraud, to a lack of a critical mass of buyers. Many companies can start B2B by simply buying from existing online stores and B2B exchanges or selling electronically by joining existing marketplaces or an auction house. The problem is determining *what* and *where* to buy or sell online.
2. **Which EC business projects work best?** Beginning in early 2000, the news was awash with stories about the failure of many dot-coms and EC projects. Industry consolidation often occurs after a "gold rush." About 100 years ago, hundreds of companies tried to manufacture cars, following Ford's success in the United States; only three survived. The important thing is to learn from the successes and failures of others, and discover the right business model for each endeavor.
3. **How can we exploit social commerce?** There are major possibilities here. Some companies even open their own social networks. Advertising is probably the first thing to consider. Recruiting can be a promising avenue as well. Offering discounted products and services should also be considered. Providing customer services and conducting market research can be a useful activity as well. Making customers and selling to them can be beneficial. Finally, the ultimate goal is associating the social network with commerce so that revenue is created.
4. **What are the top challenges of EC today?** The top 10 technical issues for EC (in order of their importance) are security, adequate infrastructure, virtualization, back-end systems integration, more intelligent software, cloud computing, data warehousing and mining, scalability, and content distribution. The top 10 managerial issues for EC are justification, budgets, project deadlines, keeping up

with technology, privacy issues, unrealistic management expectations, training, reaching new customers, improving customer ordering services, and finding qualified EC employees. Most of these issues are discussed throughout this book.

SUMMARY

In this chapter, you learned about the following EC issues as they relate to the chapter's learning objectives.

1. **Definition of EC and description of its various categories.** EC involves conducting transactions electronically. Its major categories are pure versus partial EC, Internet versus non-Internet, and electronic markets versus company-based systems.
2. **The content and framework of EC.** The applications of EC, and there are many, are based on infrastructures and are supported by people; public policy and technical standards; marketing and advertising; support services, such as logistics, security, and payment services; and business partners—all tied together by management.
3. **The major types of EC transactions.** The major types of EC transactions are B2B, B2C, C2C, m-commerce, intrabusiness commerce, B2E, c-commerce, e-government, social commerce, and e-learning.
4. **The drivers of EC.** EC is a major product of the digital and technological revolutions, which enables companies to simultaneously increase both growth and profits. These revolutions enable digitization of products, services, and information. A major driver of EC is the changing business environment. The rapid change is due to technological breakthroughs, globalization, societal changes, deregulation, and more. The changing business environment forces organizations to respond. Many traditional responses may not be sufficient because of the magnitude of the pressures and the pace of the changes involved. Therefore, organizations must frequently innovate and reengineer their operations. EC, due to its characteristics is a necessary partner for this process.

   Finally, EC is driven due to its ability to provide a much needed strategic advantage so organizations can compete better.
5. **Benefits of EC to organizations, consumers, and society.** EC offers numerous benefits to all participants. Because these benefits are substantial, it looks as though EC is here to stay, and cannot be ignored. Also, organizations can go into remote and global markets for both selling and buying at better prices. Organizations can speed time-to-market to gain competitive advantage. They can improve the internal and external supply chain as well as increase collaboration. Finally, they can better comply with government regulations.
6. **E-commerce 2.0 and social media.** This refers to the use of social computing in business, often through the use of Web 2.0 tools (such as blogs, wikis) with its social media framework, as well as the emergence of enterprise social networking and commercial activities in virtual worlds. Social and business networks attract huge numbers of visitors.
7. **Describe social commerce and social software.** Companies are beginning to exploit the opportunity of conducting business transactions in social networks and by using social software such as blogs. Major areas are advertising, shopping, customer service, recruiting, and collaboration.
8. **The elements of the digital world.** The major elements of the digital world are the digital economy, digital enterprises, and digital society. They are diversified and expanding rapidly.

   The digital world is accompanied by social businesses and social customers.
9. **The major EC business models.** The major EC business models include online direct marketing, electronic tendering systems, name-your-own-price, affiliate marketing, viral marketing, group purchasing, online auctions, mass customization (make-to-order), electronic exchanges, supply chain improvers, finding the best price, value-chain integration, value-chain providers, information brokers, bartering, deep discounting, and membership.
10. **Limitations of e-commerce.** The major limitations of EC are the resistance to new technology, fear from fraud, integration with other IT systems may be difficult, costly order fulfillment, privacy issue, unclear regulatory issues, lack of trust in computers, and unknown business partners, difficulties to justify EC initiatives, and lack of EC skilled employees.

KEY TERMS

Brick-and-mortar (old economy) organizations
Business model
Business-to-business (B2B)
Business-to-consumer (B2C)
Business-to-employee (B2E)
Collaborative commerce (c-commerce)
Consumer-to-business (C2B)
Consumer-to-consumer (C2C)
Corporate portal
Digital economy
Digital enterprise
E-business
E-government
Electronic commerce (EC)
Electronic market (e-marketplace)
E-tailing

Ethics
Extranet
Intrabusiness EC
Intranet
Sharing economy
Social business
Social commerce (SC)
Social computing
Social (digital) customer
Social enterprise
Social media
Social network
Social networking
Social networking services (SNSs)
Tendering (bidding) system
Value proposition
Virtual (pure-play) organizations
Web 2.0

DISCUSSION QUESTIONS

1. Compare brick-and-mortar and click-and-mortar organizations.
2. Why is buying with a smart card from a vending machine considered EC?
3. Explain how EC can reduce cycle time, improve employees' empowerment, and facilitate customer service.
4. Compare and contrast viral marketing with affiliate marketing.
5. Identify the contribution of Web 2.0. What does it add to EC?
6. Discuss the reasons companies embark on social commerce.
7. Distinguish an enterprise social network from a public one such as Facebook.
8. Carefully examine the non-technological limitations of EC. Which are company-dependent and which are generic?
9. Relate the social customer to social business.

TOPICS FOR CLASS DISCUSSION AND DEBATES

1. How can EC be both a business pressure and an organizational response to other business pressures?
2. Debate: Does digital business eliminate the "human touch" in trading? In addition, if "yes," is it really bad?
3. Why do companies frequently change their business models? What are the advantages? The disadvantages?
4. Debate: EC eliminates more jobs than it creates. Should we restrict its use and growth?
5. Debate: Will online fashion hurt traditional fashion retailers?
6. Search for information on the enterprise of the future. Start with **ibm.com**. In one or two pages, summarize how the enterprise of the future differs from today's enterprise.
7. Read McDonald's activities at P&G (McDonald 2011). Discuss the various e-commerce and other digital activities. Discuss the need for such a revolution.
8. Investigate why the one day sales during Singles' Day in China generated more than twice the money generated on Cyber Monday in the USA (see Wang and Pfanner 2013).
9. Discuss the impacts of EC on the fashion industry.

INTERNET EXERCISES

1. Enter **www.excitingcommerce.com** and find recent information about emerging EC models and the future of the field.
2. Visit **amazon.com** and locate recent information in the following areas:
   (a) Find the five top-selling books on EC.
   (b) Find a review of one of these books.
   (c) Review the personalized services you can get from Amazon.com and describe the benefits you receive from shopping there.
   (d) Review the products directory.
3. Visit **priceline.com** and **zappos.com** and identify the various business revenue models used by both. Discuss their advantages.
4. Go to **nike.com** and design your own shoes. Next, visit **products.office.com** and create your own business card. Finally, enter **jaguar.com** and configure the car of your dreams. What are the advantages of each activity? The disadvantages?
5. Try to save on your next purchase. Visit **pricegrabber.com**, **yub.com**, and **buyerzone.com**. Which site do you prefer? Why?
6. Enter **espn.go.com**, **123greetings.com**, and **facebook.com** and identify and list all the revenue sources on each of the companies' sites.
7. Enter **philatino.com**, **stampauctioncentral.com**, and **statusint.com**. Identify the business model(s) and revenue models they use. What are the benefits to sellers? To buyers?
8. Go to **zipcar.com**. What can this site help you do?
9. Enter **digitalenterprise.org**. Prepare a report regarding the latest EC models and developments.
10. Visit some websites that offer employment opportunities in EC (such as **execunet.com** and **monster.com**). Compare the EC salaries to salaries offered to accountants. For other information on EC salaries, check *Computerworld*'s annual salary survey and **salary.com**.

11. Visit **bluenile.com**, **diamond.com**, and **jewelryexchange.com**. Compare the sites. Comment on the similarities and the differences.
12. Visit **tickets-online.com**, **ticketmaster.com**, **stubhub.com**, and other sites that sell event tickets online. Assess the competition in online ticket sales. What services do the different sites provide?
13. Enter **timberland.com** and design a pair of boots. Compare it to building your own sneakers at **nike.com**. Compare these sites to **zappos.com/shoes**.
14. Examine two or three of the following sites: **prosper.com**, **paperbackswap.com**, **bigvine.net**, etc. Compare their business and revenue models.

TEAM ASSIGNMENTS AND PROJECTS

1. Read the opening case and answer the following questions:
   (a) In what ways you think Starbucks increases its brand recognition with its EC initiatives?
   (b) Some criticize My Starbucks Idea as an ineffective "show off." Find information about the pros and cons of the program. (See the Starbucks Ideas in Action Blog).
   (c) Starbucks initiates discussions on Facebook about non-business topics such as the marriage equality bill. Why?
   (d) Discuss how customers are being kept involved and engaged in the various EC initiatives.
   (e) Starbucks believes that its digital and social initiatives are "highly innovative and cause dramatic changes in consumer behavior." Discuss.
   (f) Watch the video available on Stelzner (2010) (8 min) and answer the following:
      i. How does Starbucks use video marketing in social media?
      ii. How does the company listen to their customers?
      iii. What are some tips for success and for things to avoid?
      iv. Enter **facebook.com/Starbucks**. Summarize your impressions of the site.
2. Each team will research two EC success stories. Members of the group should examine companies that operate solely online and some that extensively utilize a click-and-mortar strategy. Each team should identify the critical success factors for their companies and present a report to the other teams.
3. Watch the video *E-Commerce Part 1* (10.3 min) at **youtube.com/watch?v=gOVh-r03zxQ.**
   (a) Update all the data shown in the video.
   (b) What fundamental change is introduced by EC?
   (c) What is the first mover advantage discussed in the video?
   (d) Amazon.com and other companies that lost money during the time the video was made are making a lot of money today; find out why.
   (e) Identify all the EC business models discussed in the video.
   (f) How can one conduct an EC business from home?
   (g) EC is considered a disruptor. In what ways?
4. Conduct a search on "social business." Start at **eweek.com**. Divide the work between several teams, each team covers one topic and each team writes a report.
5. Research the status of self-driven cars. Start by reading Neil (2012). Outline the pro and con points. Why this is considered EC? Give a presentation.
6. Research the impact of e-commerce on the auto industry, including self-driven cars. (Read Gao et al. 2016). Write a report. Compare Net-a-Porter with Myhabit from Amazon and other sites that discount designer items. In addition, see what Groupon offers in this area. Analyze the competitive advantage of each. Write a report.

CLOSING CASE: E-COMMERCE AT THE NATIONAL FOOTBALL LEAGUE (NFL)

Professional sports are multibillion-dollar businesses in the United States and they are growing rapidly in many other countries. The National Football League (NFL), which consists of 32 teams, is a premier brand of the most popular sport in the United States—football. The NFL uses e-commerce and other information technologies extensively to run its business efficiently. The following are some examples of e-commerce activities the NFL conducts both at the corporate level and the individual team level.

Selling Online

In addition to the official store (**nflshop.com**) and the individual team stores (e.g., the Atlanta Falcons), there are dozens of independent stores that sell authentic, as well as replicas, of jerseys, hats, shirts, and other team merchandise. Most of these sales are done online, which enables you to buy your favorite team's items from anywhere; you can also save with coupons. It is basically a multibillion-dollar B2C business, supported by search and shopping tools (see Chapter 2), including price comparisons (e.g., compare prices at **bizrate.com/electronics-cases-bags**).

Several online stores sell tickets for NFL events, including resale tickets. For example, see **ticketsnow.com/nfl-tickets**.

Selling in China

In October 2013, the NFL opened its official online store in China (**nfl.world.tmall.com**). To embark on this venture, the NFL used two partners: Export Now to handle all the administration of the transactions, and Tmall.com (China's leading EC seller with over 500 million registered members). See Dusto (2013).

Information, News, and Social Commerce

The NFL is on Facebook where there is a company description and many posts by its fans. It is also on Twitter where you can find information on upcoming NFL events, and be one of its 4,000,000+ followers. You can also get local news including real-time sports scores texted to your smartphone. The popularity of social media used by players created a need for a policy regarding the use of social networks before and after (but not during) games. For the policy, see the article titled "Social Media Before, After Games" at **sports.espn.go.com/nfl/news/story?id=4435401**. For the use of social commerce in the NFL business, see Brennan (2014).

Videos and Fantasy Games

Madden NFL 11 is a video game available across all major consoles with an adaptation for iPhone and iPad versions of the game. For details, see **en.wikipedia.org/wiki/Madden_NFL_11**. Related to these games are the NFL fantasy games that are available for free at **fantasy.nfl.com**.

Smartphone Experience

Smartphones, and especially iPhones, now allow users to go online to view games in real time (some are costly). You can also use the iPhone to view photos in the stadium that are projected on a TV, and much more.

Wireless Applications in Stadiums

Several stadiums are equipped with state-of-the-art wireless systems. One example is the University of Phoenix Stadium, which is the home of the Arizona Cardinals. Fans can access many high-definition TVs in real time. Fans with smartphones can get real-time scores or purchase food and other merchandise. The system also enables employees to process ticket sales quickly. In addition, fans can watch the game while buying food in the stadium. The Cardinal's marketing department can advertise the forthcoming games and other events on the system. It also delivers data to coaches as needed during games. A similar system (used in the Sun Life Stadium, home of the Miami Dolphins) enables personalized replay during games (see the video about a special portable device titled "Miami Dolphins Transform Sun Life Stadium into Entertainment Destination for Fans" at **youtube.com/watch?v=t2qErS7f17Y**). Also, you can order food online, have it delivered to your seat, and pay for it electronically. Finally, you can play fantasy games while in the stadium. These EC applications are designed to make fans happy and to generate revenue.

Other Applications

The NFL uses many other EC applications for the management of transportation to the Super Bowl, security implementation, procurement (B2B), providing e-CRM, and much more.

For an interesting infographic on Super Bowl NFL business, see Bathe (2015).

Sources: Based on Bathe (2015) and material collected on Facebook, and Twitter (accessed March 2016).

Questions

1. Identify all applications related to B2C in online stores (see Roggio 2013 to get started).
2. Identify all B2C applications inside the stadium.
3. Identify all B2E applications inside the stadium.
4. Relate online game playing to EC at NFL.
5. Compare the NFL information available on Facebook to that of Instagram.
6. Find additional NFL-related applications not cited in this case.
7. Enter **http://www.ignify.com/Atlanta_Falcons_eCommerce_Case_Study.html**. Read the case "Atlanta Falcons E-Commerce Case Study," then go to the Falcons' online store and describe all major EC models that are used there.
8. Find information on social commerce at the NFL.
9. Compare *Madden NFL 11* with NFL fantasy games.

ONLINE RESOURCES

Available at **ecommerce-introduction-textbook.com**

ONLINE FILES

W1.1 Application Case: Dell—Using E-Commerce for Success
W1.2 Application Case: GrubHub.com—Student Entrepreneurs
W1.3 Representative EC Business Models
W1.4 The Changing Business Environment, Organizational Responses, and EC and IT Support

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E-Commerce: Mechanisms, Platforms, and Tools

2

Contents

Learning Objectives

Upon completion of this chapter, you will be able to:

1. Describe the major electronic commerce (EC) activities and processes and the mechanisms that support them.
2. Define e-marketplaces and list their components.
3. List the major types of e-marketplaces and describe their features.
4. Describe electronic catalogs, search engines, and shopping carts.
5. Describe the major types of auctions and list their characteristics.
6. Discuss the benefits and limitations of e-auctions.
7. Describe bartering and negotiating online.
8. Describe virtual communities.
9. Describe social networks as EC mechanisms.
10. Describe the emerging technologies of augmented reality and crowdsourcing.
11. Describe Web 3.0 and define Web 4.0 and Web 5.0.

OPENING CASE: PINTEREST—A NEW KID ON THE E-COMMERCE BLOCK

An e-commerce site talked about a great deal since 2011 is Pinterest.

The Opportunity

Pinterest is a social bookmarking website where users "pin" images on a virtual "pinboard." The social bookmarking of images has been practiced on the Internet all over the world, for several years. The company's founders saw the business potential and the success of similar companies in Brazil and China. Furthermore, they succeeded in attracting initial venture capital to expand the business. For a guide, see Leland (2013), and for statistics, see Smith (2014).

Electronic supplementary material: The online version of this chapter (doi:10.1007/978-3-319-50091-1_2) contains supplementary material, which is available to authorized users.

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The Solution

Pinterest is a company that provides virtual pinboards that allow users to organize and share images found on the Web (referred to as "pins"). The pinned images ("boards") are organized by any category the user wants and placed on a virtual pinboard, just like on a real bulletin board. For example, one can collect pictures of sailboats and pin them on one pinboard, with appropriate text explanation. You can collect decorations for your home on another pinboard, while you collect Chinese recipes on a third pinboard. Millions of people create pinboards and anyone can search and view them. You can also add friends to your account and "follow" them. According to their website, "Pinterest is a tool for collecting and organizing the things that inspire you" (see **about.pinterest.com**). For more about what Pinterest is and how it works, see **sheknows.com/living/articles/852875/pinterest-what-it-is-how-to-use-it-and-why-youll-be-addicted**.

Having many visitors and a rapid growth rate are necessary but not sufficient for EC success. Viable business and revenue models are also needed.

The Business and Revenue Models

Pinterest does not have a formal revenue model. (The company is privately held and it does not have to report about such a model to the public.) It looks as though the company's current priority is growth, as expressed in its mission statement. Nevertheless, many people speculate about (or suggest) revenue opportunities for the company, some of which are provided next.

Yang's Suggestions

Quora Corporation posted a question on its website: "How does Pinterest generate revenue?" One of the most comprehensive answers received was provided by "Avid Pinterest User" Yang (2012) who presented 13 *potential* monetization opportunities in four categories: charging advertisers (e.g., see Dembosky 2013), charging e-commerce partners, charging users, and charging other B2B partners. Most of these opportunities have existed in EC for years (e.g., charging for premium services, creating an online retail shop, using an affiliate program, and building a comprehensive advertisement scheme).

Selling Data for Market Research and Analysis

Several experts suggested selling customer data available on Pinterest to retailers who can use analytics, including data mining, to conduct market research using this data. Customer data may reveal important statistical associations and relationships between consumer behavior, content (e.g., product recommendations, personalization, ads), and services and products provided.

Other Suggestions for Doing Business on Pinterest

- Hemley (2012) provides 26 different suggestions in an A–Z guide (e.g., A = Add a Pinterest "Follow" and/or "Pin it" Button; B = Brands and Pinterest; C = Crowdsourcing, and so forth).
- Hub Spot (**hubspot.com**) offers a free e-book titled "How to Use Pinterest for Business" (**offers.hubspot.com/how-to-use-pinterest-for-business**). It includes information such as how to create a Pinterest business account and how Pinterest works.
- Wikipedia lists several potential revenue sources at **en.wikipedia.org/wiki/Pinterest**.
- For more suggestions see **business.pinterest.com/en/pinterest-guides**.

Using Pinterest for Advertising and Marketing

Most of the suggestions cited above, as well as suggestions by others, concentrate on advertising and marketing opportunities. For comprehensive coverage, see Cario (2013) and Miles and Lacey (2012). For how retailers can use Pinterest, see Jopson and Kuchler (2013).

Results and Managerial Issues

Pinterest is one of the fastest growing social networks ever. As of July 2013, the total number of Pinterest users worldwide was 70 million **aabacosmallbusiness.com/advisor/30-reasons-market-business-pinterest-2014-infographic-184545665.html**).

Similar reports on this amazing growth rate and popularity are provided by comScore and other reporting companies. This growth has attracted over $200 million in venture capital in 2012/2013 and generated many suggestions on money-making possibilities with Pinterest (e.g., see Carr 2012).

In January 2014, the valuation of Pinterest was about $3.8 billion. Should the company be able to generate significant revenue, it probably will go to the IPO route, in which case the valuation may be much higher. Let us look now at some managerial issues facing the company. Representative managerial issues are:

Legal Concerns

Many people collect images from the Internet to build their pinboards (and possibly a brand) without asking permission

from the content creators, giving them an attribute, or compensating them. Some of the collected material is formally copyrighted; other material may be considered copyrighted. A similar problem exists with material used on Facebook or by bloggers. According to Pinterest's "Terms of Use," members are "solely responsible for what they pin and repin." Furthermore, users must have explicit permission from the owners of contents to post them. According to Shontell (2012), one lawyer deleted all her Pinterest boards out of fear of copyright violation. Note that Pinterest places all blame and potential legal fees on its users (who may have to pay the legal fees incurred by Pinterest also). Pinterest has taken several steps to alleviate the legal concerns of users. The company is continuously adding measures to minimize the legal problems. For example, in May 2012, the company added a feature that facilitates the attribution of credit to content creators. Finally, legal concerns may include dealing with the spammers who are busy on the site.

The Competition

The popularity of Pinterest has resulted in many attempts to clone the company. Since the core concept is basically image sharing, it may not be patentable; therefore, competitors try to jump into niche markets. For example, TripAdvisor (**tripadvisor.com**) concentrates on travel. We Heart It (**weheartit.com**) is a Brazilian company (operating in the USA) that is very similar to Pinterest. An emerging competitor is Fancy (**fancy.com**), which partnered with Google+ in 2013. Several companies concentrate on adult entertainment and pornography. Indirect competitors are several Chinese companies that operate in a culturally different environment (see McKenzie 2012). Companies such as Facebook and Google may initiate a competitive service. Some believe that Pinterest may take business away from both Facebook and Twitter due to its better match with the business world.

Conclusion

Pinterest is more business oriented than Facebook or Twitter and visitors tend to buy more from there, although the latter companies drive more visitors to their sites. It seems that Pinterest has some potential benefits for small businesses (e.g., designers). Many companies already use Pinterest to derive benefits (e.g., see the Etsy case in Chapter 3). However, these applications do not currently provide any revenue to Pinterest. The success of Pinterest will be determined by its revenue model and the company's profitability.

Sources: Based on Carr (2012), Jopson and Kuchler (2013), Loren and Swiderski (2012), and McKenzie (2012).

LESSONS LEARNED FROM THE CASE

Pinterest is a social network that connects people who find interesting images on the Web and organized them on virtual boards. At the same time, Pinterest is a platform on which several activities of EC can be supported. For example, companies can build pinboards that promote their brands. Pinterest can be used as a platform for facilitating innovations via idea generation and sharing. Pinterest is a derivative of Web 2.0 and social media, and as such, it is a new mechanism for supporting EC. Other social media mechanisms that are covered in this chapter are social networks and virtual communities; different types of social media tools such as blogs, microblogs, and wikis are discussed in Online File W2.1. This chapter also covers the traditional mechanisms of EC such as marketplaces, merchant software, and auctions.

2.1 ELECTRONIC COMMERCE MECHANISMS: AN OVERVIEW

The many EC models and types of transactions presented in Chapter 1 are enabled by several mechanisms. To begin with, most applications are conducted on the Internet. In addition, the generic enablers of any information system including databases, networks, security, software and server software, operating systems, hardware (Web servers), and hosting services need to be established. Added to the above are the specific EC mechanisms presented in this chapter, such as electronic markets, shopping carts, e-catalogs, and support services. In addition to all of the above, there are different methods for executing EC, such as buying at a fixed price or at an auction, and each method has a different support mechanism. Finally, there are the Web 2.0-based collaboration and communication mechanisms (e.g., Twitter) and special platforms such as the one used by Pinterest. In this chapter, we describe the major EC and social commerce mechanisms so that you will be able to understand their uses in the forthcoming chapters.

EC Activities and Support Mechanisms

EC activities are divided here into six categories, which are listed on the left side of Figure 2.1. Each activity is supported by one or more EC mechanisms, which are shown on the right side of Figure 2.1, along with the section number in this chapter where they are presented. Additional mechanisms exist for special

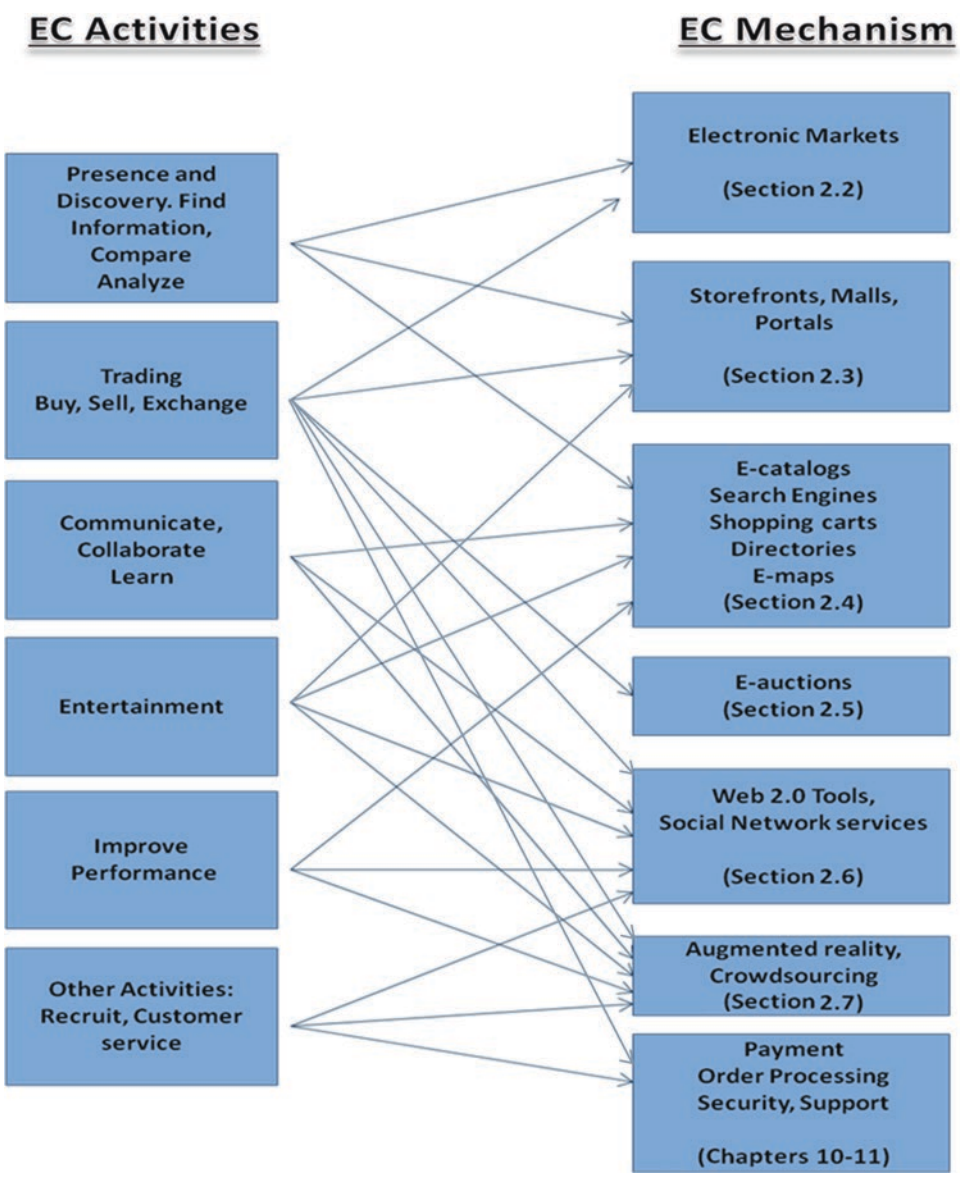

Figure 2.1 The EC activities–mechanism connection

activities, such as payment and order fulfillment (Chapter 11) and security (Chapter 10). Also, standard IT technologies such as RFID, EDI, and extranets are described in Online Tutorial T2.

In the next section, we describe online markets. Before we do this, however, we will describe what happens during a typical purchasing process.

The Online Purchasing Process

Customers buy goods online in different ways. The most common is purchasing from catalogs at fixed prices. Sometimes prices may be negotiated or discounted. Another way to determine price is *dynamic pricing*, which refers to non-fixed prices such as those in auctions or stock (commodity) exchanges.

The process starts with a buyer logging on to a seller's website, registering (if needed), and entering an online catalog or the buyer's "My Account." E-catalogs can be very large, so using a search engine may be useful. Buyers usually like to compare prices; therefore, an online price comparison service can be useful (now available on smartphones). Some sellers (e.g., American Airlines, Amazon.com) provide price comparisons showing competitors. If not satisfied, the buyer may abandon the seller's site. If satisfied, the buyer will place the chosen item in a virtual *shopping cart* (or bag). The buyer may return to the seller's catalog to choose more items. Each selected item is placed in the shopping cart. When the item selection is completed, the buyer goes to a checkout page, where a shipment option is selected from a menu (e.g., standard, next day). Finally, a payment option is selected. For example, **newegg.com** allows you to pay by credit card, PayPal, check after billing, in installments, and so on. After checking all the details for accuracy, the buyer *submits* the order.

The major mechanisms that support this process are described in Sections 2.7 and 2.9 of this chapter. The place where buying and selling occurs is called an *e-marketplace,* which we introduce next.

SECTION 2.1 REVIEW QUESTIONS

1. List the major EC activities.
2. List the major EC mechanisms.
3. Describe the online purchasing process.

2.2 E-MARKETPLACES

Markets (electronic or otherwise) have four major functions: (1) enabling transactions to occur by providing a meeting place for buyers and sellers; (2) enabling the flow of relevant information; (3) providing services associated with market transactions, such as payments and escrow; and (4) providing auxiliary services such as legal, auditing, and security.

Electronic Markets

The *electronic market* is the major venue for conducting EC transactions. An **e-marketplace** (also called *e-market, virtual market,* or *marketspace*) is an electronic space where sellers and buyers meet and conduct different types of transactions. Customers receive goods and services for money (or for other goods and services, if bartering is used). The functions of an e-market are the same as those of a physical marketplace; however, computerized systems tend to make electronic markets much more efficient by providing more updated information and various support services, such as rapid and smooth executions of transactions.

The emergence of *electronic marketplaces*, especially Web-based ones, has changed several of the processes used in trading and supply chains. In many cases, these changes, driven by technology, have frequently resulted in:

- Lowering the search time for information and cost to buyers
- Reduced information misunderstanding between sellers and buyers
- Possible reduction in the time gap between purchase and possession of physical products purchased online (especially if the product can be digitized)
- The ability of market participants to be in different locations while trading online
- The ability to conduct transactions at any time (24/7) from any place

The Components and Participants in E-Marketplaces

The major components and players in a *marketspace* are customers, sellers, products and services (physical or digital), infrastructure, front-end and back-end mechanisms, intermediaries and other business partners, and support services such as security and payments. A brief description of each follows:

- **Customers.** Several billions of Internet users worldwide are potential buyers of goods and services offered on the Internet. These consumers are looking for bargains, customized items, collectors' items, entertainment, socialization, and more. The social customers have more power than regular customers. They can search for detailed information, compare prices, bid, and sometimes negotiate. Buying organizations are also customers, accounting for more than 85% of EC volume and value activities.
- **Sellers.** Millions of webstores are advertising and offering a huge variety of items. These stores are owned by companies, government agencies, or individuals. Every day it is possible to find new offerings of products and services. Sellers can sell directly from their websites or from public e-marketplaces.
- **Products and services.** One of the major differences between the *marketplace* and the *marketspace* is the possible digitization of products and services in a marketspace. Although both types of markets can sell physical products, they can also sell **digital products**, which are goods that can be transformed into a digital format. However, in marketspaces, buyers can buy digitized products online, anytime and from any place in seconds, and receive the purchased goods instantly. In addition to the digitization of software, music, and airline tickets, it is possible to digitize dozens of other products and services, as shown in Online File W2.2.
- **Infrastructure.** The marketspace infrastructure includes electronic networks, databases, hardware, software, and more.
- **Front end.** Customers interact with a marketspace via a **front end**. The major components of the front end can include the seller's portal, electronic catalogs, a shopping cart, a search engine, an auction engine, a payment gateway, and all other activities related to placing orders.
- **Back end.** All the activities that are related to order aggregation and fulfillment, inventory management,

purchasing from suppliers, accounting and finance, insurance, payment processing, packaging, and delivery are done in what is termed the **back end** of the business.

- **Intermediaries.** In marketing, an **intermediary** is typically a third party that operates between sellers and buyers. The role of electronic intermediaries is frequently different from that of regular intermediaries (such as wholesalers or retailers), as will be seen throughout the text. For example, online intermediaries create and manage the online markets. They help match buyers and sellers, provide escrow services, and help customers and/or sellers complete transactions. Physical intermediaries may be eliminated and their jobs be computerized (fully or partially) as described next.

Disintermediation and Reintermediation

Intermediaries usually provide three types of services: (1) they provide relevant information about demand: supply, prices, and trading requirements, (2) they help match sellers and buyers, and/or (3) they offer value-added services such as transfer of products, escrow, payment arrangements, consulting, or assistance in finding a business partner. In general, the first and second types of services can be fully automated, and thus it is likely to be assumed by e-marketplaces, infomediaries, and portals that provide free or low-fee services. The third type requires expertise, such as knowledge of the industry, the market, the products, and the technological trends, and therefore can only be partially automated.

Intermediaries that provide only (or mainly) the first two types of services may be eliminated; this phenomenon is called **disintermediation**. An example is the airline industry and its push for selling electronic tickets directly by the airlines. Most airlines require customers to pay $25 or more per ticket processed by an employee via telephone. This results in the *disintermediation* of many travel agents from the purchasing process. In another example, discount stockbrokers that only execute trades manually are disappearing. However, brokers who manage electronic intermediation are not only surviving but may also be prospering (e.g., **priceline.com** and **expedia.com** in the travel industry and **tdameritrade.com** in stock trading). This phenomenon, in which disintermediated entities or newcomers take on new intermediary roles, is called *reintermediation* (see Chapter 3).

Disintermediation is more likely to occur in supply chains involving several intermediaries, as illustrated by Case 2.1.

CASE 2.1: EC APPLICATION HOW BLUE NILE INC. IS CHANGING THE JEWELRY INDUSTRY

Blue Nile Inc. (**bluenile.com**), a pure-play online e-tailer that specializes in diamonds and jewelry, capitalized on online diamond sales as a dot-com start-up in 1999. The company is a textbook case of how EC fundamentally changes the way that an industry conducts its business. For information about the company, see **quotes.wsj.com/NILE/company-people**.

The Opportunity

Using the B2C EC model—eliminating the need for physical stores—Blue Nile was able to offer discounts of 35%, yet it became profitable in a short time. (The cost of operating online stores is relatively very low.)

What are the critical success factors of the company? First, they offer large discounts. For example, you can purchase a $6000 diamond for $4000, which attracts more customers. Second, Blue Nile offers a huge selection of diamonds online and provides more information about diamonds than many physical jewelry stores can offer. In February 2016, Blue Nile offered about 60,000 loose diamonds that could be used to build customized engagement rings. No physical store can offer so many diamonds. Third, the company provides educational guides as well as independent (and trusted) quality ratings for every stone. A customer can look over a rating scale for cut, clarity, color, and so on, and then compare prices using Bizrate (**bizrate.com**) and other online price comparison sites. Note that there usually is a 30-day 100% money-back guarantee (now an online industry standard). This provides customers with a comfort level of trust against fraud and gives Blue Nile a competitive edge against stores that take the stones back but charge a fee. The site provides live chat, payment options, build-your-own engagement ring, gift ideas, and much more. The company has a mobile app for iPhone available on iTunes (**m.bluenile.com**).

The Results

Blue Nile's sales reached $129 million in 2003 (a 79% increase over 2002). In 2015, revenue reached $480 million. The company became the eighth-largest specialty jewelry company in the United States and went public in 2004 (one of the most successful IPOs of that year). While sales fell during the economic downturn in 2008, in 2009 and 2010 the company rallied again with a 2.3% growth.

In order to sell $480 million in jewelry in 1 year, a traditional retail chain needs over 300 stores and over 3000 employees. Blue Nile does it with one 10,000-square-foot warehouse and 301 employees. The company also bypasses the industry's complex supply chain, in which a diamond may pass through five or more middlemen before reaching a retailer. Because they are a large buyer, they can deal directly with original suppliers.

As a result, some 465 small jewelry stores closed in 2003 alone. The survivors specialize in custom-crafted pieces. Large traditional companies compete with Blue Nile by offering online merchandise, becoming click-and-brick multichannel organizations, and by streamlining their supply chain and customer service. Note: While Blue Nile impacted negatively small jewelry stores, it was not much of a threat to large ones (e.g., Tiffany's).

The future seems to be clear, as can be seen in Bloomberg (2004), in the case of Roger Thompson, a small jeweler in Lambertville, New Jersey, who said, "Anyone with half a brain who wants a diamond engagement ring will go to the Internet." In the meantime, grooms who propose with Blue Nile rings can save $3000–$5000.

Note that the competition in the jewelry business is very intense, not only from jewelry retailers (both off-line and online, e.g., **bidz.com**) but also from general e-tailers such as **overstock.com** and **amazon.com**.

Sources*:* Based on Rivlin (2007), Bloomberg (2004), **en.wikipedia.org/wiki/Blue_Nile_(company)**, and **bluenile.com/inside-blue-nile** (both accessed March 2016).

Questions

1. Using the classification of EC (Section 1.2, Chapter 1), how would you classify the Blue Nile's business?
2. In what ways is the company changing its industry?
3. What are the critical success factors of the company?
4. Research Blue Nile's affiliate marketing programs. Write a report. Include how this program helps Blue Nile.
5. Competition between Blue Nile and Amazon.com will continue to increase. In your opinion, which one will win? (Visit their websites and see how they sell jewelry.)
6. Compare the following three sites: **diamond.com**, **ice.com**, and **bluenile.com**.
7. Follow the performance of Blue Nile's stock since 2003 (symbol: NILE, go to **money.cnn.com**). Compare it to the performance of the total market and the averages of the industry. What is your conclusion?
8. Find the payment options at Blue Nile when you shop there.

Types of E-Marketplaces

The term *marketplace* differs once it referred to on the Web. It is sometimes referred to as e-marketplace or marketspace. We distinguish two types of e-marketplaces: private and public.

Private E-Marketplaces

Private e-marketplaces are those owned and operated by a single company. **Starbucks.com**, **dell.com**, **target.com**, and **united.com** sell from their websites. Private markets are either sell-side or buy-side. In a **sell-side e-marketplace**, a company (e.g., **net-a-porter.com** or **cisco.com**) will sell either standard or customized products to individuals (B2C) or to businesses (B2B); this type of selling is considered to be *one-to-many*. In a **buy-side e-marketplace**, a company purchases from many potential suppliers; this type of purchasing is considered to be *many-to-one*, and it is a B2B activity. For example, some hotels buy their supplies from approved vendors that come to its e-market. Walmart (**walmart.com**) buys goods from thousands of suppliers. Private marketplaces can be open only to selected members and are not publicly regulated.

Public E-Marketplaces

Public e-marketplaces often are owned by a third party (not a seller or a buyer) or by a small group of buying or selling companies, and they serve many sellers and many buyers. They are open to the public and sometimes are regulated by the government.

SECTION 2.2 REVIEW QUESTIONS

1. Define e-marketplace and describe its attributes.
2. What is the difference between a physical marketplace and an e-marketplace (marketspace)?
3. List the components of a marketspace.
4. Define a digital product and provide five examples.
5. Describe private versus public e-markets.

2.3 CUSTOMER SHOPPING MECHANISMS: WEBSTORES, MALLS, AND PORTALS

Several kinds of interactions exist among sellers, buyers, and e-marketplaces. The major B2C mechanisms are *webstores* (*storefronts*) and *Internet malls*. Let us elaborate on these, as well as on the gateways to e-marketplaces—portals.

Webstores

A **webstore** (or **storefront**) refers to a single company's (or individual seller's) website where products and services are sold.

Webstores may target an industry, a location, or a niche market (e.g., **cattoys.com**). The webstore may belong to a

manufacturer (e.g., **geappliances.com** and **dell.com**), to a retailer (e.g., **amazon.com**), to individuals selling from home, or to other types of business. Note that some companies refer to their webstores as *portals*.

A webstore includes tools known as *merchant software* that are necessary for conducting online sales. The most common tools are an *electronic catalog*; a *search engine* that helps the consumer find products in the catalog; an *electronic shopping cart* for holding items until checkout; *e-auction facilities* where auctions take place; a *payment gateway* where payment arrangements can be made; a *shipment center* where shipping arrangements are made; and *customer services*, which include product and warranty information and CRM.

Microsites

A *microsite* is a webpage(s) that acts as a supplement to a primary website, but is external to it. It expands on the content by adding editorial, commercial videos, or educational and training material.

Electronic Malls

In addition to shopping at individual webstores, consumers can shop in electronic malls (*e-malls*). Similar to malls in the physical world, an **e-mall** (**online mall**) is an online shopping location where many stores present their catalogs. The mall charges commission from the sellers based on their sale volume. For example, the Emall of Maine (**emallsofamerica.com/emallofmaine.htm**) is an e-mall that aggregates products, services, and providers in the state of Maine. It contains a directory of vacation services and product categories and the vendors in each category. When a consumer indicates the category he or she is interested in, the consumer is transferred to the appropriate independent *webstore*. This kind of mall does not provide any shared services; it is merely a directory. Other malls, such as **choicemall.com** or **etsy.com** (see Chapter 4), do provide some shared services. Both **yahoo.com** and **ebay.com** operate electronic malls.

Web (Information) Portals

A *portal* is an information gateway that is used in e-marketplaces, webstores, and other types of EC (e.g., in e-collaboration, intrabusiness, and e-learning). A **Web (information) portal** is a single point of access, through a Web browser, to critical business information located inside and outside of organizations. This information is aggregated and is accessed and presented in a consistent way. Many Web portals personalize for users. Note that wireless devices are becoming portals for both enterprise and Internet access. A schematic view of a portal is shown in Figure 2.2. Information sources (external and internal) are shown on the left side, and integrated and process data are shown as output on the monitor's screen. Web portals offer some useful services such as e-mail, news, stock prices, entertainment, shopping capabilities, and so forth.

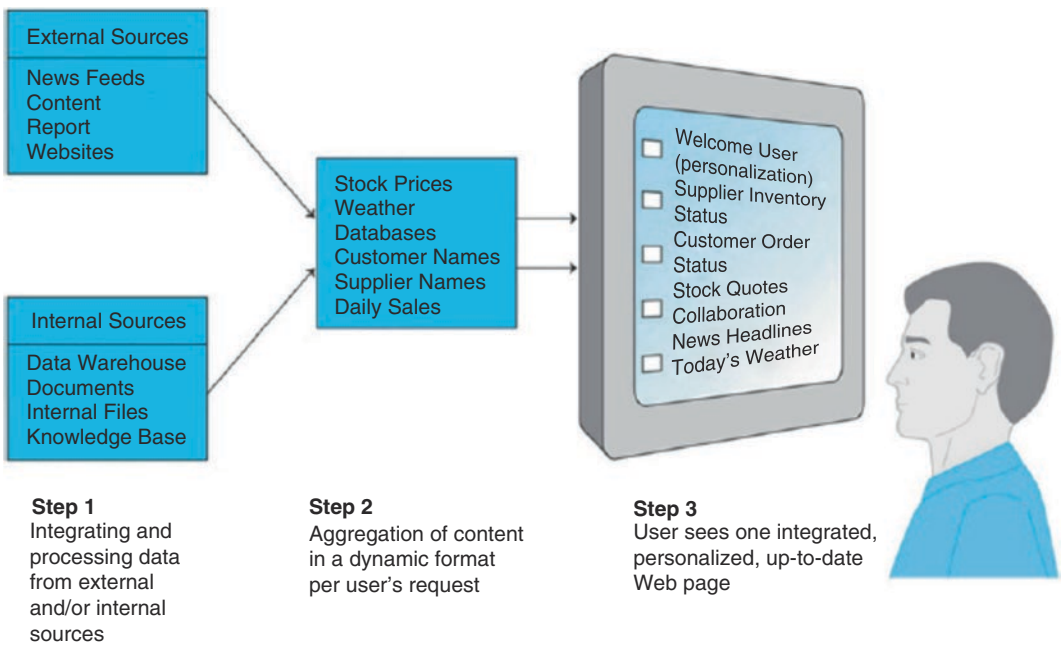

Figure 2.2 How a portal works

Types of Portals

Portals can assume many shapes. One way to distinguish among them is to look at their content, which can vary from narrow to broad, and their community or audience, which also can differ. The major types of portals are as follows:

- **Commercial (public) portals.** These popular portals offer content for anyone. Although they can be customized by the user, they are still intended for broad audiences and offer fairly routine content, some in real time (e.g., a stock ticker and news). Examples of such sites are **yahoo.com**, **google.com**, and **msn.com**.
- **Corporate (private) portals.** Corporate portals provide organized access to internal corporate information. These also are known as *enterprise portals* or *enterprise information portals*. Corporate portals appear in different forms. Examples of e-commerce portals can be found at **ibm.com/software/products/en/websphere-portal-family**.
- **Patient portals.** Several companies offer patient portals, for example, WebMD and **myUCLAhealth.org**. Patients have access to their personal information. The UCLA portal also allows communication between patients and their caregivers.
- **Publishing portals.** These portals are intended for communities with specific interests and involve relatively little customization of content; however, they provide extensive online search features and some interactive capabilities. Examples of such sites are **informationweek.com.com** and **zdnet.com**.
- **Mobile portals. Mobile portals** are portals that are accessible from mobile devices. An increasing number of portals are accessible via mobile devices. One example of such a mobile portal is i-mode, which is described in Chapter 6.
- **Voice portals. Voice portals** are websites, usually portals, with audio interfaces. This means that they can be accessed by a standard telephone or a cell phone. AOLbyPhone (**aolbyphone.com**) is an example of a service that allows users to retrieve e-mail, news, and other content from AOL via telephone. It uses both speech recognition and text-to-speech technologies. Products by companies such as Microsoft's Tellme (**tmaa.com/microsoftand-247inc.html**) offer access to the Internet from telephones, as well as tools to build voice portals. Voice portals are especially popular for 1–800 numbers (enterprise 800 numbers) that provide self-service to customers with information available in Internet databases (e.g., finding your balance or last deposit made at your bank).
- **Knowledge portals.** Knowledge portals enable easy access to knowledge by company employees and facilitate collaboration.
- **Board portals.** These portals support decision-making (see Questex 2015).
- **Community portals.** These are usually parts of online communities. They are dedicated to some theme and may be sponsored by a vendor such as Sony. An example is **gamespot.com/portal**.

The Roles and Value of Intermediaries in E-Marketplaces

The two major types of *online intermediaries* are brokers and infomediaries.

Brokers

A *broker* in EC is a person or a company that facilitates transactions between buyers and sellers. The following are different types of brokers:

- **Trading.** A company that aids online trading (e.g., E*TRADE or eBay).
- **Organization of online malls.** A company that organizes many online stores in one place (e.g., Yahoo! Shopping and Alibaba.com).
- **Comparison agent.** A company that helps consumers compare prices, encourages user comments, and provides customer service at different stores (e.g., Bizrate for a great diversity of products and Hotwire, Inc. for travel-related products and services).
- **Shopping aids provider.** A company that helps online shopping by providing escrow, payments, shipping, and security (e.g., PuntoMio, Inc.) for global shoppers.
- **Matching services.** These services match entities such as jobs to applicants, and buyers to sellers.

Distributors in B2B

A special type of intermediary in e-commerce is the B2B *e-distributor*. These intermediaries connect manufacturers with business buyers (customers), such as retailers (or resellers in the computer industry). **E-distributors** aggregate product information from many manufacturers, sometimes thousands of them, in the e-distributor's catalog. An example is W.W. Grainger (**grainger.com**). The distributor buys the products and then sells them, as supermarkets do.

SECTION 2.3 REVIEW QUESTIONS

1. Describe webstores and e-malls.
2. List the various types of webstores and e-malls.
3. What are Web (information) portals? List the major types.
4. Describe e-distributors.

2.4 MERCHANT SOLUTIONS: ELECTRONIC CATALOGS, SEARCH ENGINES, AND SHOPPING CARTS

To enable selling online, a website usually needs *EC merchant server software.* Merchant software includes several tools and platforms. Such software offers basic tools that include electronic catalogs, search engines, and shopping carts; all are intended to facilitate the electronic trading process.

One example of such software is osCommerce, which is open-source software (see **oscommerce.com**). For a list of merchant software vendors, see **cmscritic.com/directory/enterprise-e-commerce**.

Electronic Catalogs

Catalogs have been printed on paper for generations. Recently, electronic catalogs on a DVD (or CD-ROM) and on the Internet have gained popularity. **Electronic catalogs** (**e-catalogs**) consist of a product database, directory, and a presentation function. They are the backbone of most e-commerce sales sites. For merchants, the objective of e-catalogs is to advertise and promote products and services. For the customer, the purpose of such catalogs is to locate information on products and services. E-catalogs can be searched quickly with the help of search engines. Some offer tools for interactions. For an example, see Infinisys's "Change My Image" for Microsoft Windows at **en.infinisys.co.jp/product/cmimage**, and for Macintosh at **en.infinisys.co.jp/product/cmimage_mac**.

Most early online catalogs were static presentations of text and messages from paper catalogs. However, online catalogs have evolved to become more dynamic, customizable, and integrated with selling and buying procedures, shopping carts, order taking, and payment. E-catalogs may include video clips. The tools for building them are being integrated with merchant software suites and Web hosting tools (e.g., see **aabacosmallbusiness.com/ecommerce**). Examples of a simple product catalog can be seen at JetPens (**jetpens.com**) and Starbucks Store (**store.starbucks.com**).

Although used only occasionally in B2C commerce, customized catalogs are used frequently in B2B e-commerce.

EC Search Activities, Types, and Engines

Search activities are popular in EC, and many tools for conducting searches are available. Several studies revealed that 95% of shoppers conduct research online before making any purchase. Consumers may search inside one company's catalog to find a product or service, or use Google or Bing to find companies that sell the product they need. Here we describe only the essentials for EC search. For a video illustration, see "Google Commerce Search" (2:15 min) at **youtube.com/watch?v=gj7qrotOmVY**. To read publications on electronic research and e-commerce at the Research at Google website, see **research.google.com/pubs/EconomicsandElectronicCommerce.html**. Let us now look at three major types of searches.

Types of EC Searches

The three major types of EC searches are *Internet/Web search, enterprise search,* and *desktop search.*

1. **Internet/Web Search.** This is the most popular search that involves looking for any documents on the Web. According to Pew Research Internet Project (**pewinternet.org**) and other statistical sites (e.g., see **infoplease.com/ipa/A0921862.html**), finding information is one of the most frequent activities done on the Web.
2. **Enterprise Search.** An **enterprise search** describes the search for information *within* the files and databases of an organization. For example, Google has a powerful Search Appliance (known as GSA).
3. **Desktop Search.** A **desktop search** involves a search of a user's own computer files (e.g., using **copernic.com** or **windows.microsoft.com/en-us/windows7/products/features/windows-search**). Searching for documents is done by looking through all the information that is available on the user's PC. A simple example is the ability to search all files related to your e-mail archive. A search also can be extended to photos, USB ports, and Word documents.

Search Engines

Customers look for information (e.g., requests for product information or pricing) in similar ways. This type of request is repetitive, and answering such requests manually is costly. *Search engines* deliver answers economically and efficiently by matching questions with frequently asked question (FAQ) templates, which respond with "canned" answers. In general, a **search engine** is a computer program that can access databases of Internet or intranet resources, search for specific information or keywords, and report the results.

Google's Internet Explorer and Chrome, and Bing are the most popular search engines in the USA. Baidu is the primary search engine in China. Portals such as Yahoo! and MSN have their own search engines. Special search engines organized to answer certain questions or search in specified areas include **ask.com**, **mamma.com**, and **looksmart.com**. Thousands of different public search engines are available (see **searchengineguide.com**). Each of these tools excels in one or a few areas. These can be very specialized with different capabilities. In addition, many companies have their own enterprise search engines.

Voice-Powered Search

To ease searching, especially when using a smartphone, Google introduced a voice-powered tool (Google Voice Search; **google.com/intl/es419/insidesearch/features/voicesearch/index-chrome.html**) that allows you to skip the keyboard altogether. The first product was included as part of iPhone's mobile search application. It allows you to talk into your phone, ask any question, and the results of your query are provided on your iPhone. In addition to asking questions by talking into your iPhone, you can also listen to search engine results. For an example of Apple's intelligent personal assistant, "Siri," see **apple.com/ios/siri** and **imore.com/siri**. Several language translators use a similar technology.

Video and Mobile Search

There are dozens of dedicated search tools and sites that will search for videos and other images. Some of them, such as **bing.com/videos**, will search across multiple sites; others, such as YouTube, will search only for their own content. For a list of over 40 sites, see **thesearchenginelist.com/videosearch**. For another example, the search engine Bing has a search feature that allows you to listen to more than 5 million full length songs.

Mobile Search

Several search engines are adapted to mobile search. Notable are Google, Yippy, and Yahoo!

Visual Shopping Search Engine

Visual search means looking for information that is presented visually (photos, images, etc.) For an overview, see **scholarpedia.org/article/Visual_search**. This technology can be used to support e-commerce. For example, **google.com/shopping** provides a visual search engine based on machine learning and computer vision that focuses on consumer products.

Visual search is popular when conducted on mobile devices.

Social Network Search Engines

Social network search, also known as *social search*, is a class of online search engines that help people find material about social networking activities, such as in user-generated content, discussion groups, or recommendations. Like all search engines, these organize, prioritize, and filter search results. Examples of such search engines are: **socialmention.com**—"real-time social media search and analysis," **yoname.com**—"people search across social networks, blogs, and more," **bing.com/explore/social**. For an overview, see the blog "Social is the Next Search" available at **info.gigya.com/rs/gigya/images/Gigya-Social-The-Next-Search.pdf**. For a discussion of the benefits and concerns, see **en.wikipedia.org/wiki/Social_search**.

Shopping Carts

An **electronic shopping cart** (also known as *shopping bag* or *shopping basket*) is software that allows customers to accumulate items they wish to buy before they arrange payment and check out, much like a shopping cart in a supermarket. The electronic shopping cart software program automatically calculates the total cost, and adds tax and shipping charges when applicable. Customers can review and revise their shopping list before finalizing their purchase by clicking on the "submit" button.

Shopping carts for B2C are fairly simple (visit **amazon.com** to see an example), but for B2B, a shopping cart may be more complex. Shopping cart software is sold or provided free to store builders as an independent component outside a merchant suite (e.g., see **networksolutions.com/e-commerce/index-v3.jsp**—"create an online store now, **zippycart.com**, and **wpeasycart.com**). It also is embedded in merchants' servers, such as **aabacosmallbusiness.com/ecommerce**. Free online shopping carts (trials and demos) are available at **volusion.com** and **1freecart.com**; powered by MyFreeCommerce.com. For shopping cart applications for Facebook, see **ecwid.com/facebook-commerce?**

Product Configuration (Self-Customization)

A key characteristic of EC is the ability to self-customize products and services, as done by **dell.com**, **nike.com**, or **jaguarusa.com**. Manufacturers like to produce customized products in economical and rapid ways so that the price of their products will be competitive.

Questions and Answers Online

Intelligent search engines can answer users' questions. A leading engine is **ask.com**, a subsidiary of InterActiveCorp (IAC). The Q&A service matches answers from the database to questions users ask. For details, see **ask.com** and **answers.yahoo.com**. A competing engine is **answers.com**, a question and answer (Q&A) site, which comprises **wikianswers.com**. Wiki Answers is a community-generated social knowledge Q&A platform available in several languages. People ask questions on the platform and the community answers them. Another similar platform is **answers.wikia.com/wiki/Wikianswers**.

SECTION 2.4 REVIEW QUESTIONS

1. List and briefly describe the dimensions by which electronic catalogs can be classified.
2. List the benefits of e-catalogs.
3. Describe an electronic shopping cart.
4. Describe voice- and vision-related search engines.
5. What is self-customization?

2.5 AUCTIONS, BARTERING, AND NEGOTIATING ONLINE

One of the most interesting market mechanisms in e-commerce is the electronic auction. Auctions are used in B2C, B2B, C2C, G2B, and G2C.

Definition and Characteristics

An *online auction* is an electronic space where sellers and buyers meet and conduct different types of transactions. This market mechanism uses a competitive process where a seller solicits consecutive bids from buyers (forward e-auctions) or a buyer solicits bids from sellers (reverse e-auctions). A wide variety of online markets qualify as auctions using this definition. Prices are determined dynamically by the bids. Auctions, an established method of commerce for generations, deal with products and services when conventional marketing channels are ineffective or inefficient. For example, e-auctions can expedite the clearance of items that need to be liquidated or sold quickly. Rare coins, stamps, and other collectibles are frequently sold at e-auctions.

There are several types of auctions, each with its own specialties and procedures. (For coverage, see **en.wikipedia.org/wiki/Online_auction**.) Auctions can be conducted on *public* auction sites, such as **ebay.com**, or on *private* auction sites, which may be "by invitation only."

Dynamic Pricing

One major characteristic of auctions is that they are based on dynamic pricing. **Dynamic pricing** refers to prices that are not fixed, but are allowed to fluctuate, and are determined by supply and demand. In contrast, catalog prices are fixed, as are prices in department stores, supermarkets, and most webstores.

Dynamic pricing appears in several forms. Perhaps the oldest forms are negotiation and bargaining, which have been practiced for many generations in open-air markets. The most popular today are the online auctions.

Traditional Auctions Versus E-Auctions

Traditional, physical auctions are still very popular. However, the volume traded on e-auctions is significantly larger and continues to increase. In addition, person-to-person auctions are done mostly online.

Limitations of Traditional Off-Line Auctions

Traditional off-line auctions, regardless of their type, have several limitations. They usually last only a few minutes, or even seconds, for each item sold. This rapid process may give potential buyers little time to make a decision, so they may decide not to bid. Therefore, sellers may not get the highest possible price; bidders may not get what they really want, or they may pay too much for the items. Additionally, in many cases, the bidders do not have much time to examine the goods before placing a bid. Bidders have difficulty learning about specific auctions and cannot compare what is being offered at each location. Bidders must usually be physically present at auctions; thus, many potential bidders are excluded.

Similarly, it may be difficult for sellers to move goods to an auction site. Commissions are fairly high because a physical location must be rented, the auction needs to be advertised, and an auctioneer and other employees need to be paid. Electronic auctioning removes or lessens these drawbacks.

Electronic Auctions

The Internet provides an infrastructure for executing auctions electronically at lower cost, with a wide array of support services, and with many more participating sellers and buyers than physical auctions. Individual consumers and corporations can both participate in this rapidly growing and very convenient form of e-commerce.

Electronic auctions (**e-auctions**) are similar to off-line auctions except that they are conducted online. E-auctions (or online auctions) have been in existence since the 1980s over LANs (e.g., for flowers; see Saarinen et al. 2006). Host sites on the Web, which were started in 1995, serve as brokers, offering services for sellers to post their goods for sale and enabling buyers to bid on those items.

Major online auction sites, such as eBay (see Online File W2.3), offer consumer products, electronic parts, artwork, vacation packages, airline tickets, and collectibles, as well as excess supplies and inventories that are being auctioned off by businesses. Another type of B2B online auction is used to trade special types of commodities, such as electricity transmission capacities and gas and energy options (e.g., see **energyauctionexchange.com**). Furthermore, conventional business practices that traditionally have relied on contracts and fixed prices increasingly are converted into auctions with bidding for online procurements.

For a comparison of 10 online auction sites, see **online-auction-sites.toptenreviews.com**.

Types of Auctions

It is customary to classify auctions into the following major types based on how many buyers and sellers are involved.

One Buyer, One Seller

In this configuration, one can use negotiation, bargaining, or bartering. The resulting price will be determined by each party's bargaining power, supply and demand in the item's market, and (possibly) business environment factors.

One Seller, Many Potential Buyers

In this configuration, the seller uses a **forward auction**, which is an auction where a seller entertains bids from multiple buyers. (Because forward auctions are the most common and traditional form, they often are simply called *auctions*.) The four major types of forward auctions are *English* and *Yankee* auctions, in which bidding prices increase as the auction progresses, and *Dutch* and *free-fall* auctions, in which bidding prices decline as the auction progresses. Each of these can be used for either liquidation or for market efficiency.

Example: Warren Buffet's Annual Power Lunch Auctions

Every year, Warren Buffet, the famous U.S. investment guru, has an auction with the prize being a lunch with him; the winner may also bring along up to seven friends. The winner pays big money for the honor. The money is donated to a charity called the Glide Foundation, which helps the poor and homeless in San Francisco. In the past, Buffett charged $30,000 per group. Since July 2003, Buffett has placed the invitation on an online auction (eBay). In 2003, bidders pushed the bid from $30,000 to $250,100. The highest winning bid was in 2012, by an anonymous bidder, in the record-setting amount of $3,456,789. However, in 2015, the highest bid was $2.3 million. In addition to benefiting the needy, the auction provides an opportunity for people (with money) to meet Mr. Buffett.

One Buyer, Many Potential Sellers

Two popular types of auctions in which there is one buyer and many potential sellers are reverse auctions (tendering) and name-your-own-price auctions.

Reverse Auctions

When there is one buyer and many potential sellers, a **reverse auction** (**bidding** or **tendering system**) is in place. In a reverse auction, the buyer places an item he or she wants to buy for a bid (or *tender*) on a *request for quote* (RFQ) system. Potential suppliers bid on the item, reducing the price sequentially (see Figure 2.3). In electronic bidding in a reverse auction, several rounds of bidding may take place until the bidders do not reduce the price any further. The winning supplier is the one with the lowest bid (assuming that only price is considered). Reverse auctions are primarily a B2B or G2B mechanism. (For further discussion and examples, see Chapter 5.

The Name-Your-Own-Price Model

Priceline.com pioneered the **name-your-own-price model**. In this model, a would-be buyer specifies the price (and other terms) that he or she is willing to pay to any willing and able seller. For example, Priceline.com (**priceline.com**) presents consumers' requests to sellers, who fill as much of the guaranteed demand as they wish at prices and terms agreed upon by buyers. The sellers may come up with counter offers managed by Priceline. Alternatively, Priceline.com searches its own database that contains the participating vendors' lowest prices and tries to match supplies with requests. This is basically a C2B model, although some businesses also use it.

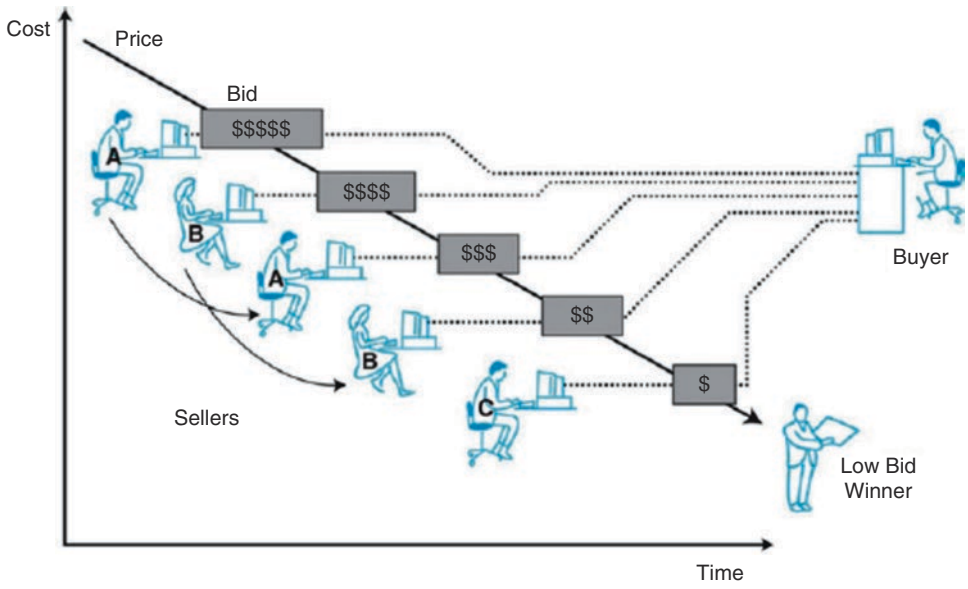

Figure 2.3 The reverse auction process

Many Sellers, Many Buyers

When there are many sellers and many buyers, buyers and their bidding prices are matched with sellers and their asking prices based on the quantities on both sides. Stocks and commodities markets are typical examples of this configuration. Buyers and sellers may be individuals or businesses. Such an auction is also called a **double auction**.

Penny Auctions

A *bidding fee auction*, also called a **penny auction**, is a new type of online forward auction in which participants must pay a small nonrefundable fee each time they place a bid (usually in small increments above the previous bid). When the auction-planned time expires, the last participant to have placed a bid wins the item paying the final bid price, which is usually significantly lower than the retail price of the item. For a tutorial, see the video titled "BidBidSold Penny Auction Site Tutorial" (2:23 min) at **youtube.com/watch?v=ngr2kJcnAr4**.

Because most bidders will receive nothing in return for their paid bids, some observers have stated that the fee spent on the bid is actually equivalent to a lottery or wager. The auctioneer receives income both in the form of the fees collected for each participant bidder and in the form of a seller's commission for the winning bid. Examples of penny auction companies are **madbid.com** and **quibids.com/en**. At **100auctionsites.com**, you can find a list of several penny auction companies. Some companies allow the auction's unsuccessful bidders to use all their bidding fees toward a purchase of items at regular or slightly discounted prices. Users need to be careful of scams. For additional information, see **en.wikipedia.org/wiki/Bidding_fee_auction**.

Several other innovative auctions are available.

Benefits of E-Auctions

E-auctions are becoming important selling and buying channels for many companies and individuals. E-auctions enable buyers to access goods and services anywhere auctions are conducted. Moreover, almost perfect market information is available about prices, products, current supply and demand, and so on. These characteristics provide benefits to all.

The auction culture seems to revolutionize the way customers buy, sell, and obtain what they want. A listing of the benefits of e-auctions to sellers, buyers, and e-auctioneers is provided in Table 2.1.

Limitations of E-Auctions

E-auctions have several limitations. The most significant limitations are minimal security, the possibility of fraud, and limited participation.

Minimal Security

Some of the auctions conducted on the Internet are not secure because most are done in an unencrypted (or poorly protected) environment. This means that credit card numbers can be stolen during the payment process. Payment methods such as PayPal (**paypal.com**) can be used to solve the problem. In addition, some B2B auctions are conducted over highly secure private lines.

Table 2.1 Benefits of e-auctions

Benefits to sellers	Benefits to buyers	Benefits to E-auctioneers
• Increased revenues from broadening bidder base and shortening cycle time. Can sell anywhere globally	• Opportunities to find unique items and collectibles	• Higher repeat purchases. **marketresearch.com** found that auction sites, such as eBay, tend to garner higher repeat-purchase rates than the top B2C sites, such as Amazon.com
• Opportunity to bargain instead of selling at a fixed price. Can sell at any time and conduct frequent auctions	• Entertainment. Participation in e-auctions can be entertaining and exciting (e.g., virtual live auction site **tophatter.com**)	• High "stickiness" to the website (the tendency of customers to stay at sites longer and come back more often). Auction sites are frequently "stickier" than fixed-priced sites. Stickier sites generate more ad revenue for the e-auctioneer
• Optimal price setting determined by the market (more buyers, more information)	• Convenience. Buyers can bid from anywhere, even using a mobile device; they do not have to travel to a physical auction place	• Easy expansion of the auction business
• Sellers can gain more customer dollars by offering items directly (saves on the commission to intermediaries; also, physical auctions are very expensive compared to e-auctions)	• Anonymity. With the help of a third party, buyers can remain anonymous	
• Can liquidate large quantities quickly	• Possibility of finding bargains, for both individuals and organizations	
• Improved customer relationship and loyalty (in the case of specialized B2B auction sites and electronic exchanges)		

Possibility of Fraud

In many cases, auction items are unique, used, or antique. Because the buyer cannot see and touch the items, the buyer may receive something different than she (or he) had in mind. In addition, products may be defective. Buyers may also commit fraud (e.g., by receiving goods or services without paying for them). Thus, the fraud rate in e-auctions is relatively high. For a discussion of e-auction fraud and fraud prevention, see **scambusters.org/onlineauctions.pdf**. For general information on Internet fraud in general, see **fbi.gov/scams-safety/fraud/internet_fraud**. Lately, several people have warned about fraud on penny auctions sites. For examples of scams, see **aarp.org/money/scams-fraud/info-10-2011/online-penny-auctions-real-or-ripoffs.html**.

Limited Participation

Some auctions are by invitation only; others are open only to dealers. Limited participation may be a disadvantage to sellers, who usually benefit from as large a pool of buyers as possible. Buyers also may be unhappy if they are excluded from participation.

Online Bartering

Bartering, the exchange of goods and services, is the oldest method of trade. Today, it is done primarily between organizations. The problem with bartering is that it is difficult to match trading partners. Businesses and individuals may use classified ads to advertise what they need and what they offer in exchange, but they still may not be able to find what they want. Intermediaries may be helpful, but they are expensive (20–30% commissions) and very slow.

E-bartering (**electronic bartering**)—bartering conducted online—can improve the matching process by attracting more partners to the barter. In addition, matching can be done faster, and as a result, better matches can be found. Items that are frequently bartered online include office space, storage, and factory space; unused facilities; and labor, products, and banner ads. (Note that e-bartering may have tax implications that need to be considered.)

E-bartering is usually done in a **bartering exchange**, a marketplace where an intermediary arranges the transactions. These exchanges can be very effective. Representative bartering websites include **u-exchange.com**—"Trade anything, Pay nothing," **swapace.com**—"Swap anything for anything," and **barterdepot.com**. The typical bartering process works like this: First, the company tells the bartering exchange what it wants to offer. The exchange then assesses the value of the company's products or services and offers it certain "points" or "bartering dollars." The company can use the "points" to buy the things it needs from a participating member in the exchange.

Bartering sites must be financially secure; otherwise, users may not have a chance to use the points they accumulate. (For further details, see **virtualbarter.net** and **barternews.com**.)

Online Negotiating

Dynamic prices also can be determined by *negotiation*. Negotiated pricing is commonly used for expensive or specialized products. Negotiated prices also are popular when large quantities are purchased. Much like auctions, negotiated prices result from interactions and bargaining among sellers and buyers. Negotiation also deals with terms, such as the payment method, timing, and credit. Negotiation is a well-known process in the off-line world (e.g., in real estate, automobile purchases, and contract work). A simple peer-to-peer (P2P) negotiation can be seen at **ioffer.com**. For more on negotiation in P2P money lending, see the Lending Club Company. See also the ZOPA and Prosper cases in Online File W7.1.

SECTION 2.5 REVIEW QUESTIONS

1. Define auctions and describe how they work.
2. Describe the benefits of e-auctions over traditional (off-line) auctions.
3. List the four major types of auctions.
4. Distinguish between forward and reverse auctions.
5. Describe the "name-your-own-price" auction model.
6. Describe penny auctions.
7. List the major benefits of auctions to buyers, sellers, and auctioneers.
8. What are the major limitations of auctions?
9. Define bartering and describe the advantages of e-bartering.
10. Explain the role of online negotiation in EC.

2.6 VIRTUAL COMMUNITIES AND SOCIAL NETWORKS

A *community* is a group of people with common interests who interact with one another. A **virtual community** is one where the interaction takes place over a computer network, mainly the Internet. Virtual communities parallel typical physical communities, such as neighborhoods, clubs, or associations, but people do not meet face to face. Instead, they meet online. Virtual communities offer several ways for members to interact, collaborate, and trade (see Table 2.2 for types of virtual communities).

Characteristics of Traditional Online Communities and Their Classification

Most virtual communities are Internet-based, known also as *Internet communities*.

Hundreds of thousands of communities exist on the Internet, and the number is growing rapidly. Pure-play Internet communities may have thousands or even hundreds of millions of members. By early 2016 (its 12th anniversary), Facebook had grown to about one billion active members around the world. This is one major difference from traditional purely physical communities, which usually are much smaller. Another difference is that off-line communities frequently are confined to one geographic location, whereas very a few online communities are geographically confined.

Classifications of Virtual Communities

Virtual communities can be classified in several ways.

Public Versus Private Communities

Communities can be designated as *public*, meaning that their membership is open to anyone. The owner of the community may be a privately held corporation (e.g., Twitter), public for profit, or nonprofit organizations. Many of the large social networks, including Facebook, belong to the public for profit category.

In contrast, *private* communities belong to a company, an association, or a group of companies and their membership

Table 2.2 Applications in social gaming types of virtual communities

Community type	Description
Transaction and other business activities	Facilitate buying and selling. Combine an information portal with an infrastructure for trading. Members are buyers, sellers, intermediaries, etc., who are focused on a specific commercial area (e.g., fishing)
Purpose or interest	No trading, just exchange of information on a topic of mutual interest. Examples: Investors consult The Motley Fool (**fool.com**) for financial advice; music lovers go to **mp3.com**
Relations or practices	Members are organized around certain life experiences. Example: **seniornet.com** is for senior citizens. Professional communities also belong to this category. Example: **aboutus.org/Isworld.org** is a space for information systems faculty, students, and professionals
Fantasy/role playing	Members share imaginary environments. Examples: sports fantasy teams at **espn.go.com** see **sports.yahoo.com/fantasy**, **horseracegame.com**
Social networks	Members communicate, collaborate, create, share, form groups, entertain, and more. Facebook is the leader
Virtual worlds	Members use avatars to represent themselves in a simulated 3-D environment where they can play games, conduct business, socialize, and fantasize about whatever they like

is limited to people who meet certain requirements (e.g., work for a particular employer or work in a particular profession). Private communities may be internal (e.g., only employees can be members) or external (for customers and suppliers).

Classification Categories

Another option is to classify the members as *traders, players, just friends, enthusiasts*, or *friends in need*. A more common classification recognizes six types of Internet communities: (1) transaction, (2) purpose or interest, (3) relations or practices, (4) fantasy, (5) social networks, and (6) virtual worlds.

The most popular type of virtual community today is the social network service, the subject of our next section.

Social Network Service Sites

A social network is a virtual community whose members interact, share, and exhibit social behaviors. They are hosted by social network sites (or services).

A Definition and Basic Information

As you may recall, in Chapter 1 we defined a *social network* (or *service*) site as a Web-based company, such as Facebook, that provides free Web space and tools for its community members to build profiles, interact, share, connect, and create and publish content.

A preliminary list of the characteristics and capabilities of social network sites (SNAs) was provided in Section 1.3 of Chapter 1. More capabilities are provided in this section.

SNAs are also known as *social networks* and they appear in a variety of forms; the most well-known, mostly social-oriented network is Facebook. LinkedIn is a business-oriented network.

A Global Phenomenon

Although Facebook, Pinterest, Twitter, Google+, and other social networks attract the majority of media attention in the United States, they also have many members in other countries. Other country-based social network sites are proliferating and growing in popularity worldwide. For example, **renren.com**, **weixin.qq.com**, and **us.weibo.com** are large communities in China; **mixi.jp** has been widely adopted in Japan; and **vk.com** in Europe (primarily in Russia). Dutch users have embraced **hyvesgames.nl**; and Nasza Klasa (**nk.pl**) has captured Poland. **Hi5.com**, a social network (now part of Tagged), has been popular in Latin America, the USA, South America, and Europe. **Migente.com** is an English language site geared toward the Hispanic community. Additionally, previously popular communication and community services have begun implementing social networking features. For example, the Chinese instant messaging service **qq.com** became one of the largest social networking services in the world once it added profiles and made friends visible to one another. Finally, Cyworld conquered the Korean market by adding "buddies."

Representative Capabilities and Services Provided by Social Network Sites

Social network sites provide many capabilities and services such as:

- Users can construct a Web page where they present their profile to the public.
- Users can create a circle of friends who are linked together.
- The site provides discussion forums (by subgroup, by topic).
- Photo, video, and document viewing and sharing (streaming videos, user-supplied videos) are supported.
- Wikis can be used to jointly create documents.
- Blogs can be used for discussion, dissemination of information, and much more.
- These sites offer community e-mail and instant messaging (IM) capabilities.
- Experts can be made available to answer member queries.
- Consumers can rate and comment on products and services.
- Online voting may be available to poll member opinions.
- The site may provide an e-newsletter.
- The site supports conference (group) chatting, combined with document and image sharing.
- Message and bulletin board services are available for posting information to groups and individuals on the website.
- The site provides storage for content, including photos, videos, and music.
- Users can bookmark self-created content.
- Users can find other networks, friends, or topics of interest.

These capabilities can make social networks user-friendly.

Business-Oriented Public Social Networks

Business-oriented social networks, also known as *professional social networks*, are social networks whose primary objective is to facilitate business. The prime example here is **linkedin.com**, which provides business connections and enables recruiting and finding jobs (see Chapter 8). Another example is **craigslist.org**, the largest classified ad site, which offers many social-oriented features (see Case 2.2 later in this section). Another example is The Brain Yard, a place for executives to find news, knowledge, and contacts. Finally, **doximity.com** is a medical network for U.S. physicians and health care professionals. Businesses are using business social networks to advertise their brands as well as making and enhancing contacts globally.

Some Capabilities of Business-Oriented Networks

With Web 2.0 tools, companies can engage users in new innovative ways (for an example, see Online File W2.4). More direct communication is achieved by offering additional ways for consumers to engage and interact among themselves and with organizations. For example, a company can:

- Encourage consumers to rate and comment on products and services.
- Allow consumers to create their own topic areas and build communities (forums) around shared interests possibly related to a company's products.
- Hire bloggers or staff editors who can lead discussions about customer feedback.
- Provide incentives such as sweepstakes and contests for customers to get involved in new product (service) design and marketing campaigns.
- Encourage user-made videos about products/services and offer prizes for winning video ads.
- Provide interesting stories in e-newsletters.

An interesting business-oriented company that uses classified ads is **craigslist.org**, which is described in Case 2.2.

CASE 2.2: EC APPLICATION CRAIGSLIST: THE ULTIMATE ONLINE CLASSIFIED COMMUNITY

If you want to find (or offer) a job, housing, goods and services, social activities, romance, advice, and much more in over 700 local sites in 13 languages, and in more than 70 countries worldwide (2016 data), go to Craigslist (**craigslist.org**). The site has much more information than you will find in newspapers. According to their website, Craigslist receives 80 million new classified ads every month. Each month there are more than 60 million visitors to the site in the United States alone (see **craigslist.org/about/factsheet**). Finally, there are over 50 billion page views per month. For more statistics, see **alexa.com/siteinfo/craigslist.org**. According to Alexa.com, Craigslist is the eleventh most visited site in the United States.

In addition, Craigslist features over 100 topical discussion forums with more than 200 million user postings. Every day, people from 700 local sites in 70 countries worldwide check classified ads and interact on forums. Craigslist is considered by many as one of the few websites that could change the world because it is simply a free social-oriented, popular, and useful notice site. Although many other sites offer free classifieds, no other site comes close to Craigslist.

Users cite the following reasons for the popularity of Craigslist:

- It gives people a voice.
- It is consistent and champions down-to-earth values.
- It illustrates simplicity.
- It has social networking capabilities.
- It can be used for free in most cases (you can post free ads, except for business; for rent, or for sale ads in a few large cities; some employment ads; and for adult and therapeutic services).
- It is effective and well visited.

For more information, see **craigslist.org/about/factsheet**.

As an example of the site's benefits, we provide the personal experience of one of the authors, who needed to rent his condo in Long Beach, California. The usual process to get the condo rented would take 2–4 weeks and $400–$700 in newspaper ads, plus ads in local online sites for rental services. With Craigslist, it took less than a week at no cost. As more people discover Craigslist, the traditional newspaper-based classified ad industry will probably be the loser; ad rates may become lower, and fewer ads will be printed.

In some cities, Craigslist charges for "help wanted" ads and apartments listed by brokers. In addition, Craigslist may charge for ads with rich media features.

Concerns About Craigslist

Critics charge that some users post illegitimate or false ads on the site and the Craigslist staff are unable to effectively monitor this practice. Some users have complained about

questionable ads and scams being posted. Craigslist also attracts criminals seeking to commit fraud by paying with bad checks. The anonymity of Craigslist's users as well as the lack of ratings encourages unlawful acts.

Another concern is that adult services make up a significant portion of the total traffic on the site and may involve illegal activities, especially concerning minors. With the sheer volume of users and ads posted per day, such monitoring is not possible given the modest workforce of only 40 plus that the site employs (data of 2016). (As of September 8, 2010, Craigslist has been trying to control such activities.)

On the other side, many supporters contend that attempts to control Craigslist may simply cause users to use other, less-regulated sites.

In China, a company called 58.com Inc. (**58.com**) is modeled after Craigslist and provides similar information and generates sizeable revenue and profits. The company is listed in the NYSE under the symbol WUBA.

Sources*:* Based on Clark (2008), Liedtke (2009), and **craigslist.org** (accessed March 2016).

Questions

1. Identify the business model used by Craigslist.
2. Visit **craigslist.org** and identify the social network and business network elements.
3. What do you like about the site? What do you dislike about it?
4. Why is Craigslist considered by some as a site that "could change the world?"
5. What are some of the risks and limitations of using this site?

Private (or Enterprise) Social Networks

In addition to public-oriented business social networks such as LinkedIn and Craigslist, there are many private social networks (also called enterprise networks) within organizations. An example is the opening case in Chapter 1 (Starbucks). Other companies with notable internal networks for employees only include Northwestern Mutual. According to the company, they have an internal blog ("Mutualblog") and a Yammer account internally, which is used by over 1000 employees to dialog and make connections on nonproprietary topics. Private networks are for employees, business partners, and customers.

Business Models and Services Related to Social Networking

Social network sites provide innovative business models, ranging from customer reviews of food and night life in India (**mumbai.burrp.com**), to users who dress up paper dolls that look like celebrities (**stardoll.com**). New revenue models are being created almost daily. Although some generate limited revenue, others succeed. Lately, the Pinterest model has become popular.

Many communities attract advertisers. For example, **vivapets.com** attracts pet lovers with wiki contributions in its attempt to catalog all pet breeds. The site attracts hundreds of thousands of unique visitors per month. Obviously, pet food-related vendors are interested in placing ads there.

Some of the popular social-oriented services are:

1. **Xanga.com** hosts blogs, photo blogs, and social networking profiles. Users of Xanga are referred to as "Xangans." Xanga was originally launched as a site for sharing book and music reviews. Today it is one of the most popular blogging and networking services, with an estimated 10,000,000–100,000,000 users worldwide. Xanga has a very popular blogring in Hong Kong, Macao, and Singapore. (A *blogring* links together a number of blogs that share mutual interests and can be searched by subject matter.)
2. **Digg.com** is a community-based website that takes short reports from members on podcasts, news articles, and videos, which are then voted on by other participants. Digg is available on a website, iPhone app, and daily e-mail.

Mobile Social Commerce

Mobile computing is growing faster than any other type of EC computing. According to Bent (2014), mobile data traffic grew 81% (from 820 petabytes per month in 2012 to 1.5 exabytes per month in 2013). This clearly boosts mobile commerce. According to The Retail Bulletin (2012), 64% of smartphone consumers used them to shop online. In subsequent chapters, we will discuss many mobile applications. Instagram is considered an important factor in the future of mobile social commerce. Here we present the basic definitions, technologies, and a few examples.

Mobile Social Networking

Mobile social networking refers to social networking where members chat and connect with one another using any mobile device. Most major social networking websites now offer mobile services. By Q4 2013, Facebook had 945 million mobile users out of a total 1.23 billion million monthly active users (see **techcrunch.com/2014/01/29/facebook-is-a-mobile-ad-company** and **newsroom.fb.com/Company-info**). Some social networking sites offer mobile-only services (e.g., **path.com** and **javagala.ru**).

Mobile social networking is especially popular in Japan, South Korea, and China, generally due to better data pricing (flat rates are widespread in Japan). In Japan and South Korea, where 4G networks offer more bandwidth, the leaders in social networking are **mixi.jp** and Mobage by Dena (**mbga.jp**). Numerous other mobile social networking sites have been launched in Japan. For statistics on the exponential growth of mobile social networks, see **comscore.com**.

Experts predict that mobile social networks will experience explosive growth in the future.

Mobile Enterprise Networks

Several companies have developed (or fully sponsor) mobile-based social networks. For example, Coca-Cola has a social network that can only be accessed by mobile devices. There Coca-Cola employees attempt to influence young people to buy Coke's products.

Examples of Social Mobile Commerce Applications

There are several types of social mobile applications. Illustrative examples are provided next.

Example 1

IBM is a leader in social commerce adoption on mobile devices. Following are some examples of IBM's initiatives.

- IBM Mobile Connect (formerly IBM Lotus Mobile Connect; social media and social networks building software, abbreviated as Connect) is popular in industry. Customers can get immediate access to blogs, wikis, and other tools. They can also share photos, videos, and files on major mobile devices (e.g., Android, iOS).
- IBM Connections allows people to generate and vote on ideas at work (see **ibm.com/connections/blogs/SametimeBlog/?lang=en**).
- The capabilities in IBM Connections 5.0, such as Moderations, or Ideation Blogs, enable workers to embrace networks of engaged people.

Example 2

With the current technology, we also see a trend toward sophisticated interactions of Internet social networks with images, voice, and videos. This is expected to be a powerful managerial and marketing feature in the near future.

Recent Innovative Tools and Platforms for Social Networking

A large number of software tools and platforms are available for social networking. Well-known tools are blogs, microblogs, and wikis, which are described in Online File W2.1. Note that the capabilities of these tools are improving continuously. Here we provide a representative list of recent innovative tools:

- **Snapchat.com**—A mobile photo messaging service for "chatting" with friends through photos, videos, and captions "like 'texting' with pictures or videos" (see **webtrends.about.com/od/Iphone-Apps/a/What-Is-Snapchat.htm**).
- **WhatsApp.com**—According to its website, WhatsApp is a cross-platform free mobile messaging app for smartphones. Users can form groups, send each other unlimited images, video and audio media messages. The company was acquired by Facebook in 2014 for around $19 billion. WhatsApp was used by over one billion people each month in January 2016 (Ahmed 2016).
- **Tranzactive.com**—Enabler of real-time conversational translation mainly in social media.
- **Droid Translator** (**tiwinnovations.com**)—Translates phone calls, video chats (e.g., Skype), and text conversations into 29 different languages. (For more information, see Petroff 2014).
- **Viber.com**, **line.me/en**, etc.—Companies that provide free voice and video calling, etc. for mobile devices and desktops (e.g., Viber for Desktop).
- **Instagram.com**—A free platform for sharing photos and videos. As a social network, it allows for creation of reviews, etc. (Acquired by Facebook in 2012.)
- **Hshtags.com**; ("A social media search engine dedicated to hashtags")—Enables users to see in real time, all public content related to any keyword and join any related public conversation in real time (see **digitaltrends.com/social-media/new-search-engine-like-google-social-web**).

Mobile Community Activities

In many mobile social networks, devices can be utilized to conduct the same activities that are performed in a nonmobile setting. Customers can even create their own mobile community.

Mobile video sharing, which sometimes is combined with photo sharing, is a new technological and social trend. Mobile video-sharing portals are becoming popular (e.g., see **spicedigital.in/mobile-operators/mobile-vas/video/video-sharing-portal**). Many social networking sites offer mobile features.

For 2016 statistics about social commerce, see **bazaarvoice.com/research-and-insight/social-commerce-statistics**.

SECTION 2.6 REVIEW QUESTIONS

1. Define virtual communities and describe their characteristics.
2. List the major types of virtual communities.
3. Define social network.
4. Describe mobile social commerce.
5. List some major social network sites.
6. Describe the global nature of social networks.
7. Describe social networking.
8. Describe mobile social networking and commerce.

2.7 EMERGING EC PLATFORMS: AUGMENTED REALITY AND CROWDSOURCING

Several technologies are used as platforms that enable innovative EC applications. Here we present two.

Augmented Reality

An increasing number of business applications use the technology of *augmented reality* (AR). See Malik (2016) for more details. The term AR has several definitions depending on its field of applications. According to Wikipedia, **augmented reality** is "a live or indirect view of a physical, real-world environment whose elements are *augmented* (or supplemented) by computer-generated sensory input such as sound, video, graphics or GPS data" (see **en.wikipedia.org/wiki/Augmented_reality**). Such an arrangement helps people enhance the sensory perception of reality. The computerized layer can be seen through an application on mobile devices such as smartphones, webcams, or 3D glasses (including 3D TV). Google developed Augmented Reality (AR) glasses called "Google Glass" (other companies have similar glasses; see Chapter 6).

Applications in E-Commerce

The major applications in e-commerce are in the areas of advertising and marketing (for details, see Corpuz 2015), as will be described in Chapter 9. An application in real estate is described in Chapter 3. There are potentially many other areas of applications. For example, Corpuz (2015) describes several business applications. Google's AR is being used by several companies. For example, Walgreens is using AR for improving customer loyalty (see Kaye 2014). Finally, Wikipedia lists many e-commerce related applications of AR.

Example 1: Net-a-Porter

This innovative company (Chapter 1) is using an iPhone/iPad app to view an AR "shopping window." As can be seen in the video "Net-A-Porter Augmented Reality Shopping Windows" (1:37 min) available at **digitalbuzzblog.com/net-a-porter-augmented-reality-shopping-windows**, customers at the company's physical store can point the mobile device camera at a clothing display (e.g., in the stores or store windows), and see a 360 degree view of the clothes. They also can see presentations at fashion shows, price, availability, and other relevant information. Furthermore, the window shoppers can immediately buy the clothing online using their mobile device (for the download, see **itunes.apple.com/ne/app/net-a-porter/id318597939?mt=8**).

Example 2: IKEA

IKEA uses AR to show how its furniture can fit in your house. For details on this mobile devices app, see Truong (2013) and watch the video "Place IKEA Furniture in Your Home with Augmented Reality" at **youtube.com/watch?v=vDNzTasuYEw**. The technology used is made by Snapshop, a free app for iOS systems.

Applications in Social Gaming

AR is already used in several applications. According to **t-immersion.com/augmented-reality/use-cases/social-augmented-reality-games**, social AR gaming is a superb tool for generating marketing leads and brand recognition because of the huge number of players engaged in games connected with a product.

Virtual Reality (VR)

Often confused with augmented reality is *virtual reality*. **Virtual reality** is a computer-generated simulation of a real-life environment in which users can be immersed. People feel like they are inside the environment and they can manipulate it (e.g., see Parisi 2016). To experience VR, user must wear special glasses and handsets. The technology has been around for decades but was used mainly for computer games. Lately, however, VR is moving to be an EC element (e.g., see Williams 2016). An example is Facebook's Oculus, which is experimenting with commercial applications. This is an example of combining social commerce and virtual reality. For details, see Meola (2016).

Comparing AR and VR

According to McKalin (2015), both technologies are similar in their goal of immersing the users. But they do it in different ways and for different purpose. For details, see McKalin (2015), Boyajian (2015), and Aukstakalnis (2016).

Crowdsourcing

Another platform for e-commerce is crowdsourcing. Crowdsourcing is a platform for collective intelligence in e-commerce and social commerce (see the industry website **crowdsourcing.org**). Here we present the essentials of the technology. In Chapter 8 we present some applications that are based on this technology.

Definitions and Major Concepts

The term *crowd* refers to a large group of people such as a group of consumers, employees of a corporation, or members of a social network who offer expertise.

AR is developed into apps for mobile devices to blend digital components into real worlds.

Crowdsourcing utilizes crowds to collectively execute tasks such as solving problems, innovating, or getting large projects completed by dividing the work among many people. The term was coined by Jeff Howe in June 2006 (Howe 2008). In the crowdsourcing process, the initiator recruits a crowd (e.g., customers) to create content, a cumbersome task (e.g., translating Wikipedia articles), or in research and development. This is based on the idea that two heads are better than one. The collective intelligence of large groups is assumed to be able to solve complex problems at low cost (Zeref 2015; Brabham 2013).

The basic elements of crowdsourcing are illustrated in Figure 2.4. Three elements are involved: the task(s) to be carried out, the crowd, which is used to work on the task, and the models and processes used by the crowd to execute the task. These elements are connected by features related to the tasks and the crowd (such as the psychology of the crowd), the technologies used (such as idea generation and voting), and implementation issues such as incentives paid to the participants.

The Process of Crowdsourcing

Crowdsourcing can be viewed as a collective problem-solving or work-sharing process, and usually is conducted as a Web-based activity. In a typical use of crowdsourcing, problems are broadcasted either to a known crowd (e.g., employees or business partners) or to an *unknown* group of participants (e.g., expert problem solvers or consumers). The communication usually starts as an open call for solutions or ideas (see first step in Figure 2.5). The members of the crowd are organized as an online community, and the members submit individual work (e.g., solutions). The crowd may also discuss the solutions and may vote for a final short list. Alternatively, the short list is then prioritized (e.g., ranked). The final selection can be made by the crowd or by manage-

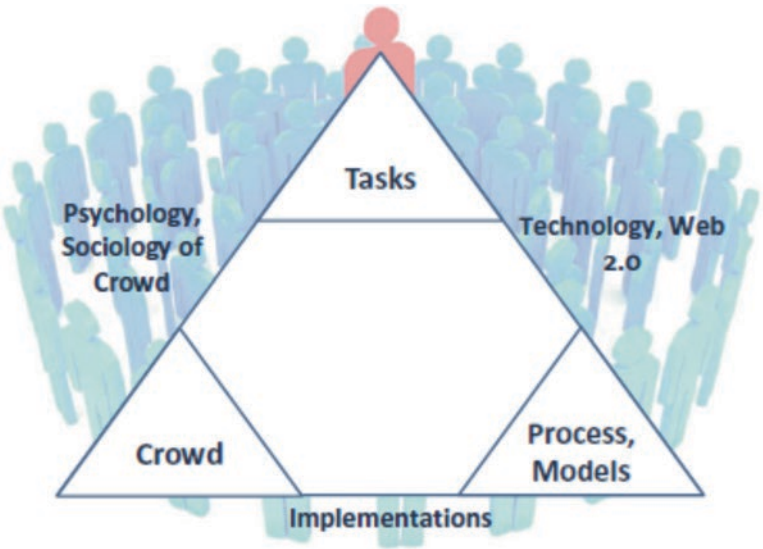

Figure 2.4 The elements of crowdsourcing

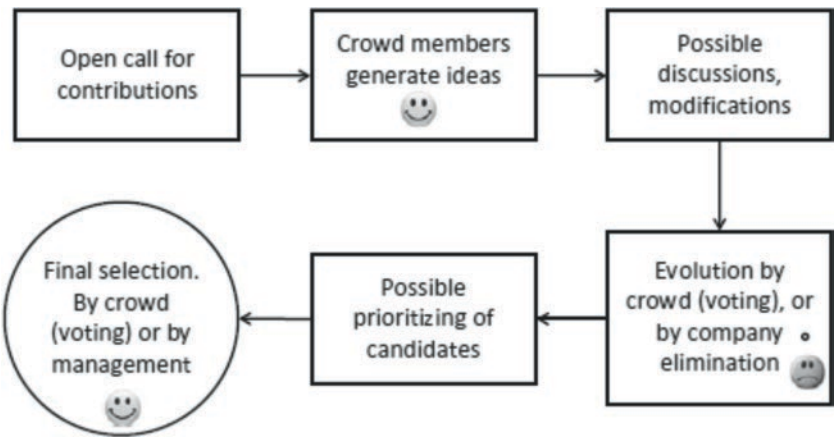

Figure 2.5 A typical crowdsourcing process

ment (Figure 2.5). The winning individuals in the crowd are well compensated, either monetarily or with special recognition. In other cases, the only rewards may be the satisfaction with a job well done. The use of crowdsourcing can yield results from amateurs or unrecognized professionals.

Example: Starbucks

Starbucks introduced My Starbucks Idea (**mystarbucksidea.force.com**), a social media site designed to solicit ideas and feedback from customers (see opening case in Chapter 1). The site was built around four key themes: (1) ideas are user generated; (2) users can vote to short list ideas, discussing them before and/or after the vote; and (3) company employees act as "idea partners," providing answers to questions and leading discussions.

The crowd's idea generation process is visible to the entire Starbucks community. The members can see the status of each proposal.

An overview of crowdsourcing is provided in BrightSightGroup's video titled "Jeff Howe - Crowdsourcing" (3:20 min) at **youtube.com/watch?v=F0-UtNg3ots**, also see **crowdsourcing.org** and Crowdconsortium (**crowdconsortium.org**). These specialists have developed best practices for the industry. For more about crowdsourcing, see Chapter 8.

Benefits of Crowdsourcing

The major perceived benefits of crowdsourcing include the following:

For additional benefits to crowdsourcing, see Sherman (2011).

- Problems can be analyzed or solved at comparative little cost. (Payment can be determined by the results; however, sometimes there is no monetary payment, just praise or accolades).
- Solutions can be reached quickly since many people work on the needed research project simultaneously. Also, designs of products may be expedited.
- The contributing crowd may reside within the organization; therefore, talents may be discovered.
- By listening to the crowd, organizations gain first hand insight into the desires of their customers (or employees). There is built-in market research when the crowd is composed of customers.
- Crowdsourcing can tap into the global world of ideas. The crowd may include business partners, customers, academicians, etc., and the members of the crowd can reside in different countries.
- Customers tend to be more loyal if they participate in a company's problem-solving project (see the opening case in Chapter 1).

Uses of Crowdsourcing in E-Commerce

There are several EC applications of crowdsourcing—notable is the creation of Wikipedia. Sherman (2011) and Fitchard (2015) present many successful applications; the major ones are described in Chapter 8.

SECTION 2.7 REVIEW QUESTIONS

1. Define augmented reality.
2. Describe how AR can facilitate EC.
3. Define crowdsourcing.
4. List the elements of crowdsourcing.
5. Describe the process of crowdsourcing.
6. What are the major benefits of crowdsourcing?
7. How is crowdsourcing used in EC?

2.8 THE FUTURE: WEB 3.0, WEB 4.0, AND WEB 5.0

Web 2.0 is here. What's next? The answer is a still-unknown entity referred to as *Web 3.0*, the future wave of Internet applications. Some of the desired capabilities of Web 3.0 will be discussed later in this section. In general, there is optimism about the future of the use of the Web 3.0 to facilitate EC (see **siliconangle.com/blog/2013/08/02/the-future-of-ecommerce-with-web-3-0**).

Web 3.0: What Does the Future Hold?

Web 3.0 is projected to deliver a new generation of business applications that will see business and social computing converge. Web 3.0 could change the manner in which people live and work as well as the organizations where they work, and it may even revolutionize social networking (see 1stwebdesigner 2015).

According to several experts, Web 3.0 could have the following capabilities:

- Make current applications smarter by introducing new intelligent features
- Provide easier and faster interaction, collaboration, and user engagement
- Facilitate intelligent-based powerful search engines
- Provide more user-friendly application-creation and human-computer interaction capabilities
- Increase the wisdom and creativity of people

- Enable smarter machines (Gartner 2015)
- Enable much wider bandwidth
- Enable better visualization including 3-D tools
- Simplify the use of mobile computing and mobile commerce

For additional capabilities, see O'Connell's (2015) slide show.

Web 3.0 and the Semantic Web

One of the major possible platforms of Web 3.0 technologies is the *Semantic Web*. The term was presented by the inventor of the Web, Tim Berners-Lee, who visualized the Semantic Web as the platform for making the Web smarter. There is no standard definition of **Semantic Web**. It is basically a group of methods that focus on machines (in contrast with Web 2.0 that focuses on people). The technology attempts to enable computers to understand the semantics (i.e., the meaning) of information, by using natural language understanding tools. For a video titled "Evolution Web 1.0, Web 2.0 to Web 3.0" (3.58 min), see **youtube.com/watch?v=bsNcjya56v8**.

A similar view regarding the role of the Semantic Web is expressed by Borland (2007), who believes that new Web 3.0 tools (some of which are already helping developers put together complex applications) will enhance and automate database searches, assist people in choosing vacation destinations, and make sorting through complicated financial data more efficient.

An experimental Semantic Web browser has been in use lately. This browser enables users to display data, draw graphs, and make browsing more interactive (e.g., see **w3.org/standards/semanticweb**). Another example would be "friend-of-a-friend" networks, where individuals in social networks provide data in the form of links between themselves and friends.

For a video titled "Web 3.0—The Internet or Things" (4:29 min), see **youtube.com/watch?v=F_nbUizGeEY**.

Concerns

The following are a few concerns regarding the implementation of Web 3.0 and the future of EC.

- **Future Threats.** According to Stafford (2006), Laurent (2010), and the authors' experiences, the following trends may slow the growth of EC and Web 3.0, and may even cripple the Internet.
  - **Security and privacy concerns.** Shoppers, as users of e-banking and other services, and members of social networks, worry about online security and privacy. The Web needs to be made safer.
  - **Lack of Net neutrality.** If the big telecommunications companies are allowed to charge companies for a guarantee of faster access, critics fear that small innovative Web companies could be demolished by the big companies that can afford to pay more for efficient Internet usage.
  - **Copyright complaints.** The legal problems of YouTube, Craigslist, Wikipedia, and others may result in a loss of originality, dedication, and creativity of user-generated content.
  - **Insufficient connectivity.** Upstream bandwidths are still constraining applications, making uploading of video files a time-consuming task.
- **Language Fitness.** There will be a need to reconsider the existing spoken languages with Web 3.0 taxonomies and schemes.
- **Standards.** There will be a need for architectural standards for Web 3.0.

Therefore, some believe that the Semantic Web will never work (see the 91 min video at **youtube.com/watch?v=oKiXpO2rbJM**).

Despite these concerns, Web 3.0 and e-commerce could thrive due to several innovations in the technological environment.

The Technological Environment

The future of EC and the Semantic Web is dependent on how far the relevant information technology advances (e.g., see Gartner 2015). Of the many predictions, we cite two here. Also, see Gartner's annual reports about Strategic Technology Trends at **gartner.com/technology/research**.

Web 4.0

Web 4.0 is the Web generation after Web 3.0. It is still an unknown entity. It is known as Symbiotic Web. For a discussion, see Koren (2013).

Web 5.0

According to Patel (2013), "Web 5.0 is still an underground idea in progress and there is no exact definition of how it would be. Web 5.0 can be considered as a Symbionet Web, decentralized." Patel provides some technical information.

SECTION 2.8 REVIEW QUESTIONS

1. What is Web 3.0, and how will it differ from Web 2.0?
2. Define Semantic Web.
3. List the major potential inhibitors and concerns of e-commerce and Web 3.0.
4. What are the major influencing computing and IT trends?
5. What are Web 4.0 and Web 5.0?

MANAGERIAL ISSUES

Some managerial issues related to this chapter are as follows.

1. **Should we use auctions for selling?** A major strategic issue is whether to use auctions as sales channels. Auctions do have some limitations, and forward auctions may create conflicts with other distribution channels. If a company decides to use auctions, it needs to select auction mechanisms and determine a pricing strategy. These decisions determine the success of the auctions and the ability to attract and retain visitors on the selling site. Auctions also require support services. Decisions about how to provide these services and to what extent to use business partners are critical to the success of high-volume auctions.
2. **Should we barter?** Bartering can be an interesting strategy, especially for companies that lack cash, need special material or machinery, and have surplus resources. However, the valuation of what is bought or sold may be hard to determine, and the tax implications in some countries are not clear.
3. **How do we select merchant software?** There are many products and vendors on the market. Small businesses should consider offers from Yahoo! or eBay since the software is combined with hosting and offers exposure to the vendor-managed e-market. The functionalities of the software as well as the ease of building webstores need to be examined.
4. **How can we use Facebook and other social networks in our business?** There are many possibilities that are presented in Chapter 7, mostly in marketing and advertising. Any progressive organization should examine and experiment with social networking.

SUMMARY

In this chapter, you learned about the following EC issues as they relate to the chapter's learning objectives.

1. **Activities and mechanisms.** The major activities are information dissemination and presence, online trading, collaboration, entertainment, and search. The major mechanisms are marketplaces, webstores, shopping carts, catalogs, search engines, Web 2.0 tools, and virtual communities.

   Most of the activities are between sellers and buyers. However, there also are collaboration activities among supply chain members as well as among people within organizations. EC attempts to automate the interaction process for the above activities.
2. **E-marketplaces and their components.** An e-marketplace or marketspace is a virtual market that does not suffer from limitations of space, time, or borders. As such, it can be very efficient and effective. Its major components include customers, sellers, products (some digital), infrastructure, front-end processes, back-end activities, electronic intermediaries, other business partners, and support services.

   The role of intermediaries will change as e-markets develop: Some will be eliminated (disintermediation); others will change their roles and prosper (reintermediation). In the B2B area, for example, e-distributors connect manufacturers with buyers by aggregating e-catalogs of many suppliers. New value-added services that range from content creation to syndication are mushrooming.
3. **The major types of e-marketplaces.** In the B2C area, there are webstores and e-malls. In the B2B area, there are private and public e-marketplaces, which may be vertical (within one industry) or horizontal (across different industries). Exchanges are the platform for many buyers and sellers to meet and trade. Different types of portals provide access to e-marketplaces.
4. **Electronic catalogs, search engines, and shopping carts.** The major mechanisms in e-markets are e-catalogs, search engines, software (intelligent) agents, and electronic shopping carts. These mechanisms, which are known as merchant suites, facilitate EC by providing a user-friendly and efficient shopping environment.
5. **Types of auctions and their characteristics.** In forward auctions, bids from buyers are placed sequentially, either in increasing mode or in decreasing mode. In reverse auctions, buyers place an RFQ and suppliers submit offers in one or several rounds. In name-your-own-price auctions, buyers specify how much they are willing to pay for a product or service, and an intermediary tries to find a supplier to fulfill the request. Penny auctions are forward auctions where a small fee is paid each time a bid is made. The final member to bid wins the auction when the designated time is up.
6. **The benefits and limitations of auctions.** The major benefits for sellers are the ability to reach many buyers, sell quickly, and save on intermediary commissions. Buyers have excellent access to auctions, and a chance to obtain bargains and collectibles while shopping from their homes. The major limitation is the possibility of fraud.

7. **Bartering and negotiating.** Electronic bartering can greatly facilitate the swapping of goods and services among organizations, thanks to improved search and matching capabilities, which is managed by bartering exchanges. Software agents can facilitate online negotiation.
8. **The structure and role of virtual communities.** Virtual communities create new types of business opportunities. They bring people with similar interests together at one website. (Such groups are a natural target for advertisers and marketers.) Using chat rooms, discussion spaces, and so forth, members can exchange opinions about certain products and services. Of special interest are communities of transactions, whose interest is the promotion of commercial buying and selling. Virtual communities can foster customer loyalty. This may increase sales of products made by vendors that sponsor communities, and facilitate customer feedback for improving service and business operations.
9. **Social networks as EC mechanisms.** These are very large Internet communities that enable the sharing of content, including text, videos, and photos, and promote online socialization and interaction. Hundreds of social networks are emerging around the world, competing for advertising money. Millions of corporations advertise, entertain, and even sell on social networks.

   Business-oriented communities concentrate on business issues, both in one country and around the world (e.g., recruiting, finding business partners). Social marketplaces meld social networks and some aspects of business. Notable business-oriented social networks are LinkedIn and XING. Some companies are active in public social networks such as Facebook. Other companies own and operate their own social networks within the company, which are known as enterprise social networks. Their members are usually employees and retirees. They are used mainly for collaboration, knowledge creation and preservation, training, and socialization. Many large companies have such networks (e.g., IBM, Wells Fargo, Northwestern Mutual).
10. **Augmented Reality (AR) and crowdsourcing.** These emerging technologies facilitate two types of EC activities. AR blends visual aspects of computer and physical worlds. Thus, it can facilitate advertisement and presentation of information. It works by pointing a mobile device (e.g., smartphone) to a product or building and adds information to what you see (e.g., 360 degree view, price tag). Crowdsourcing solicits the wisdom of the crowd for idea generation or problem-solving. It also is used to divide a large task among many people, each of whom is executing a different, small subtask.
11. **Web 3.0 and Web 4.0, and Web 5.0.** Web 3.0, the next generation of the Web, will combine social and business computing. It will be more portable and personal, with powerful search engines, increased clout, and greater connectivity with the wireless environment and on-demand applications. Knowledge management will be one of its main pillars. The Semantic Web will play a major role in Web 3.0 applications. Web 3.0 and its applications will depend on IT trends such as the developments in cloud computing, utility computing, parallel processing, and machine intelligence. Web 4.0 is a futuristic Web that will be built on ubiquitous and intelligent systems. It will connect "islands" of intelligence from different sources. Web 5.0 is only a theory, but can be considered as a Symbionet Web, decentralized.

KEY TERMS

Augmented reality
Back end
Bartering
Bartering exchange
Business-oriented social network
Buy-side e-marketplace
Crowdsourcing
Desktop search
Digital products
Disintermediation
Double auction
Dynamic pricing
E-bartering (electronic bartering)
E-distributor
Electronic auction (e-auction)
Electronic catalog (e-catalog)
Electronic shopping cart
E-mall (online mall)
E-marketplace
Enterprise search
Forward auction
Front end
Intermediary
Mobile portal
Mobile social networking
Name-your-own-price model
Penny auction
Reverse auction (bidding or tendering system)
Search engine
Sell-side e-marketplace
Semantic Web
Virtual community
Virtual reality
Voice portal
Web 3.0
Web 4.0
Web (information) portal
Webstore (storefront)

DISCUSSION QUESTIONS

1. Compare physical marketplaces with marketspaces. What are the advantages and limitations of each?
2. Discuss the competitive advantage of Craigslist using classified ads.
3. Describe the advantages of Web 3.0 over Web 1.0 and Web 2.0.
4. Discuss the need for portals in EC.
5. How do business-oriented networks differ from regular social networks such as Facebook?
6. Why are social marketplaces considered to be a Web 2.0 application?
7. Discuss the following statement: "Technically, you can put together a portal in a weekend, but culturally there are a slew of things to consider; therefore it takes much longer."
8. Discuss the pros and cons of selling cars via auctions.
9. Discuss the differences between virtual reality and augmented reality.

TOPICS FOR CLASS DISCUSSION AND DEBATES

1. Compare and contrast the efficiency of traditional markets with that of digital markets.
2. Some claim that social networking, especially microblogging and social network sites, displaces the traditional electronic bulletin board systems. Discuss.
3. Discuss the advantages of dynamic pricing strategy over fixed pricing. What are the potential disadvantages of dynamic pricing?
4. Enter Facebook and search for companies that do auctions on the site. Identify the different types of auctions on the site.
5. What is the advantage of a business using eBay instead of conducting auctions from its own site? Distinguish between C2C and B2B cases.
6. Debate: Should companies build in-house social networks for external activities or use existing public social networks (e.g., see Roberts 2008)?
7. Debate: Should Craigslist and YouTube monitor and control what users publish there? Who will pay the cost?
8. Debate: Social network services can provide good security to enterprise social networks. However, security may limit users' creativity and disrupt the business. Should a company use such a service?
9. Debate: Some research suggests that the use of public social networks by employees during work hours can be good for a business because employees develop relationships and share information, which increases productivity and innovation. Others say it is a waste of time and ban the use of Facebook, YouTube, and other such sites at work.
10. Debate the business value of social networking.
11. Debate: Facebook and Twitter compete for advertisers' money. Which one has a better chance to get more ad money and why?
12. Some of the largest social media networks exist in China (**qq.com**, **qzone.qq.com**, **us.weibo.com**, **weixin.qq.com**, and **renren.com**). Find information about these networks and list their properties. How do they differ from U.S. social networks?

INTERNET EXERCISES

1. Enter **tiwinnovations.com** and **tranzactive.com** and compare their translation capabilities.
2. Examine how bartering is conducted online at **tradeaway.com**, **barterquest.com**, and **u-exchange.com**. Compare and contrast the functionalities and ease of use of these sites.
3. Enter **volusion.com** and identify all specific e-commerce mechanisms (or solutions) provided by the company.
4. Enter **respond.com** and request a product or a service. Once you receive replies, select the best deal. You have no obligation to buy. Write a short report based on your experience.
5. Enter **dtsearch.com** and find its capabilities. What type(s) of search does it conduct (e.g., desktop, enterprise, general)?
6. Enter **cars.com**. List all services available to both sellers and buyers of cars. Compare it to **carsdirect.com**. Finally, identify the revenue sources of both sites.
7. Enter **ups.com**.
   (a) Find out what information is available to customers before they send a package.
   (b) Find out about the "package tracking" system; be specific.
   (c) Compute the cost of delivering a 10″ × 20″ × 15″ box, weighing 40 pounds, from your hometown to Long Beach, California. Compare the cost for the fastest delivery option with the lowest possible delivery cost.
   (d) Prepare a spreadsheet using Excel for two different types of calculations available on the UPS site. Enter data to solve for two different calculations.
8. Enter **magicleap.com** and find the company's activities in augmented reality. Write a report.
9. Enter **truecar.com** and review the services they provide to car buyers. Write a report.
10. Enter **ibm.com** and **oracle.com**. Prepare a list of the major products available for building corporate portals.

11. Enter **go.sap.com/index.html** and find the key capabilities of its enterprise portals. List the benefits of using five of the capabilities of SAP's portals.
12. Enter **networksolutions.com**. View the shopping cart demo. What features impress you the most and why? What related services does it provide? Compare it to **storefront.net**, **nexternal.com**, and **ecwid.com**.
13. Enter the website of a social network service of your choice. Build a homepage. Add a chat room and a message board to your site using the free tools provided. Describe the other capabilities available. Make at least five new friends.
14. Enter **vivapets.com** and **dogster.com** and compare their offerings.
15. Enter **w3.org**. Find material about Semantic Web (SW); check their RDF/FAQ and search for some applications. Write a report.

TEAM ASSIGNMENTS AND PROJECTS

1. **Assignments Related to the Opening Case**
   (a) Why is Pinterest considered a social network?
   (b) What are the company's business and revenue models?
   (c) How can manufacturers advertise on Pinterest?
   (d) Compare Pinterest and We Heart It. Pay attention to the business models.
   (e) Pinterest has a large amount of money. How does it use this money on its website to increase its competitive advantage?
2. Assign each group a large e-tailer (e.g., Amazon.com, Walmart.com, Target.com, Dell.com, Apple.com, and HP.com). Trace the purchasing process. Look at the catalogs, search engines, shopping carts, Web 2.0 features, and any other mechanisms that improve e-shopping. Prepare a presentation that includes recommendations for improving the existing process.
3. Compare the shopping carts from Shopify, Big Commerce, and Open Cart. Distinguish between hosted and self-hosted carts. Watch the O'Reilly Media video titled "Online Communities: The Tribalization of Business" (Part 1 is 6:15 min; Parts 2 and 3 are optional) at **youtube.com/watch?v=qQJvKyytMXU** and answer the following questions:
   (a) Why is the term tribalization used in the video?
   (b) What are virtual communities?
   (c) How can traditional businesses benefit from online communities?
   (d) What is the value of communities for the customers?
   (e) Compare social vs. marketing frameworks.
   (f) How are virtual communities aligned with the businesses?
   (g) Discuss the issues of measurements, metrics, and CSFs.
   (h) Optional: View Part 2 (**youtube.com/watch?v=U0JsT8mfZHc#t=15**) and Part 3 (**youtube.com/watch?v=AeE9VWQY9Tc**) (6:50 and 10:24 min, respectively), and summarize the major topics discussed.
4. The team's mission is to analyze Pinterest's U.S. and global competition, including similar companies in China and Brazil. Start by reading McKenzie (2012) about the Chinese social sites Meilishuo and Mogujie and compare them to Pinterest. Do the same for **weheartit.com**. Look at another country of your choice. Comment on the cultural differences. Write a report.
5. There are many applications of augmented reality. Find current ones and classify them by areas (e.g., marketing). Make a class presentation.

CLOSING CASE: MADAGASCAR'S PORT MODERNIZES CUSTOMS WITH TRADENET

Madagascar is an island-state in Africa whose port is critical to its trade activities and the overall economy. The country's customs operations play an essential part in the port operations.

The Problem

The trade administration process in this underdeveloped country used to be cumbersome and slow. This limited the trade volume and the customs revenue. Madagascar's "Trading Across Borders" indicator position was one of the world's lowest (143rd ranking). The country's Logistics Performance Index was also low (120th place).

The Business Process

According to CrimsonLogic (2014), "Everyone exporting to Madagascar must first register and fill in an electronic form, called Advance Cargo Information—ACI…, for each consignment. The exporter attaches copies of the trade documents, such as the commercial invoice, bill of lading and certificate of origin to the BSC and these are then transmitted electronically to the Customs in Madagascar to be verified for consistency and risk profiling."

Once completed, the importer or customs broker can submit the customs declaration electronically.

Once submitted, the approval process begins. It may involve several government agencies, port container terminal management, commercial banks, and the country's Central Bank and Treasury. While the submission portion was com-

puterized and fairly efficient, the approval process was not. Overall, the cargo clearance took over 15 days.

The Solution

Originally, Customs had been using ASYCUDA++ (a legacy computerized system designed by the United Nations Conference on Trade and Development). This system helped with the submission, but the overall process was still slow due to lack of integration of all participants' subsystems. The port had difficulties competing with other ports in the area that offered faster and more efficient customs management systems. Therefore, the Medagasy Community Network Services ("GasyNet") saw the need to create a single online platform to connect the entities in the trade community. They relied on a new system, which is an integration of TradeNet, an electronic data exchange, and ASYCUDA++.

What Is TradeNet?

TradeNet is an electronic data interchange (EDI) system (see Online Tutorial T2) developed in Singapore in 1989. It is now administered, operated, and maintained by CrimsonLogic of Singapore. TradeNet, which initially operated only in Singapore, is used today in several ports around the world, including Madagascar. The current system also includes Windows-based and Web-based portions. Using the TradeNet-based system the trading community can submit electronically all the forms needed by the Customs administration. The system then routes the applications for processing. Approved permits are then returned electronically to the senders via ASYCUDA++. The process starts before ships even enter the port. For an overview of TradeNet, see the United Nations Economic Commission for Europe (**unece.org/energy.html**).

The Integrated System

In order to improve the flow of information and provide an efficient trade environment, the TradeNet system was integrated with ASYCUDA++. The importers input their customs declarations data into GasyNet, which in turn transmits the data to TradeNet, which enables all involved partners to share data and transmit results. The results that are returned to TradeNet are transferred to GasyNet and then to the importers. To use TradeNet, users need to buy special software from TradeNet Frontend Solution. The software enables data entry by the users (e.g., the customs declarations) from PC's or mobile devices. The system provides permit status information, company billing inquiries, ability to retrieve lost permits, acknowledgement notification, an audit trail, permit listings, and more.

The system links the multiple partners in the trade by creating a single point of transaction for all the standard documents involved.

The Results

The system is an efficient platform for the B2B customs-related transactions. It reduced the cargo clearance time from more than 15 days to less than 5 days for sea shipments, which resulted in increased trade volume. In addition, customs revenue more than doubled in 5 years (accounting for around half of Madagascar's total income). Other recorded benefits include elimination of unnecessary bureaucracy and cost reduction due to paperless processes.

Finally, Madagascar's "Trading Across Borders" indicator improved from 143rd to 109th place, and their Logistics Performance Index ranking improved from 120th to 84th.

Sources: Based on Fjeldsted (2009), CrimsonLogic (2014), and Singapore Customs (2014).

Questions

1. Describe the role of GasyNet in the process.
2. Describe the contribution of TradeNet.
3. What is the role of EDI in this system?
4. The TradeNet system is a typical B2B platform. Explain why.
5. Relate the content of this chapter to the case.

ONLINE FILES

Available at **ecommerce-introduction-textbook.com**

W2.1 Social Software Tools: From Blogs to Wikis to Twitter
W2.2 Examples of Digital Products
W2.3 Application Case: eBay: The World's Largest Auction Site
W2.4 Application Case: Social Media at Eastern Mountain Sports

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Part II

E-Commerce Major Applications

Retailing in Electronic Commerce: Products and Services

3

Contents

Learning Objectives

Upon completion of this chapter, you will be able to:

1. Describe electronic retailing (e-tailing) and its characteristics.
2. Classify the primary e-tailing business models.
3. Describe how online travel and tourism services operate and how they influence the industry.
4. Discuss the online employment market, including its participants and benefits.
5. Describe online real estate services.
6. Discuss online stock-trading services.
7. Discuss cyberbanking and online personal finance.
8. Describe on-demand delivery of groceries and similar perishable products and services related to them.
9. Describe the delivery of digital products such as online entertainment.
10. Discuss various online consumer aids, including price comparison sites.
11. Describe the impact of e-tailing on retail competition.
12. Describe disintermediation and other B2C strategic issues.

OPENING CASE: AMAZON.COM—THE KING OF E-TAILING

The Problem

In the early 1990s, entrepreneur Jeff Bezos saw an opportunity rather than a business problem. He decided that books were the most logical product for selling online. In July 1995, Bezos started Amazon.com (**amazon.com**) and began selling books online. Over the years, the company has continually improved, expanded, changed its business model, and expanded its product selection, improving customer experience, and adding new products and services and business alliances. The company also recognized the importance

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of order fulfillment and warehousing early on. It has invested billions of dollars building physical warehouses and distribution centers designed for shipping packages to millions of customers. In 2012, the company started same-day delivery from its new distribution centers. After 2000, the company added information technology products and services, notably Kindle e-reader family and Web Services (cloud technologies). In 2015, Amazon continued to heavily invest in Prime Video to actively compete with NetFlix (Trefis 2015). Amazon.com's challenge was, and still is, to profitably sell many consumer products and services online.

The Solution: Innovations and Reaching Out to Customers

In addition to its initial electronic bookstore, Amazon.com has expanded its offerings to include millions of products and services. A unique example of a service they offer is Mechanical Turk (**mturk.com**), a marketplace for crowdsourcing work that requires human intelligence in dozens of categories. Key features of Amazon.com are easy browsing, searching, and ordering; useful product information, reviews, recommendations, and other personalization techniques; a very large selection of products, the ability to compare prices; low prices; secure payment system; efficient order fulfillment; and an easy product return arrangement.

The Amazon.com website has a number of useful services, some provided by its companies. For example, its & "Gift Finder and Wish Lists" section (**amazon.com/gp/gift-finder**) suggests gifts for all occasions and seasons, categorized by relationship, price, and more. Author Central (**authorcentral.amazon.com**) is a page where customers can read about authors (such as their biography and speaking events) and even connect with some of them. Authors can discuss their work and answer readers' questions via tweeting.

Amazon.com also offers support services. Amazon Services (**services.amazon.com**) hosts webstores for a small monthly fee, offering small businesses the opportunity to have customized storefronts supported by Amazon.com's payment and order fulfillment system (see **services.amazon.com/content/sell-on-amazon.htm**). Customers can use mobile devices to shop. Amazon Prime (**amazon.com/prime**) offers unlimited free shipment and streaming video for a $99 annual fee.

Amazon.com is also recognized as an online leader in providing personalized services and CRM. When a customer revisits Amazon.com, a cookie file identifies the user and says, for example, "Welcome back, Sarah Shopper," and then proceeds to recommend new books on topics similar to past purchases. You may receive recommendations for cheaper products. For example, a customer who buys printer toner for $30 a unit regularly might be directed to a vendor that sells four units for a total of $65. Amazon also provides detailed product descriptions and ratings to help consumers make informed purchase decisions. The site has an efficient search engine and other shopping aids. Amazon.com has a state-of-the-art warehousing system that gives the company an advantage over the competition.

Customers can personalize their accounts and manage orders online with the patented "1-Click" ordering feature. 1-Click includes an electronic digital wallet, which enables shoppers to save time paying for their orders, since all the shopping information, including preferred method of payment and default address, is stored online.

Amazon.com offers many Web 2.0 social shopping features (e.g., customer reviews). It acquired Woot! (**woot.com**), a social networking company known for its daily deals. Amazon is continuously adding innovative services. In 2011, the company introduced Price Check (to be described later), which enables customers to compare prices in physical stores with a smartphone app. Notable in 2012 were the same-day delivery initiative, the **myhabit.com** clothing site (designer brands at reduced prices), and the ability to use mobile devices while you are inside a physical store to compare prices using the Price Check app. The Amazon strategy is to provide the best customer satisfaction, make large investments in the short run at the expense of profit, and promote innovations (see **businessinsider.com/amazons-profits-what-people-dont-understand-2013-10**).

The Results

In 1999, *Time* magazine named Bezos "Person of the Year." In January 2002, Amazon.com declared its first profit—for the 2001 fourth quarter. Since then, the company has remained profitable despite its huge investments in distribution centers and other initiatives. Amazon.com reported that despite adverse U.S. and global economic conditions, its annual profits for 2015 had increased 721% from 2007.

In 2012, *Fortune* magazine selected Bezos as the "businessperson of the year" (see **fortune.com/2012/11/16/2012-businessperson-of-the-year**). Annual sales increased consistently by 30–40% each year due to the addition of more products and services, going global, and the increased volume purchased by existing customers. Amazon offers about 20 million books, music, and DVD/video titles to millions of customers. In 2015, Amazon had over 1.6 million e-books for sale. Finally, its investors are rewarded with rapidly increasing stock prices. Data from 2016 show Amazon.com as #6 on Alexa (global rank) and #4 (U.S. rank). It has over 23 million "Likes" and over 84,000 "Talking about this" on Facebook (see **facebook.com/Amazon**). As of February 2014, Amazon has 2.3 million followers on Twitter (**twitter.**

com/amazon). For the "Amazing Amazon Story—Jeff Bezos Full Speech," watch the video (17:59 min) at **youtube.com/watch?v=YlgkfOr_GLY**.

Despite increased competition from thousands of e-tailers in the online market, Amazon.com has been holding its place as the number one B2C e-tailer and money-making EC site in the world (some Chinese sites are getting closer to Amazon, but they are not competitors). Due to its order fulfillment system, Amazon.com can offer very low prices. Add this to high customer satisfaction and the selection of quality products, one can understand why Amazon.com sells more than three times the products compared to its nearest U.S. competitor.

Amazon.com also offers several features for international customers, including over one million Japanese-language books. Amazon.com operates in 16 countries but it can ship its products to other countries. Each country has a website in its own language (for example, Amazon China **amazon.cn**). Amazon.com generated revenues of about $482 million in 2015, with an operating income of over $107 billion (see **variety.com/2016/biz/news/amazon-clocks-107-billion-in-revenue-in-2015-1201691106**). As of Q4 2015, the company employs over 222,000 full-time and part-time employees. Amazon.com is considered as the "king of e-tailers." The company has been ranked by the U.S. National Retail Federation, as the #1 fastest growing large retail organization in the USA. For a comprehensive slide show about Amazon.com, see Stone (2013).

Sources: Based on Stone (2013), Trefis (2015), and **amazon.com** (accessed April 2016).

LESSONS LEARNED FROM THE CASE

The case of Amazon.com, the most recognized name of all e-tailers in the world, demonstrates the evolution of e-tailing, some of the problems encountered by e-tailers, and the solutions that a company can employ to expand its business. It also is indicative of some key trends in Internet retailing. For example, there is fierce competition online. Amazon.com is successful because of its size, innovations, personalization, order fulfillment, and customer service. The biggest online retailer is still growing and becoming more dominant. E-tailing, as demonstrated by the Amazon.com case, continues its double-digit, year-over-year growth rate despite the global economic downturn. This is, in part, because sales are shifting away from physical stores. In this chapter, we look at the delivery of both products and services online to individual customers. We also discuss e-tailing successes and failures.

3.1 INTERNET MARKETING AND B2C ELECTRONIC RETAILING

The Amazon.com case illustrates how commerce can be conducted on the Internet. Indeed, the amount and percentage of goods and services sold on the Internet is increasing rapidly, despite the failure of many dot-com companies. **internetworldstats.com** estimates that there are over 7.26 billion Internet users worldwide and over 357 million in North America as of April 2016 (see **internetworldstats.com/stats.htm**). Forrester Research estimates that U.S. shoppers will spend $327 million online in 2016, a 62% increase over 2012 (reported by Rueter 2012). Experts forecast the global B2C to be over 1.5 trillion in 2018, especially due to the growth in China. Some think that as the number of Internet users reaches saturation, the rate of increase of online shopping may slow down. However, this may not be the case. In fact, the rise of social and mobile shopping seems to have accelerated the pace of B2C. In addition, the economic downturn may increase online shopping as a means of saving money (e.g., save on gas if you do not need to drive to a physical store). Finally, global B2C is still increasing rapidly. Therefore, one of the challenges facing e-tailers is increasing the amount of money each person spends online. Companies have many benefits from selling their goods and services online. Innovative marketing models and strategies and a better understanding of online consumer behavior are critical success factors in B2C.

Overview of Electronic Retailing

A retailer is a sales *intermediary* between manufacturers and customers. Even though many manufacturers sell directly to consumers, they usually do so to supplement their major sales through wholesalers and retailers. In the physical world, retailing is done in stores (or factory outlets) that customers must visit physically in order to make a purchase, although sometimes customers may order by phone. Companies that produce a large number of products for millions of customers, such as Procter and Gamble, must use retailers for efficient product distribution. However, even if a company sells relatively few different types of products (e.g., Apple Computers), it still might need retailers to reach a large number of customers who are scattered in many locations.

Catalog (mail-order) sales offer companies the opportunity to reach more customers and give customers a chance to buy from home. Catalog retailers do not need a physical store with staff; online shopping has created the need for electronic catalogs. Retailing conducted over the Internet is called **electronic retailing (e-tailing)**, and sellers who conduct retail business online are called **e-tailers**, as illustrated in the opening case. E-tailing can be conducted through catalogs that have fixed

prices as well as online via auctions. E-tailing helps manufacturers (e.g., Dell) sell directly to customers. This chapter examines the various types of e-tailing and related issues.

Note that the distinction between B2C and B2B EC may be unclear. For example, Amazon.com sells to both individuals and organizations. Walmart (**walmart.com**) sells to both individuals and businesses (via Sam's Club). Dell sells its computers to both consumers and businesses from **dell.com**, Staples sells to both markets at **staples.com**, and insurance sites sell to both individuals and corporations.

Size and Growth of the B2C Market

B2C e-commerce is growing rapidly, especially in developing countries (e.g., China, Russia, and India).

The statistics for the volume of B2C EC sales, including forecasts for future sales, come from many sources. Reported amounts of online sales *deviate substantially* based on how the numbers are derived, and thus it is often difficult to obtain a consistent and accurate picture of the growth of EC. Some of the variation stems from the use of different definitions and classifications of EC. Another issue is how the items for sale are categorized. Some sources combine certain products and services; others do not or use different methods. Some sources include online travel sales in the statistics for EC retail; others do not. Sometimes different time periods are used in the measurement. Therefore, when reading data about B2C EC sales, it is important that care is taken in interpreting the figures.

Developments in B2C E-Commerce

The first generation of B2C e-commerce sold books, software, and music—simple to understand small items (known as commodity items) that were easily shipped to consumers. The second wave of online growth started in 2000, as consumers started researching and buying complex products such as furniture, large appliances, and expensive clothing (see Case 1.1 on Net-a-Porter, p. 11). Today consumers research product information and purchase online from categories such as bedding, spas, expensive jewelry, designer clothes, appliances, cars, flooring, big-screen TVs, and building supplies. Consumers are also buying many services such as college educations and insurance policies.

Characteristics and Advantages of Successful E-Tailing

Many of the same success factors that apply to physical retailing also apply to e-tailing. In addition, a scalable and secure infrastructure is needed. However, e-tailers can offer special consumer services not offered by traditional retailers. For a comparison of e-tailing and retailing, including advantages, see Table 3.1.

Table 3.1 Retailing versus e-tailing

Factor	Retailers	E-Tailers
Increase of sales volume	• Expansion of locations, stores, and space	• Going out of their regular area and even globally to find customers
More visitors, but less revenue	• Expand marketing efforts to turn "window shoppers" into active shoppers	• Expand marketing communications to turn viewers into shoppers
Use of technology	• Automation store technologies such as POS, self-check, and information kiosks	• Ordering, payments, and fulfillment systems
		• Comparisons and customer testimonials
		• Instant delivery of digital products
Customer relations and handling of complaints	• Face-to-face, stable contacts	• Anonymous contacts, less stability
	• More tolerance of disputes due to face-to-face contacts	• More responsiveness to complaints due to potential negative publicity via social media platforms (e.g., Facebook, Twitter)
Competition	• Local competition	• More competitors
	• Fewer competitors	• Intense due to comparisons and price reductions
		• Global competition
Customer base	• Local area customers	• Wide area (possibly global) customers
	• Lack of anonymity	• Anonymity most of the time
	• High increase of customer loyalty	• Easy to switch brands (less loyalty)
Supply chain cost	• High cost, interruptions	• Lower cost, more efficient
Customization and personalization	• Expensive and slow	• Fast, more efficient
	• Not very popular	• Popular
Price changing	• Expensive and slow, not done often	• Inexpensive, can be done anytime
Adaptability to market trends	• Slow	• Rapid

Sources: Based on Li et al. (2011), Ingham et al. (2015), and authors' experiences

Goods with the following characteristics are expected to sell the most:

- Brand name recognition (e.g., Apple, Dell, Sony). A service guarantee provided by well-known vendors (e.g., Amazon.com, BlueNile.com). For example, return policies and expedited delivery; free shipping.
- Digitized format (e.g., software, music, e-books, or videos).
- Relatively inexpensive items (e.g., office supplies, vitamins).
- Frequently purchased items (e.g., books, cosmetics, office supplies, prescription drugs).
- Commodities for which physical inspection is not necessary (e.g., books, CDs, airline tickets).
- Well-known packaged items that you normally do not open in a physical store (e.g., canned or sealed foods, chocolates, vitamins).

Advantages of E-Tailing

E-tailing provides advantages to both sellers and buyers. The advantages of e-commerce, described in Chapter 1, also apply here.

The major advantages to sellers are:

- Lower product cost, thus increasing competitive advantage.
- Reach more customers, many outside the vendor's region, including going global. For example, some Chinese and Taiwanese e-tailers operate sites that sell electronic products all over the world (e.g., E-Way Technology Systems Corp.; **ewayco.com**).
- Change prices and catalogs quickly, including the visual presentation. Such flexibility increases competitive advantage.
- Lower supply chain costs.
- Provide customers with a wealth of information online as a self-service option, thus saving customer service costs.
- React quickly to customer needs, complaints, tastes, and so forth.
- Provide customization of products and services, self-configuration, and personalization of customer care.
- Enable small companies to compete with larger companies.
- Better understand customers and interact with them.
- Sell specialized items countrywide, or even worldwide (e.g., surfing-related merchandise by the Australian company **surfstitch.com**).
- Engage customers in interesting search, comparison, and discussion activities.
- Contact customers who are not reachable by traditional methods of communication.

The major benefits to the buyers are to:

- Pay less than in traditional or even discount stores.
- Find products/services not available in local stores.
- Shop globally: compare prices and services.
- Shop anytime and from anywhere.
- Find it unnecessary to go to the store wasting time and gasoline, and being pressured by salespeople.
- Create their own designs and products (e.g., see **spreadshirt.com**).
- Find collectors' items.
- Buy in groups: buy with friends and engage in social shopping.

The next section examines the major business models that have proven successful in e-tailing.

SECTION 3.1 REVIEW QUESTIONS

1. Describe the nature of B2C EC.
2. What are the characteristics of high-volume products and services?
3. Describe the major trends in B2C.
4. Why is B2C also called e-tailing?
5. List the major characteristics of B2C.
6. What are the benefits of B2C for both buyers and sellers?

3.2 E-TAILING BUSINESS MODELS

In order to understand e-tailing better, let us look at it from the point of view of a retailer or a manufacturer that sells to individual consumers (see Figure 3.1). The seller has its own organization and must also buy materials, goods, and services from others, usually businesses (B2B in Figure 3.1). As also shown in the figure, e-tailing, which is basically B2C (right side of the figure), is done between the seller (a retailer

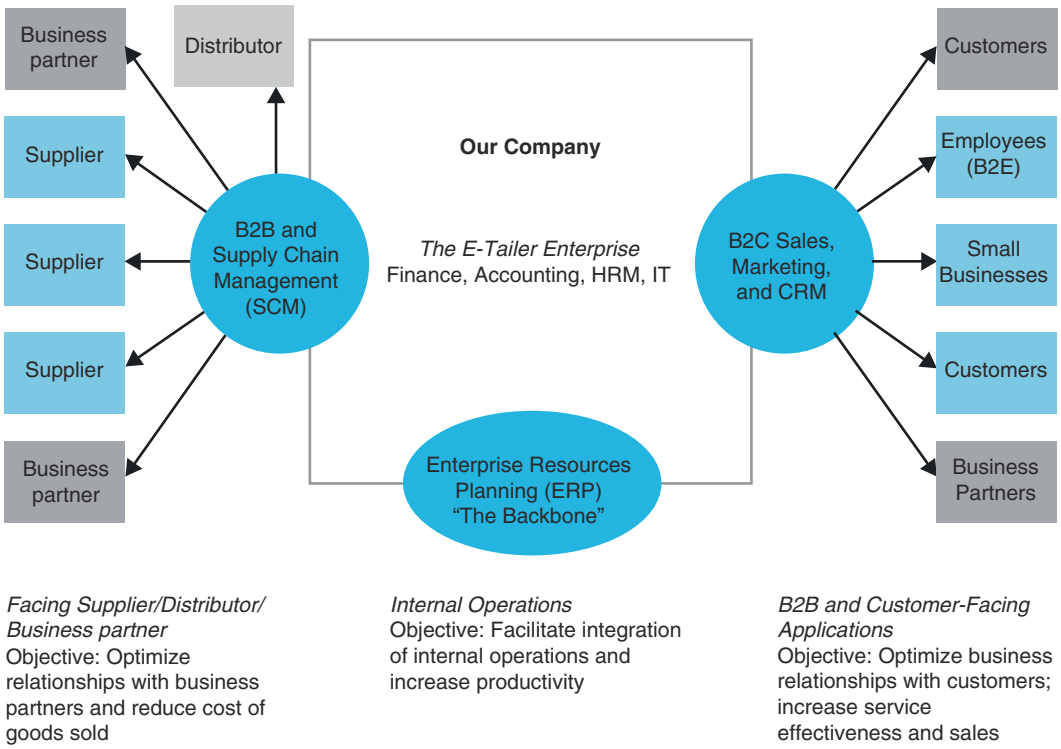

Figure 3.1 E-tailing as an enterprise EC system

or a manufacturer) and an individual buyer. The figure shows other EC transactions and related activities that may affect e-tailing. Retailing businesses, like other businesses, are driven by a business model. A **business model**, as defined in Chapter 1, is a description of how an organization intends to generate revenue through its business operations.

In this section, we will look at the various B2C models and their classifications.

Classification of Models by Distribution Channel

E-tailing business models can be classified in several ways. For example, some classify e-tailers by the nature of the business (e.g., general purpose versus specialty e-tailing) or by the scope of the sales region covered (global versus regional), whereas others use classification by revenue sources. Here we classify the models by the distribution channel used, distinguishing five categories:

1. **Traditional mail-order retailers that also sell online.** For example, QVC and Lands' End also sell on the Internet.
2. **Direct marketing by manufacturers.** Manufacturers such as Dell, LEGO, and Godiva market directly online from their webstore to customers, in addition to selling via retailers.
3. **Pure-play e-tailers.** These e-tailers sell only online. Amazon.com is an example of a pure-play e-tailer (see opening case).
4. **Click-and-mortar ("brick-and-click") retailers.** These are retailers that open webstores to supplement their regular business activities (e.g., **walmart.com** and **homedepot.com**). However, we are now seeing a reverse trend: Some pure-play e-tailers are creating physical storefronts. For example, Apple opened physical stores and Dell sells its products at partner store locations, such as Best Buy and Staples. The idea of selling both online and off-line is part of a model or strategy known as a **multichannel business model**. Using this strategy, the company offers several options for the customer to shop, including over the Internet. This strategy gives customers the opportunity to select the marketing channel with which they are most comfortable.
5. **Internet (online) malls.** As described in Chapter 2, these malls include many stores on one website.

   Note that, in direct marketing of any type, sellers and buyers have a chance to interact directly and better understand each other.
6. **Flash sales.** In any of the above categories, sellers can offer steep discounts via an intermediary or directly to the consumers. These discounts exist in several varieties.

Our examination of each of these distribution channel categories follows.

Direct Marketing by Mail-Order Companies

In a broad sense, **direct marketing** describes marketing that takes place without physical stores. Direct marketers take orders directly from consumers, frequently bypassing traditional intermediaries. Sellers can be retailers or manufacturers.

Direct Sales by Manufacturers and Make-to-Order

Many manufacturers are selling directly to customers. Dell, HP, and other computer manufacturers use this method. It is usually combined with self-configuration of products (customized, build to order). The major success factor of this model is the ability to offer customized products at a reasonable cost.

Virtual (Pure-Play) E-Tailers

Virtual (pure-play) e-tailers are companies with direct online sales that do not need physical stores. Amazon.com is a prime example of this type of e-tailer. Virtual e-tailers have the advantage of low fixed costs. However, one drawback can be a lack of an efficient order fulfillment system. Virtual e-tailers can be *general purpose* (such as Amazon.com or Rakuten.com) or *specialized* e-tailers (such as Dogtoys.com).

General-purpose pure-play companies can be very large. Amazon.com is one example. Another example is Rakuten Ichiba, Japan's largest online mall that offers more than 50 million products made by over 33,000 merchants. In May 2010, the Japanese company acquired U.S.-based Buy.com (which is now known as Rakuten.com Shopping). The combined company offers more than 90 million products made by over 35,000 merchants worldwide. Thousands of other companies operate as pure-play e-tailers. Examples are Australian companies **dealsdirect.com.au** and **asiabookroom.com**.

Specialty e-tailers, such as CatToys.com (**cattoys.com**), can operate in a very narrow market. Blue Nile is another example. Such specialized businesses would find it difficult to survive in the physical world because they would not have enough customers and could not hold a large variety of stock.

Click-and-Mortar Retailers and Multichanneling

This is probably the most commonly used model of e-tailing competing with pure-play e-tailers. Examples are Walmart.com, Target.com, and thousands of other retailers that offer products and services online as an additional sales channel. This strategy is gaining momentum, but it is not always successful for large companies. A prime example is Best Buy (see Section 3.9).

A **click-and-mortar retailer** is a combination of both the traditional retailer and a webstore.

A **brick-and-mortar retailer** conducts business exclusively in the physical world. In some cases, sellers also might operate a traditional mail-order business.

In today's digital economy, *click-and-mortar* retailers sell via stores, through phone calls, over the Internet, and via mobile devices. A firm that operates both physical stores and an online e-tail site is a click-and-mortar business selling in a *multichannel business model*. Examples of retailers going from brick-and-mortar only to brick-and-click are department stores, such as Macy's (**macys.com**) and Sears (**sears.com**), as well as discount stores, such as Walmart (**walmart.com**) and Target (**target.com**). It also includes supermarkets and all other types of retailing.

Retailing in Online Malls

There are two types of online malls: referring directories and malls with shared shopping services.

Referring Directories

This type of virtual mall contains a directory organized by product type. Banner ads at the mall site advertise the products or vendors. When users click on the product and/or a specific store, they are transferred to the webstore of the seller, where they can complete the transaction. Examples of referring directories can be found at **bedandbreakfast.com**. The stores listed in a directory either own the directory collectively, or they pay a subscription fee or a commission to the organizing third party for maintaining the site and advertising their products. This type of e-tailing is a kind of affiliate marketing (see **virtualshoppingmall.weebly.com/affiliate-referral-sites.html**).

Malls with Shared Services

In online malls with shared services, a consumer can find a product, order and pay for it, and arrange for shipment. The hosting mall provides these services.

Ideally, the customer would like to go to different stores in the same mall, use one shopping cart, and pay only once. This arrangement is possible, for example, in Yahoo! Small Business (see **smallbusiness.yahoo.com/ecommerce**) and **bing-shop.com**. With the availability of e-commerce software and outsourced logistics services, the popularity of online malls is shrinking.

Other B2C Models and Special Retailing

Several other business models are used in B2C. They are discussed in various places throughout the book. Some of these models also are used in B2B, B2B2C, G2B, and other types of EC.

B2C Social Shopping

Social shopping activities are facilitated by new or improved business models (e.g., see Turban et al. 2016; Singh and Diamond 2012). For example, B2C sites such as **amazon.com** and **netflix.com** provide consumers with extensive social context and engagement opportunities, such as product ratings. Using blogs, wikis, discussion groups, and Twitter, retailers can help customers find and recommend shopping opportunities. Typical new or improved models created by social media tools are summarized below.

Flash Deals (Deals of the Day)

These are sales in which companies offer heavily discounted products to consumers for a limited time (usually 24–72 h), directly or via intermediaries such as Groupon. The discounts are so large that the sellers hope that people will spread the news to their friends.

Online Group Buying

In these depressed economic times, more people are using the Internet as a smart way to save money. Using online *group buying*, it is easy to join a group of buyers to get volume discounts. There are several start-ups in this market: **yipit.com** and **livingsocial.com**. Other sites that used pure group buy are now concentrating on flash deal sales. For example, see Groupon, **dealradar.com,** and **myhabit.com**.

Personalized Event Shopping

Event shopping is the B2C model in which sales are designed to meet the needs of special events (e.g., a wedding, Black Friday). This model may be combined with group purchasing (to lower the customers' cost). For details, see Wieczner and Bellstrom (2010). Two variations of this online model are *private shopping clubs* and *group gifting online*.

Private Shopping Clubs

An online **private shopping club**, like an off-line shopping club (e.g., Costco), enables members to shop at a discount, frequently for short periods of time (just few hours or days). Members may need to register before they are invited to see the special offers. To assure quality, many clubs buy directly from the manufacturers.

Examples of such clubs are Gilt (**gilt.com**) in the USA (see Wieczner and Bellstrom 2010) and KupiVIP (**kupivip.ru**) in Russia.

Private shopping clubs can be organized in different ways (e.g., see **beststreet.com**). For details, see Chapter 7 and **en.wikipedia.org/wiki/Private_shopping_club**.

Group Gifting Online

In many cases, a group of friends can collaborate on gifts for events such as a wedding. To help coordinate the group activities and select the gifts, one can use sites like **frumus.com** and **socialgift.com**.

Location-Based E-Commerce

Location-based e-commerce (l-commerce) is a wireless-based technology used by vendors to send advertisements relevant to the location where customers are at a given time by using GPS. The technology is a part of mobile commerce (Chapter 6). The model was unsuccessful until social networking emerged. Today, companies such as Foursquare provide l-commerce services.

SECTION 3.2 REVIEW QUESTIONS

1. List the B2C distribution channel models.
2. Describe how traditional mail-order firms are transforming or adding online options.
3. Describe the direct marketing model used by manufacturers.
4. Describe virtual e-tailing.
5. Describe the click-and-mortar approach. Compare it to a pure e-tailing model.
6. Describe the different types of e-malls.
7. Describe flash sales (daily deals).
8. Describe B2C social shopping models.

3.3 ONLINE TRAVEL AND TOURISM (HOSPITALITY) SERVICES

Online services are provided by many travel vendors. Some major travel-related websites are **expedia.com**, **travelocity.com**, **tripadvisor.com**, and **priceline.com**. All major airlines sell their tickets online. Other services are vacation packages (e.g., **blue-hawaii.com**), train schedules and reservations (e.g., **amtrak.com**), car rental agencies (e.g., **autoeurope.com**), hotels (e.g., **marriott.com**), commercial portals (e.g., **cnn.com/TRAVEL**), and tour companies (e.g., **atlas-**

travelweb.com). Publishers of travel guides such as **lonelyplanet.com**, **fodors.com**, and **tripadvisor.com** provide considerable amounts of travel-related information on their websites, as well as selling travel services. The competition is fierce, but there is also collaboration. For example, in 2012, TripAdvisor helped New Orleans hotels to attract more guests.

Example: TripAdvisor

According to comScore Media Matrix (March 2016), TripAdvisor (**tripadvisor.com**) is the world's largest travel site. The company provides trip advice generated from actual travelers. This is a global site with more than 350 million visitors a month. For history, features, and more facts, see **tripadvisor.com/PressCenter-c4-Fact_Sheet.html**.

Example: Qunar.com

Qunar (**qunar.com**) is the world's largest Chinese-language travel platform. The site provides services similar to those provided by TripAdvisor, such as travel information, travel arrangements, and in-depth search (see **http://www.qunar.com/site/en/Qunar.in.China_1.1.shtml**).

Characteristics of Online Travel

Online travel services generate income from commissions, advertising fees, lead-generation payments, subscription fees, site membership fees, etc.

With rapid growth and increasing success, the online travel industry is very popular, although online travel companies cite revenue loss due to fraud as their biggest concern. Consumers themselves can fall prey to online travel fraud. However, competition among online travel e-tailers is intense and has low margins. In addition, customer loyalty and difference in prices make it more difficult to survive. Thus, guaranteed best rates and the provision of loyalty programs are becoming a necessity.

Three important trends will drive further changes in the online travel industry. First, online travel agents may try to differentiate themselves by providing superior customer service. Second, they provide easy search capabilities (e.g., for best prices). Third, online travel companies are likely to use social media tools to provide content to travelers and would-be travelers (see the discussion later in this section and Chapter 7).

Services Provided

Online travel agencies offer almost all the same services delivered by conventional travel agencies, from providing general information to reserving and purchasing travel accommodations and event tickets. In addition, they often provide services that most conventional travel agencies do not offer, such as travel tips and reviews provided by other travelers, fare tracking (free e-mail alerts on low fares), expert opinions, detailed driving maps and directions (see **airbnb.com**; a website that connects travelers and lists accommodations around the world, chat rooms, and bulletin boards).

Example: HomeAway.com, Inc.

HomeAway, Inc. (**homeaway.com**) is a marketplace for the vacation rental industry. This online marketplace hosts 1.26 million paid listings offering vacation rental homes in 196 countries (April 2016 data). The basic idea is to offer travelers vacation homes at affordable prices. For example, you can rent a whole vacation house at less than half price of a hotel. The site connects property managers and owners with travelers. Besides the USA, the company has subsidiaries in several countries, such as the UK, France, and Spain. It has both short and longer stay rentals. For details, see **homeaway.com**.

Other special services include:

- **Wireless services.** Many airlines (e.g., Cathay Pacific, Delta, and Qantas) allow passengers to access the Internet during flights with mobile devices (usually for a fee).
- **Advance check-in.** Most airlines provide advance online check-in. You can print your boarding pass within 24 h prior to departure. Alternatively, you can use a smartphone (or a tablet) to download the boarding pass to your cell phone and then submit your phone to security with your ID. The security department has electronic scanners that read the boarding pass from your smartphone and let you board the plane.
- **Direct marketing.** Airlines sell electronic tickets (or "e-tickets") over the Internet. When customers purchase electronic tickets online (or by phone), all they have to do is print the boarding pass or enter their credit card at an *electronic kiosk* to get a boarding pass there.
- **Alliances and consortia.** Airlines and other travel companies are creating alliances with one another (e.g., **staralliance.com**) to increase sales or reduce purchasing costs for purchases made over the Internet.

Using Mobile Devices

The use of these is increasing rapidly, with hundreds of apps related to comparing prices, making reservations, looking at travel reviews, and finding the best travel deals available (see **tomsguide.com/us/pictures-story/491-best-travel-apps.html** for a list of 50 ultimate travel apps).

Social Travel Networks

Travelers are using sites like Facebook, YouTube, Twitter, Gogobot, Flickr, Foursquare, and TripAdvisor to plan their trips and share experiences (both good and bad) afterward.

For example, all major airlines have pages on Facebook that provide information and news about their airline and offer their customers a community to meet other travelers and share experiences (e.g., see **facebook.com/AmericanAirlines**).

Several social networks have travel channels that cater to travelers. An example of such networks is **wikitravel.org**, which features a travel channel that uses a wiki allowing any Internet reader to create, update, edit, and illustrate *any* article on the website ("the travel guide you write"). For a comprehensive resource on travel, see **tripadvisor.com**. Other social networks available exclusively for travelers are Trip Wolf, Trip Hub (a blog dedicated to group travel), Trip Advisor, Virtual Tourist, BootsnAll, and Lonely Planet. Case 3.1 shows an example of a social network for travelers.

CASE 3.1: EC APPLICATION WAYN: A LIFESTYLE AND TRAVEL SOCIAL NETWORK

WAYN (**wayn.com**), which stands for "Where Are You Now?", is a social network website with a goal of uniting travelers globally, allowing them to share experiences, describe problems, participate in forums, and find friends. WAYN, a UK company, has grown from 45,000 members in 2005 to over 22.4 million in 2014. Approximately two million members are based in the United Kingdom. WAYN is popular in most major developed countries.

The capabilities of the site are similar to that of Facebook and other major social networks. Travelers can search for contacts and visually locate them on countries' maps. The goal is for travelers to keep their friends informed of where they are while traveling and, in turn, to be able to locate their friends ("find who is around").

In addition, users can send SMSs to any of their contacts worldwide and chat online using WAYN's Instant Messenger. Utilizing WAYN, users can create discussion groups, make friends, plan trips, and ask for recommendations.

As of April 2016, WAYN is available in 198 countries, becoming a global and profitable brand. WAYN is followed on Facebook and Twitter. To survive, the company sells travel deals and provides advertising opportunities to service providers (see **wayn.com/advertising**). WAYN can be accessed on the go via several downloadable mobile applications (see **wayn.com/mobileapps**). The site also provides an opportunity to meet like-minded people and make friends. For a comprehensive description, see **tnooz.com/article/wayn-social-travel-revenue-gains** (posted February 2014). To read an interview with the CEO of WAYN, see **travelblather.com/2013/01/the-future-for-social-travel-websites-an-interview-with-wayn-ceo-pete-ward.html**.

Sources: Based on Butcher (2008) and **wayn.com** (accessed April 2016).

Questions

1. Visit **wayn.com**. What options do you find most exciting on the site?
2. Enter **wayn.com** and identify all advertising options. List them and discuss three that would work best for you as a traveler.
3. Identify the mobile capabilities on the site.
4. Why has WAYN been so successful even though the site requires subscription fees for some of its services?

Benefits, Limitations, and Competition in Online Travel Services

The benefits of online travel services to travelers and travel providers are extensive. The amount of free information is voluminous, and is accessible at any time from any place. Shoppers can find the lowest prices. Travel providers also benefit by eliminating commissions and selling otherwise-empty spaces. Finally, processing fees are reduced.

Online travel services do have some limitations. First, complex trips are difficult to arrange and may not be available on some sites because they require complicated arrangements. Therefore, the need for travel agents as intermediaries remains, at least for the time being.

Competition in Online Travel

The competition in online travel is intense. In addition to well-known pure players such as Expedia (**expedia.com**), Priceline (**priceline.com**), and Hotels.com (**hotels.com**), there are thousands of travel-related sites online. Many service providers have their own sites, related websites advertise travel sites, and tourist guides sell services or direct users to them. In such a competitive environment, online businesses may fail (e.g., Travel-Ticker folded in September 2012).

Corporate Travel

The corporate travel market is huge and its online portion has been growing rapidly in recent years. Corporations can use all the online travel services mentioned earlier where they may receive special services. Companies can enable employees to plan and book their own trips to save time and money. Using online optimization tools provided by travel companies, such as those offered by American Express (**amexglobalbusinesstravel.com**), companies can try to

reduce travel costs even further. Expedia via Egencia TripNavigator (**egencia.com**), Travelocity (**travelocity.com**), and Orbitz (**orbitzforbusiness.com**) also offer software tools for corporate planning and booking. TripAdvisor for Business (**tripadvisor.com/Owners**) provides information to the tourism and hospitality industries. TripAdvisor TripConnect offers a way for businesses to compete for bookings and generate new business by bringing visitors directly to their online booking pages.

Example: American Express's Business Travel Helps URS Corp. to Survive Hurricanes

In order to repair the damage caused by Hurricane Katrina, URS Corporation (a large engineering and architectural design firm) realized that they needed an automated system to identify travelers in need of immediate assistance. A solution was found by implementing American Express Business Traveler's TrackPoint system (**trackpoint.amexgbt.com**), which "enables companies to quickly interface impacted travelers, pinpoint their locations, and review their itineraries" (see **businesstravel.americanexpress.com/se/files/2011/11/CS_URSCorp-US.pdf**).

SECTION 3.3 REVIEW QUESTIONS

1. What travel services are available online that are not available off-line?
2. List the benefits of online travel services to travelers and to service providers.
3. How do social networks facilitate travel?
4. Describe corporate online travel services.
5. Describe the competition in online travel services.

3.4 EMPLOYMENT AND THE ONLINE JOB MARKET

The online job market connects job seekers with potential employers. An online job market is now very popular with both job seekers and employers. In addition to job ads posted online and placement services available through specialized websites (such as **careerbuilder.com**), larger companies are building career portals on their corporate websites as a way of reducing recruitment costs and expediting the time to fill vacancies. Advantages of the online job market over the traditional one are listed in Table 3.2.

Table 3.2 Traditional versus online job markets

Characteristic	Traditional job market	Online job market
Cost	Expensive, especially in prime space	Can be very inexpensive
Life cycle	Short	Long
Place	Usually local and limited if global	Global
Context updating	Can be complex, expensive	Fast, simple, inexpensive
Space for details	Limited	Large
Ease of search by applicant	Difficult, especially for out-of-town applicants	Quick and easy
Ability of employers to find applicants	May be very difficult, especially for out-of-town applicants	Easy
Matching of supply and demand	Difficult	Easy
Reliability	Low, material can get lost in mail	High
Communication speed between employees and employers	Can be slow	Fast
Ability of employees to compare jobs	Limited	Easy, fast

The Internet Job Market

The Internet offers a comprehensive and large environment for job seekers and for recruiters. Nearly all *Fortune 500* companies now use the Internet for some of their recruitment activities. Online resources are the most popular recruitment option for many companies. Since 2000, online job recruitment revenues and volume significantly overtook print ad classifieds. Tens of thousands of job-related sites are active in the United States alone. Note that many sites provide free lists of available positions. The U.S. market is dominated by several major players, especially as Monster acquired Yahoo! HotJobs and CareerBuilder. However, socially oriented sites such as Craigslist, LinkedIn, Twitter, and Facebook are becoming very important online recruitment sites (see **askingsmarterquestions.com/how-to-recruit-online-finding-talent-with-facebook-twitter-study**).

Online Job Markets on Social Networks

According to McCafferty (2012), 58% of recruiters agree that social networking is the "next big thing" in recruiting. Specifically, 86% already use LinkedIn, 51% use Facebook, and 27% use Google+. In 2016, Del Castillo reported that over 31% of job seekers had found jobs using social media. Facebook has many features that help people find jobs and help employers find candidates. One such feature is Jobcast (**jobcast.net**), which is an app for companies to place on their Facebook page to recruit candidates. The app, which has different types of plans (free and paid), offers social sharing to LinkedIn and Twitter, as well as to Facebook. Their

app on Facebook is for job seekers and employers to connect, and they also have interesting articles regarding the job market. (See **facebook.com/jobcastnet**.) Another way for employers and job seekers to connect via Facebook is through a company called FindEmployment (**facebook.com/findemployment**), which also offers tips and suggestions for job seekers. A similar service is provided by **linkedin.com/jobs**. Craigslist, for example, claims more than one million new job listings every month. The LinkedIn search engine can help employers find appropriate candidates quickly. For more on social networking activities in recruiting, see Chapter 8 and Masud (2012).

In addition, *job referral social networking* sites solve the need for finding the right people for the job (e.g., **jobster.com**). These sites provide job seekers opportunities to promote themselves and their areas of expertise, as well as help them be discovered by employers. The site's algorithms enable headhunters to analyze qualified applicants by different criteria. When a job offer is made, the job referral site receives referral fees. Lately, the use of Twitter as an aid for job searches has increased. Bortz (2014) provides a strategy for job seekers and for how to use Twitter to access recruiters and increase job seekers' visibility.

Global Online Portals for Job Placement

The Internet is very helpful for anyone looking for a job in another country. An interesting global site for placing/finding jobs in different countries is **xing.com**. The electronic job market may increase employee turnover and its costs. Finally, recruiting online is more complicated than most people think, mainly because there are so many résumés online. To facilitate recruitment, top recruiters are seeking the benefits of using new tools like video conferencing to interview and connect with candidates from remote locations.

Benefits and Limitations of the Electronic Job Market

The online job market has many benefits for both job seekers and recruiters. The major advantages are shown in Table 3.3. For more on the advantages of attending job fairs, see **careercast.com/career-news/how-rock-virtual-job-fair**. For benefits of virtual recruiting, see **smallbusiness.chron.com/advantages-virtual-recruitment-16632.html**.

The electronic job market also has a few limitations, such as security and privacy. Posted résumés and employer–employee communications are usually not encrypted. Thus, confidentiality and data protection cannot be guaranteed. It is also possible that someone at a job seeker's current place of employment (e.g., his or her boss) could find out that that person is job hunting. LinkedIn, for example, provides privacy protection, enabling job seekers to determine who can see their résumé online.

For tips on how to protect your privacy while job hunting, see **guides.wsj.com/careers/how-to-start-a-job-search/how-to-protect-your-privacy-when-job-hunting**.

SECTION 3.4 REVIEW QUESTIONS

1. What are the driving forces of the electronic job market?
2. What are the major advantages of the electronic job market to the candidate? To employers?

Table 3.3 Advantages of the electronic job market for job seekers and employers

Advantages for job seekers	Advantages for employers
Can discover a large number of job openings	Can reach a large number of job seekers
Can communicate directly and quickly with potential employers	Can reduce recruitment costs
Can market themselves quickly to appropriate employers (e.g., **quintcareers.com**)	Can reduce application-processing costs by using electronic application forms
Can post résumés for large-volume distribution (e.g., at **careerbuilder.com**)	Can provide greater equal opportunity for job seekers
	Opportunity of finding highly skilled employees who match the job requirements
Can search for available positions any time	Can describe positions in great detail
Can obtain several support services at no cost (e.g., **careerbuilder.com** and **monster.com** provide free career-planning services)	Can interview candidates online (e.g., using video teleconferencing)
Can determine appropriate salaries in the marketplace (e.g., use **salary.com** and **rileyguide.com**; look for salary surveys)	Can arrange for testing online
	Can view salary surveys for recruiting strategies
Can learn how to behave in an interview (**greatvoice.com**)	
Can access social network groups dedicated to electronic job markets	Can use existing staff to refer applicants

Sources: Based on Cohen (2013), Waldman (2013), and the authors' experiences

3. Why is LinkedIn so useful for job seekers and for employees? List the specific tools provided by EC to job seekers.
4. List the specific tools provided by recruiters.
5. What are the limitations of electronic job markets?

3.5 ONLINE REAL ESTATE, INSURANCE, AND STOCK TRADING

Online infrastructures enable additional marketing channels, new business models, and provide new capabilities. The infrastructures provide a different way of delivering products and services. Some major services are presented in this and the following section.

Real Estate Online

Changes in online real estate information search and transactions significantly impact the way that business is conducted.

To get some idea of the changes, see **realtor.org/research-and-statistics,** and for statistics on the growth of the online and off-line real estate markets, see **realtor.org/research-and-statistics/research-reports**. For example, in 2012, 74% of all realtors used social media tools regularly. Additional studies by the National Association of Realtors® (NAR) have shown that over 42% of real estate buyers begin their searches for properties on the Internet, and 87% of all recent buyers used the Internet at some point in their home search (National Association of Realtors® 2015).

E-commerce and the Internet are slowly but surely having an ever-increasing impact on the real estate industry. For example, despite the changes that are beginning to emerge, real estate agents have not been disintermediated. Home buyers today tend to use both real estate agents and the Internet. One possible impact is declining commissions that sellers pay agents.

Zillow, Craigslist, and Other Web 2.0 Real Estate Services

Craigslist (**craigslist.org**) and Zillow (**zillow.com**) are examples of Web 2.0 free real estate services. Both reduce the use of newspaper classified advertising, and allow buyers to find housing information and do price and location comparisons on their own.

Zillow operates the "Make Me Move" (**zillow.com/make-me-move**) service (free) that allows you to see for what price you would be willing to sell your home without actually putting it on the market (**zillow.com/wikipages/What-is-Make-Me-Move**). Homeowners may be motivated to sell when they see the price they can get when they list their homes (anonymously). Sellers can see prices of similar homes. Buyers can contact the sellers via anonymous e-mail. The company also provides free listings (including photos). Users can also participate in a blog or wiki, start a discussion, and engage in other social-oriented activities. Zillow also offers mortgage calculators and current loan rates. Zillow makes money from advertisers and was listed on the stock market in 2012. Zillow has several competitors (e.g., **ziprealty.com** and **listingbook.com**). Zillow offers its brand via more than a dozen websites (e.g., **zillow.com/homes/for_rent**, and **agentfolio.com**). Zillow generates revenue by selling ads on its companion websites.

Craigslist has a major classifieds section for real estate ("for sale" and "for rent" listings). Listings are free except in some large cities, where brokers must pay a fee for placing ads.

Insurance Online

An increasing number of companies use the Internet to offer standard insurance policies, such as auto, home, life, or health, at a substantial discount, mostly to individuals. Furthermore, third-party aggregators offer free comparisons of available policies. Several large insurance and risk-management companies offer comprehensive insurance contracts online (e.g., **allstate.com**, **ensurance.com**, **statefarm.com/insurance**, **progressive.com/insurance-choices**, **geico.com**). Although many people do not trust the faceless insurance agent, others are eager to take advantage of the reduced premiums. Many insurance companies use a dual strategy, using sales agents in the field but also selling online (e.g., advertising on e-mails and Google searches). Like real estate brokers, insurance brokers send unsolicited e-mails to millions of people. The stiff competition will probably reduce the commission for the surviving agents.

Example

The insurance industry has seen that over 86% of potential insurance customers are researching and gathering information on the Internet. Thus, insurance companies are trying to capitalize on this trend. Many insurance companies are quickly rolling out a variety of online tools to meet this need (**bain.com/publications/articles/for-insurance-companies-the-day-of-digital-reckoning.aspx**).

Online Stock Trading and Investments

The commission for an online trade is between $1 and $15 ("dirt cheap brokers") to $15–$30 ("mid-priced discount brokers"), compared with an average fee of $100–$200 per trade from a full-service broker (see **investopedia.com/university/broker/broker1.asp**). With online trading, there are no busy

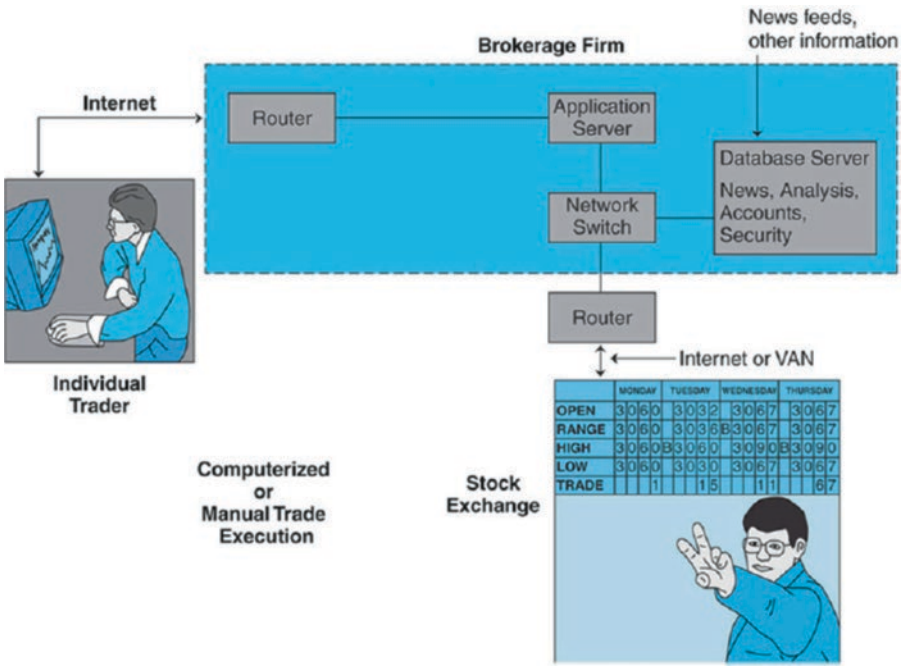

Figure 3.2 Online electronic stock trading

telephone lines, and the chance to err is small, because there is no oral communication in a frequently noisy environment. Orders can be placed from anywhere, at any time, and there is no biased broker to push a sale. Furthermore, investors can find a considerable amount of free research information about specific companies or mutual funds. Many services provided to online traders include online statements, tax-related calculations, extensive research on industries, real-time news, and even tutoring on how to trade (e.g., check **etrade.com** or **google.com/finance**).

How does online trading work? Let us say an investor has an account with Charles Schwab. The investor accesses Schwab's website (**schwab.com**), enters an account number and password, and clicks on "stock trading." Using a menu, the investor enters the details of the order (buy, sell, margin or cash, price limit, or market order). The computer tells the investor the current (real-time) "ask" and "bid" prices, just as a broker would do over the telephone, and the investor can approve or reject the transaction. The flow chart of this process is shown in Figure 3.2.

Some companies, including Schwab, are now also licensed as exchanges. This allows them to match the selling and buying orders of their own customers for many securities in one to two seconds. Some well-known companies that offer online trading are E*TRADE, TD Ameritrade, Scottrade, and Share Builder.

With the rapid pace of adoption of mobile computing, mobile stock trading is becoming more and more popular (e.g., see the mobile offering from E*TRADE). For example, users can pay bills and purchase stocks (see details in Chapter 11).

SECTION 3.5 REVIEW QUESTIONS

1. List the major online real estate applications.
2. What are the advantages of selling insurance online?
3. What are the advantages of online stock trading?

3.6 ONLINE BANKING AND PERSONAL FINANCE

Electronic (online) banking (e-banking) refers to conducting banking activities online. Consumers can use e-banking to check their accounts, pay bills online, secure a loan, transfer money, and much more. Sixty-one percent of U.S. adult Internet users bank and pay bills online (**pewinternet.org/files/old-media/Files/Reports/2013/PIP_OnlineBanking.pdf**). Several sites have tools that can help you with personal finance and budgeting. Examples are **mint.com**, **geezeo.com**, and **kiplinger.com**.

E-Banking

E-banking saves users time and money. For banks, it offers a rapid and inexpensive strategy to acquire out-of-the-area customers. In addition, the banks may need fewer branches or employees. Many physical banks now offer online banking services, and some use EC as a major competitive strategy.

Online banking in general has been embraced worldwide, including developing countries. For example, online banking in China is increasing rapidly in popularity, especially among China's new educated middle class who live in the more developed cities. It is facilitated by the use of smartphones and other mobile devices. (See **hsbc.com.cn/1/2/personal-banking/e-banking/personal-internet-banking** and Bank of China **boc.cn/en**.)

Online Banking Capabilities

Banking applications can be divided into the following categories: informational, administrative, transactional, portal, and others. In general, the larger the bank, the more services are offered online.

Pure Virtual Banks

Virtual banks have no physical location and conduct only online transactions. Security First Network Bank (SFNB) was the first such bank to offer secure banking transactions on the Web. Amid the consolidation that has taken place in the banking industry, SFNB has since been purchased and now is a part of RBC Bank (**rbcbank.com**). Other representative virtual banks in the United States are First Internet Bank (**firstib.com**) and Bank of Internet USA (**bankofinternet.com**).

However, more than 97% of the hundreds of pure-play virtual banks failed by 2003 due to a lack of financial viability. Many more failed during 2007–2012. The most successful banks seem to be of the click-and-mortar type (e.g., Wells Fargo, City Corp, HSBC).

Virtual banking can be done with new business models, one of which is P2P lending.

P2P Lending

The introduction of online banking enables the move of personal loans to the Web in what is called *online person-to-person money lending*, or in short *P2P lending*. This model allows people to lend money and to borrow from each other via the Internet. For how P2P loans work, see **thebalance.com/how-peer-to-peer-loans-work-315730**.

Examples

Two examples of peer-to-peer (P2P) online lending are Zopa Limited in the United Kingdom (**zopa.com**) and Prosper Marketplace in the United States (**prosper.com**). Note that, despite the global credit crunch of 2008–2012 and the fact that neither has a government-backed guarantee, both Zopa and Prosper are enjoying solid growth. For example, as of May 2016, Zopa's 53,000 active members had lent more than £1.45 billion at negotiated rates to UK customers, mainly for car payments, credit card debts, and home improvements. The default rate of these P2P lenders is very low (e.g., Zopa's historical bad debt is 0.19% since 2010) since money is lent only to the most credit-worthy borrowers. For Prosper's company overview, see **prosper.com/about**.

A word of caution about virtual banking, including P2P lending: Before sending money to any cyberbank, especially one that promises high interest rates for your deposits, make sure that the bank is a legitimate one.

CASE 3.2: EC APPLICATION SECURITY FOR ONLINE BANK TRANSACTIONS

Banks provide extensive security measures to their customers. The following describes some of the safeguards provided.

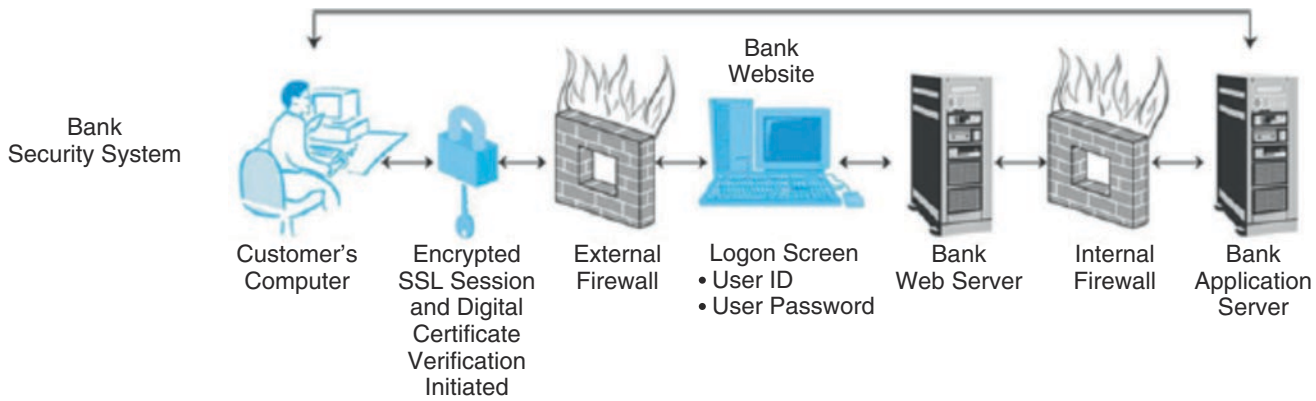

Figure 3.3 Security for online banking transactions

Customers accessing a bank system online must go through encryption provided by SSL (Secure Socket Layer) and digital certificate verification (see Chapters 10 and 11). The verification process assures users each time they sign on that they are indeed connected to their specific bank. The customer inquiry message then goes through an external firewall. Once the logon screen is reached, a user ID and a password are required. This information flows through a direct Web server and then goes through an internal firewall to the bank's application server. This process is illustrated in Figure 3.3.

Information is shared among a bank's business partners only for legitimate business purposes.

Banks do not capture information provided by customers when conducting hypothetical scenarios using planning tools (to ensure privacy). Many banks use cookies to learn about their customers; however, customers can control both the collection and in some cases the use of such information. In addition, most banks provide suggestions on how users can increase security (e.g., by using a browser that supports 128-bit encryption).

With the increased use of mobile devices, the threat of security risks has increased. Banks are creating innovative solutions. For example, in January 2009, Bank of America introduced "SafePass," a feature that can generate a six-digit, one-time passcode that is necessary to complete an online transaction. The passcode is delivered via text message to your mobile device. (See **bankofamerica.com/privacy/online-mobile-banking-privacy/safepass.go**.) A similar device is offered by other financial institutions.

Questions

1. Why is security so important for a bank?
2. Why is there a need for two firewalls?
3. Who is protected by the bank's security system—the customer, the bank, or both? Elaborate.
4. What might be the limitations of such a security system?

Example

Some banks have multistage security systems. For example, Central Pacific Bank (**centralpacificbank.com**) asks you to log in (with your ID) and then answer security questions to which you previously provided the answers. You then see an image on the screen that you preselected. If you do not recognize the image and a pre-established phrase, you know you have not accessed the real bank. If all answers are provided satisfactorily, you provide a password to enter your account.

Risks

Online banks, as well as click-and-mortar banks, might carry some risks and problems, especially in international banking. The first is the risk of hackers accessing their accounts. In addition, some believe that virtual banks carry a *liquidity* risk (the risk of not having sufficient funds to pay obligations as they become due) and could be more susceptible to panic withdrawals. Regulators are grappling with the safeguards that need to be imposed on e-banking.

Online Billing and Bill Paying

The popularity of e-payments is growing rapidly. The number of checks the U.S. Federal Reserve System processes has been decreasing while the volume of commercial Automated Clearing House (ACH) transactions has been increasing. Many people prefer online payments of monthly bills such as mortgage payments, car loans, telephone, utilities, rent, credit cards, cable, TV, and so on. The recipients of such payments are equally eager to receive money online because online payments are received much more regularly and timely and have lower processing costs.

Another method for paying bills via the Internet is electronic billing or electronic bill payment and presentment (EBPP). With this method, the consumer makes payments at each biller's website, either with a credit card or by giving the biller enough information to complete an electronic withdrawal directly from the consumer's bank account. The biller sends the invoice to the customer via e-mail or a hosting service site. The customer then authorizes and initiates a payment via an automatic authorization, e-check, and so forth.

Taxes

One important area in personal finance is advice about and computation of taxes. Dozens of sites are available to help people with their federal tax preparations. Many sites will help people legally reduce their taxes. The following list offers some sites worth checking:

- **irs.gov**: The official website of the Internal Revenue Service.
- **taxsites.com**: A massive directory of tax-related information, research, and services.
- **fairmark.com**: A tax guide for investors.
- **taxaudit.com**: IRS tax audit help and audit assistance.

Mobile Banking

Mobile banking is a system that enables people to conduct financial transactions from a smartphone or other wireless mobile device. Many of the recent developments are in the area of mobile banking (presented in Chapters 6 and 11). Topics such as payments from smartphones and handling micropayments have revolutionized the financial systems (Chapter 11). The need for an improved banking and financial system is clear.

SECTION 3.6 REVIEW QUESTIONS

1. List the capabilities of online banking. Which of these capabilities would be most beneficial to you?
2. How are banks protecting customer data and transactions?
3. Define a P2P loan system.
4. How are banking transactions protected?
5. What is mobile banking?

3.7 ON-DEMAND DELIVERY OF PRODUCTS, DIGITAL ITEMS, ENTERTAINMENT, AND GAMING

This section examines B2C delivery issues related to on-demand items, such as perishable products, as well as the delivery of digitizable items, entertainment, and games.

On-Demand Delivery of Products

Most e-tailers use third-party logistics carriers to deliver products to customers. They might use the postal system within their country or they might use private shippers such as UPS, FedEx, or DHL. Deliveries can be made within days or overnight. Customers are frequently asked to pay for expedited shipments (unless they have a "premium" subscription, such as Amazon.com Prime; **amazon.com/Prime**).

Some e-tailers and direct marketing manufacturers own a fleet of delivery vehicles in order to provide faster service or cut delivery costs to the consumer. According to Mark Sebba, CEO of Net-a-Porter (**net-a-porter.com**), the company prefers "to do as much as possible in-house, which includes operating their own delivery vans for customers in London and Manhattan" (see **net-a-porter-brand.blogspot.com/2013/05/some-more-current-content.html**). Such firms provide either regular deliveries or will deliver items on demand (e.g., auto parts). They might also provide additional services to increase the value proposition for the buyers. An example in this category is an online grocer, or *e-grocer*. An **e-grocer** is a grocer that takes orders online and provides deliveries on a daily or other regular schedule or within a very short period of time, sometimes within an hour. Home delivery of food from restaurants or pizza parlors is another example. In addition, office supply stores, repair parts distributors (e.g., for cars), and pharmaceutical suppliers promise speedy, same-day delivery.

An express delivery option is referred to as an **on-demand delivery service**. In such a case, the delivery must be done quickly after an order is received. A variation of this model is same-day delivery. According to this model, delivery is done faster than "overnight," but slower than the 30–60 min expected with on-demand delivery of pizzas, fresh flowers, or auto repair parts. E-grocers often deliver using the same-day delivery model.

Speed of Delivery

Speed of delivery is critical not only for groceries and perishable items but also for other on-demand and large items. For example, **uber.com** is an on-demand travelers delivery service. In 2013, they partnered with Home Depot to deliver Christmas trees (Rodriguez 2013). See also **blog.uber.com/UberTREE**.

The fastest delivery in the future may be by drones (see Chapter 12). Amazon.com, UPS, and Google are exploring this phenomenon. In 2014, Facebook decided to "jump on the bandwagon" with the purchase of drone maker Titan Aerospace for $60 million (see **forbes.com/sites/briansolomon/2014/03/04/facebook-follows-amazon-google-into-drones-with-60-million-purchase**).

Online Delivery of Digital Products, Entertainment, and Media

Certain goods, such as software, music, or news stories, can be distributed in physical format (such as hard copy, CD-ROM, DVD, and newsprint), or they can be digitized and delivered over the Internet. Online delivery is much cheaper and saves sellers storage room, handling, and distribution costs.

Online Entertainment

Online entertainment is growing rapidly and is now the most popular medium in the United States among young people between the ages of 8 and 17. There are many kinds of Internet entertainment. It is difficult to categorize them precisely because there is a mixture of entertainment types, delivery modes, and personal taste. All these must be considered when deciding whether something is entertainment or not, and what kind of entertainment it is. Some online entertainment is interactive, in that the user is engaged in it. PricewaterhouseCoopers (2013) predicts that the global entertainment and media industry spending will reach $2.2 trillion in 2017. This includes online gaming, streaming videos, and audio (streaming media refers to multimedia that is constantly presented to users in real time).

All forms of traditional entertainment are now available over the Internet. However, some have become much more popular in the new environment due to the capabilities of technology. For example, Facebook's online games attract

millions of players. For information on entertainment in the Web 2.0 environment and social networks, see Chapter 8.

iTunes

iTunes (**apple.com/itunes**) is a media management software by Apple that includes an online store for buying music and other media. The program also enables you to organize and play the digital items you downloaded. Note that iTunes and similar services have basically crushed the music industry (see **money.cnn.com/2013/04/25/technology/itunes-music-decline**), similar to the way **netflix.com** has impacted the sale of DVDs and CDs. A 2014 study by Asymco found at **asymco.com/2014/02/10/fortune-130** discovered that iTunes is more profitable than Xerox and Time Warner Cable (see **wallstcheatsheet.com/stocks/study-itunes-is-more-profitable-than-xerox-and-time-warner-cable.html/?a=viewall**).

Online Ticketing

This popular service enables customers to buy tickets for events (e.g., sports, music, theater) by using a computer or mobile device. Companies such as Ticketmaster, Inc. are active in this area. Fandango is a company that sells movie theater tickets.

Internet TV and Internet Radio

Two similar streaming technologies are popular on the Web: Internet TV and Internet Radio.

Internet TV

Internet TV is the delivery of TV content via the Internet by video streaming technologies. The content includes TV shows, sporting events, movies, and other videos. Several video-on-demand and subscription services, such as **netflix.com**, **hulu.com**, and **hulu.com/plus**, as well as **amazon.com/Prime-Instant-Video** offer this service. For a comprehensive description of Internet TV, see **wisegeek.org/what-is-internet-tv.htm**. The major advantage is the ability to select what and when to view content and the ability to do so from computers, tablets, smartphones, Blue-Ray consoles, Apple TV (**apple.com/appletv**), Roku (**roku.com**), Google Chromecast (**google.com/intl/en/chrome/devices/chromecast**), Aereo (**aereo.com**), and so forth. In order to compete with other channels, traditional channels have developed an online presence, such as HBO (**hbo.com**).

Internet Radio

Known by several other names, **Internet radio** refers to audio content transmitted live via the Internet. It is a broadcasting service that enables users to listen online to thousands of radio stations (e.g., over 4000 in Europe, see **listenlive.eu**). The service can broadcast anything that is on the radio stations plus broadcasts from organizations, governments, and even individuals (**radio.about.com/od/listentoradioonline/qt/bl-InternetRadio.htm**). Internet radio has the same copyright issues as those of Internet TV. Note that, in many cases, there is an agreement between the content creators and the distributors (e.g., Warner Music and Apple reached an iTunes Radio deal in 2013; see **cnet.com/news/apple-reaches-iradio-deal-with-warner-music-suggesting-wwdc-launch** and **apple.com/itunes/itunes-radio**).

Pandora Radio

Pandora is a leading free Internet radio that delivers music not only from radio stations but also from many other sources. The core of the service is the *Music Genome Project*. According to **pandora.com/about**, the project is an inclusive analysis of thousands of musical pieces. All the music in the project is available on Pandora for your listening pleasure.

Pandora is actually a music streaming and automated music recommendation service that in 2016 is available only in the USA, Australia, and New Zealand. Users can create up to 100 personalized stations that play pre-arranged selections. In February 2014, the company opened up its content submission process to independent artists (see **submit.pandora.com**, **help.pandora.com/customer/portal/articles/24802-information-for-artists-submitting-to-pandora** and Hockenson 2014). For Pandora's Help Center, see **help.pandora.com**.

Various e-tailers offer songs for sale to Pandora's listeners. You can access Pandora through many streaming media devices. You can enjoy Pandora for free on the Web, on home-listening devices, and most mobile devices. Pandora One (**pandora.com/one**) has a monthly fee, but the benefits include ad-free service and higher quality audio. Pandora is a profitable business. Its subscriber base continues to grow; in March of 2014, it had 75.3 million active listeners (**investor.pandora.com/file/Index?KeyFile=22417465**).

Social Television (TV)

Social TV is an emerging social media technology that enables several TV viewers who are in different locations to interactively share experiences such as discussions, reviews, and recommendations while watching the same show simultaneously. According to Mashable.com (**mashable.com/category/social-tv**), social TV is "the union of television and social media" and refers to "the phenomenon of people communicating with each other while watching a TV show or discussing with each other about television

content using the Internet as a medium of communication." The communication can be done via texting in social networks, smartphones, tablets, etc. Social TV combines broadcast television programs and user-generated content with rich social media.

Characteristics of Social TV

Social TV has several unique characteristics:

- The possibility of discovering new video content and sharing this discovery with friends.
- Most social TV activities are done in real time by watching content and commenting on it to others, even if the viewers are in different locations.
- Social TV allows people to connect in a unique way, with other people who share the same interests.

Social TV is attracting an ample number of viewers. (The number of traditional television viewers is declining due to Internet viewing.)

Adult Entertainment

Online adult entertainment is probably the most profitable B2C model (usually with no or little advertisement; viewers pay subscription fees) and it accounts for a large percentage of Internet use. Adult content sites are popular because they provide a large and vivid selection, low fees (even free), and anonymity for those who watch. This popularity may cause a problem for some companies. According to reports by market research firms that monitor the industry, such as Forrester Research, IDC, Datamonitor, Mediabistro Inc., and Nielsen, viewers are willing to pay substantial fees to view adult sites.

Internet Gaming

Internet gaming comprises all forms of gaming such as arcade gaming, lotteries, casino gaming, and promotional incentives. Between 2008 and 2016, online gambling revenue continued to increase despite the bad economy. The global online gambling industry grew 8% during 2013 to reach $35.5 billion. According to Statistica.com (2016), the online gaming market will reach almost $56.1 billion in 2018. The ease of access and use of broadband services throughout the world in recent years has been vital to the expansion of online gaming.

Legal Aspects

Online gambling is booming despite the fact that it is illegal in almost all U.S. states. In 2013, Delaware and Nevada were the first U.S. states to allow some online gambling, followed by New Jersey (in October 2013, Delaware became the first state to allow a "full suite" of Internet gambling). In February 2014, both Delaware and Nevada signed a deal to allow interstate online gambling. Delaware reported $1.8 million in state revenue in 2015. Note that Federal Law limits online gambling to players while they are physically within a given state. (This can be verified by using geolocation software.) Therefore, if one state allows online gambling, you can play only when you are in that state. Online gambling is legal in other countries (e.g., Australia). By 2015, at least seven U.S. states had pending legislation that would legalize online gambling.

Source: Based on Zernike (2013), Fox News (2014), and Pempus (2016).

SECTION 3.7 REVIEW QUESTIONS

1. Describe on-demand delivery services.
2. Describe digital goods and their delivery process(es).
3. What are the benefits and limitations of digital delivery of software, music, and so forth?
4. What are the major forms of online entertainment?
5. Describe Internet TV, social TV, and Internet radio.
6. Describe Internet gambling and its challenges.

3.8 ONLINE PURCHASING DECISION AIDS

Many sites and tools are available to help consumers with online purchasing decisions. Some sites offer price comparisons as their primary tool (e.g., **pricerunner.co.uk** and **shopzilla.com**); others evaluate services, trust, quality, and other factors. Shopping portals, shopping robots ("shopbots"), business ratings sites, trust verification sites, friends' advice in social networks, and other shopping aids are also available. The major types are discussed next.

Shopping Portals

Shopping portals are gateways to webstores and e-malls. Specifically, they host many online stores simultaneously. Like any other portal, they can be comprehensive or niche-oriented. Comprehensive, or general-purpose, portals have links to many different sellers, and present and evaluate a

broad range of products. An example of a comprehensive portal is eCOST.com (**ecost.com**). Several public portals also offer shopping opportunities and comparison aids. Examples are **shopping.com** (part of the eBay Commerce Network), **shopping.yahoo.com**, and **pricegrabber.com**. eBay (**ebay.com**) is a shopping portal also because it offers shopping at fixed prices as well as auctions. Several of these evaluation companies have purchasing shopbots or other, smaller shopping aids, and have incorporated them into their portals.

Some shopping portals offer specialized items with links to certain products (e.g., books, phones) or services (universities, hospitals). Such portals also help customers conduct research. Examples include **zdnet.com/topic-reviews** and **shopper.cnet.com** for computers, appliances, and electronics. The advantage of niche shopping portals is their ability to specialize in a certain line of products.

For a comprehensive site with information on e-retailers, B2B, marketing, etc., see Internet Retailer (**internetretailer.com**).

Price and Quality Comparison by Shopbot Software Agents

Savvy Internet shoppers may want to find bargain shopping. **Shopping robots** (**shopping agents, shopbots**) are search engines that look for the lowest prices or other search criteria. Different shopbots use different search methods. For example, mySimon (**mysimon.com**) searches the Web to find the best prices and availability for thousands of popular items.

Google Enterprise Search and Enterprise Search Appliance

Google Enterprise Search helps companies search all internal and public-facing information.

Search is facilitated by a powerful server called Enterprise Search Appliance which enables many flexible search options including the search of some foreign languages.

A similar service is offered by Search Spring (**searchspring.net**).

"Spy" Services

In this context, "spy" services are not the CIA or MI5. Rather, they are services that visit websites for customers, at their direction, and notify them of their findings. Web surfers and shoppers constantly monitor sites for new information, special sales, ending times of auctions, stock market updates, and so on, but visiting the sites to monitor them is time consuming. Several sites will track stock prices or airline special sales and send e-mails accordingly. For example, **money.cnn.com**, **pcworld.com**, **expedia.com**, and alerts at **google.com/alerts** will send people personalized e-mail alerts.

Of course, one of the most effective ways to "spy" on Internet users is to introduce cookies and spyware to their computers (see Chapter 9 for details).

Ratings, Reviews, and Recommendation Sites

Ratings and reviews by friends, even by people that you do not know (e.g., experts or independent third-party evaluators), are usually available for social shoppers. In addition, any user has an opportunity to contribute reviews and participate in relevant discussions. The tools for conducting ratings and reviews, which are presented next, are based on Gratton and Gratton (2012), **bazaarvoice.com/solutions/conversations**, and the authors' experiences. The major types of tools and methods are:

- **Customer ratings and reviews.** Customer ratings are popular; they can be found on product (or service) pages or on independent review sites (e.g., TripAdvisor) and/or in customer news feeds (e.g., Amazon.com, Buzzillions, and Epinions). Customer ratings can be summarized by votes or polls.
- **Customer testimonials.** Customer experiences are typically published on vendors' sites, and third-party sites such as TripAdvisor. Some sites encourage discussion (e.g., Bazaarvoice Connections; **bazaarvoice.com/solutions/connections**).
- **Expert ratings and reviews.** Ratings or reviews can also be generated by domain experts and appear in different online publications.
- **Sponsored reviews.** These reviews are written by paid bloggers or domain experts. Advertisers and bloggers can find each other by searching through websites such as **sponsoredreviews.com**, which connects bloggers with marketers and advertisers.
- **Conversational marketing.** People communicate via e-mail, blog, live chat, discussion groups, and tweets. Monitoring conversations may yield rich data for market research and customer service. An example of a conversational marketing platform is Adobe Campaign (**adobe.com/solutions/campaign-management.html**; formerly Neolane).
- **Video product review.** Reviews can be generated by using videos. YouTube offers reviews that are uploaded, viewed, commented on, and shared.
- **Bloggers post reviews.** This is a questionable method, however, since some bloggers are paid and may use a biased approach. However, many bloggers have reputations as unbiased sources. For a list of 50 product review blogs, see Sala (2012).

Many websites rate various e-tailers and online products based on multiple criteria. Bizrate (**bizrate.com**) and Consumer Reports Online (**consumerreports.org**) are well-known rating sites. Bizrate.com organized a network of shoppers that reports on various sellers and uses the compiled results in its evaluations. Note that different rating sites provide different rankings. Alexa Internet, Inc. (**alexa.com**; an Amazon.com company) computes Web traffic rank, see **alexa.com/pro/insight**.

Comparison Shopping Websites

A large number of websites provide price comparisons for products and services (e.g., online tickets, cruises). Online retailers such as Amazon.com also provide price comparisons and so do many other sites (e.g., **nextag.com**, **pricegrabber.com**, **mysimon.com**). FreePriceAlerts.com (**freepricealerts.com**) is a price comparison app.

Trust Verification Sites

With so many sellers online, many consumers are not sure whom they should trust. A number of companies evaluate and verify the trustworthiness of various e-tailers. One such company is TRUSTe (**truste.com**). The TRUSTe seal appears at the bottom of each TRUSTe-approved e-tailer's website. E-tailers pay TRUSTe for the use of the seal (which they call a "trustmark"). TRUSTe's 1300-plus members hope that consumers will use the seal as an assurance and as a proxy for actual research into their conduct of business, privacy policy, and personal information protection. Trust sites grant a *trust seal* for a business to display, demonstrating to customers the level of quality. For types see Trust Seal in Wikipedia. TRUSTe now offers a service for mobile devices, called TRUSTed apps (**truste.com/products-and-services/enterprise-privacy/TRUSTed-apps**), which provide ongoing monitoring and safeguarding of brands to ensure that merchants' mobile apps are trusted by consumers.

Some comprehensive trust verification sites are Symantec Corporation's VeriSign (**verisign.com**) and BBBOnline (**bbb.org**). VeriSign tends to be the most widely used. Other sources of trust verification include Secure Assure (**secure-assure.co.uk**), which charges yearly fees. In addition, Ernst & Young, the global public accounting firm, has services for auditing e-tailers in order to offer some guarantee of the integrity of their business practices. Other sites are **trust-guard.com** and **trust-verified.org**. For the results of a 2013 survey on which site seal people trust the most (conducted using Google Consumer Surveys, and reported at **baymard.com/blog/site-seal-trust**).

Concerns About Reviews, Ratings, and Recommendations

Some people raise the issue of how accurate reported reviews and recommendations are. On some sites, fake reviews and claims are suspected to encompass 30–40% of the total reviews. In 2012, however, Yelp unveiled its Consumer Alerts, which shows warnings to users when they find businesses who have paid for reviews (see **webpronews.com/just-how-bad-is-yelps-fake-review-problem-2014-01**). As of mid-January 2014, Yelp has issued almost 300 Consumer Alerts. (For an example of a Consumer Alert, see **searchengineland.com/yelp-turns-up-the-heat-285-consumer-alerts-issued-over-fake-reviews-181706**.) There is also a concern about businesses paying money to bloggers for producing reviews. Some claim that such reviews may be biased. Another concern is that in cases of a small number of reviewers, a bias (positive or negative) may exist. Finally, it is wise to look at bloggers' review sites. (For a list of the top 50 review blogs, see Sala 2012.) As a side note, Amazon.com has compiled a list of the "Funniest Reviews" posted on their site, on products ranging from banana slicers to horsehead masks (see **amazon.com/gp/feature.html?ie=UTF8&docId=1001250201**).

Other Shopping Assisting Tools

Other digital intermediaries assist buyers or sellers, or both, with research and purchase processes. For example, escrow services (e.g., **escrow.com** and **abnamro.com/en**) assist buyers and sellers with the exchange of items and money. A trusted third party frequently is needed to facilitate the proper exchange of money and goods, or to verify information. (Remember that trading partners usually do not even see each other.) Escrow sites may also provide payment-processing support, as well as letters of credit (see Chapter 11).

- Similar to Craigslist, Angie's List (**angieslist.com**) helps its members find high quality service companies and health care professional services in over 700 categories. Although there is a fee, its advantage over free review sites is there are no anonymous reviews and their data is certified "so you get the whole story" (see **angieslist.com/how-it-works.htm**). **Angieslist.com** also provides a complaint resolution service and discounts from highly rated service companies. They also offer live support through a call center.
- To organize store information in a standard, easy to see, and understandable format, vendors can use tools such as **facebook.com/thefind**. Shoppers can use the same tools to search once and compare products at every store, finding the best deals.

Another shopping tool is a *wallet*—in this case, an *electronic wallet*, which is a program that contains the shopper's information. To expedite online shopping, consumers can use electronic wallets so that they do not need to reenter the information each time they shop. Although sites such as Amazon.com offer their own specialized wallets, Microsoft Passport has two services, "a Single Sign-On service that allows members to use a single name and password to sign on to a growing number of participating websites, and a Wallet service that members can use to make fast, convenient online purchases."

Example: Yelp

Yelp (**yelp.com**) is a search engine whose mission is to help people find local (in a specific city) qualified services ranging from mechanics to restaurants to hairstylists based on recommendations of fellow locals. It connects people with businesses. Community members, known as "Yelpers," write reviews of the businesses and then rate them. Yelpers also find events and special offers and can connect with each other by posting "conversations" on different topics (for example, to "talk" with someone from Los Angeles, see **yelp.com/talk/la**). For details, see **yelp.com/faq** and Chapter 7.

Aggregators

These are sites that aggregate information from many other sites and bring them to one place. Yipit (**yipit.com**) is a free "e-mail-based daily aggregator" that gathers deals ("every deal in your city") on products from daily deal sites such as Groupon and Living Social. Tell Yipit what you want, and they will alert you when there are deals that match, usually at a fraction of the retail price (**yipit.com/about**).

Digital Coupons

Shoppers are introduced to a new generation of coupons, which can be described as "no clip and no print." This is how it works. You register, for example, with the "Just-For-U" program at Safeway. You click on the special sale items, or on the coupon of a product you want. When you go into Safeway and buy any of the products you clicked on (if they are available), you automatically receive a 10–20% discount. SavingStar Inc. (**savingstar.com**) offers a similar nationwide service in the USA.

Self-Service

One of the major benefits of EC is that it facilitates self-service. By providing tools that enhance self-service, customers can improve their online shopping experience. Examples of self-service tools are: configuration tools, calculators (e.g., for cost), FAQs, virtual online real-time assistants, application tools, and site searches.

SECTION 3.8 REVIEW QUESTIONS

1. Define shopping portals and provide two examples.
2. What are shopbots?
3. Explain the role of business and website ratings, reviews, recommendations, and site verification tools in the purchase-decision process.
4. Why are escrow services useful for online purchases? Describe "spy" services in B2C EC.
5. How can a site motivate people to contribute their opinions on products and vendors?
6. Describe digital coupons.

3.9 THE NEW FACE OF RETAIL COMPETITION: RETAILERS VERSUS E-TAILERS

The introduction of B2C intensified the competition in the retail market. As we illustrated in the Blue Nile case in Chapter 2, prices are declining, while companies are disappearing or changing. For example, many retailers are adding an online channel to their off-line offerings, or adding Internet only options. Adding an online retail channel helps, but many well-known retailers such as Best Buy, J.C. Penney, Radio Shack, Sears, Staples, and Office Depot still are forced to close numerous physical stores and are struggling to survive (e.g., see **usatoday.com/story/money/business/2014/03/12/retailers-store-closings/6333865** and Schoon 2014). Let us first look at an overview of the competition.

The Online Versus Off-Line Competition: An Overview

The Oxford Handbook of the Digital Economy from **oxfordhandbooks.com** provides a comprehensive study by Lieber and Syverson (2012), which describes the nature of the competition as well as the interplay of online and off-line retail markets. They also look at the characteristics of online shoppers and the changes in both the demand and supply. The major variables studied in the Oxford handbook are:

- **Customers' search cost.** With today's shopping search and comparison engines and the use of mobile devices, the search cost to customers is very low and its importance in the competition is probably declining.

- **Delivery time.** Order fulfillment in physical stores is usually immediate for physical goods. However, online companies are constantly reducing the time between purchase and consumption. Sometime in the future, delivery will be by drones (see Chapter 12 and the opening case to this chapter). In the meantime, e-tailers are developing efficient same-day delivery services, at least in the large metropolitan areas. Additionally, in 2013 Amazon.com partnered with the U.S. Postal Service for Sunday delivery to Los Angeles and New York metropolitan areas, with service to extend to other cities in 2014 (see **usatoday.com/story/tech/2013/11/11/amazon-Sunday-delivery-usps/3479055**). Google Shopping Express (**google.com/shopping/express**) is a same-day delivery service in the San Francisco and San Jose areas, challenging similar services offered by Amazon.com and eBay (see Hsu 2014).
- Obviously the delivery time of digitizable products is very fast in e-tailing. This is an important factor since prices and the quality of products sold online are getting to be similar in different stores, so delivery time becomes an important factor.
- **Distribution costs.** Traditional retailers need to spend money to build (or rent) stores, have inventory, advertise, etc. On the other hand, e-tailers need to pay for packing and shipments, but their advertising costs and inventory costs are lower. These costs vary, depending on the products, the geographical location, and more. The distribution costs can be an important factor in the competition.
- **Tax differences.** The advantage of online shopping is diminishing as the trend is to levy a tax on out of state online products.
- **Price.** Not only do online vendors offer lower prices on the same goods, but they also may create a price conflict within click-and-mortar companies (see Section 3.10).
- **Information available to buyers.** While buyers cannot physically examine goods they buy online, they can use the Internet to obtain considerable information on what they plan to purchase. In general, this is not a major factor in most transactions.
- **Other influencing factors.** Several other factors are important in the competition. For example, who the sellers are, who the buyers are, the distribution channels used, consumer satisfaction, level of consumer loyalty, and the relationship between the sellers' online and off-line marketing channels are all important. Finally, the shopping trends clearly indicate that more people are shopping online and spending more money doing so (e.g., see Moseti 2014). Younger people especially are turning to the so-called "showrooming," meaning that shoppers go to a physical store to examine goods and check prices. Then they buy online at a lower price (see Isidore 2014). Shoppers are using apps on their mobile devices to compare prices (see Motorola Solutions 2013; and for some of the apps used, see **verizonwireless.com/news/article/2014/01/showrooming-trend.html**). Customers in general prefer to "touch and feel" items before they purchase them online (see **cnbc.com/id/100597529**).

Global Competition

As of 2016, we are seeing an increase in online global competition. For example, several Chinese companies are offering consumer electronic products at a discount when compared to what you can get at Amazon.com. After acquiring Buy.com, Japanese company Rakuten (**rakuten.com**) is competing in the U.S. market by offering their website in English.

Retailers Versus E-Tailers

Since the beginning of EC in the mid-1990s, it has become clear that in certain industries, e-tailing will hurt brick-and-mortar retailers. In Chapter 2, we introduced Blue Nile as an example of disrupting the jewelry industry. Stock brokerages and travel agents also have become victims to pure-play competitors. Amazon.com initially concentrated on books, eliminating bookstores such as Borders. Today, Amazon.com is competing with thousands of retailers, including giants such as Walmart (see O'Connor 2013). *Encyclopedia Britannica* and many others no longer have printed editions. The initial line of defense for traditional retailers was to become a "click-and-brick," namely adding an online distribution channel to their physical presence. This helped some department stores and specialty stores, but not all.

Examples of Click-and-Brick Retailers

Most large retailers have already migrated to be click-and-brick companies. Let us look at several examples:

Best Buy

Best Buy, like Walmart, Target, and others, added an online marketing channel. However, in contrast with GAP, Best Buy was not successful. One reason is that the company operates large-scale stores. Consumers come to the stores, examine the products and go home and order them online ("showrooming") on Amazon.com because it is much cheaper. In summer 2012, Best Buy reduced its prices to match those of Amazon.com. The result was that in August 2012, Best Buy, which is one of the world's largest electronic retailers, saw its profit going down 91% in one year. Thus, the company decided to close 50 of its stores, and also is

moving to smaller stores to cut expenses. The future of Best Buy, which was one of the most successful electronic retailers just a few years ago, is improving but still uncertain as of April 2014. Because of customers engaging in "showrooming," in early 2013, Best Buy decided to price match not only all local retail competitors but also 19 "major online competitors." The price-matching initiative was temporary during the 2012 holiday season, but due to its popularity, Best Buy decided to make it permanent (see **businessinsider.com/best-buy-new-price-matching-policy-2013-2**).

SM Chain of Malls in the Philippines

According to Magdirila (2014), this huge chain (over 230 malls and supermarkets across the Philippines) is preparing for full-scale online operations by 2016.

Other Strategies

According to VOA News (2013), many retailers are providing apps that help shoppers locate items while they are inside physical stores. The retailers can also provide digital discount coupons and make it easier for shoppers to place online orders for out-of-stock merchandise. For more on these strategies, see Krupnik (2013).

What Can Traditional Retailers Do?

In addition to opening online channels and closing the least profitable stores, traditional companies have a few strategies to defend themselves. Here are representative examples:

Can Small Businesses Survive?

While large retailers such as Best Buy and HHGregg may go out of business, some small businesses may survive. Small businesses such as **dogtoys.com** and **dell.com** were pioneers of e-commerce and are still doing well. It seems that the success of small e-tailers is related to a strategy that includes:

- Niche markets. Products that cannot be produced in mass production (e.g., non-commodities) should be considered by a small business (e.g., provide custom-made and specialized products).
- Faster delivery than Amazon. Uniquely distributed products in local markets are ideal for small companies. (However, now Amazon offers same-day delivery in select cities via its "Local Express Delivery" service.)
- Protect privacy. Amazon tracks customers' movements on the Web.
- Concentrate on local markets.
- Provide outstanding customer service.
- Prices should be competitive.
- Maintain their reputation using such strategies as many small companies have done; either pure-play, brick-and-mortar, or click-and-brick can survive and succeed.

Going Global

Some small companies (e.g., **dogtoys.com**) have many global customers. Big companies like Amazon.com are also very active globally. For example, according to Brohan (2012), Amazon.com is Europe's largest online retailer. Large companies acquire local EC companies or need to enter into joint ventures with them.

Examples

Ralph Lauren Corporation (**ralphlauren.com**), apparel designer, manufacturer, and retailer, is selling aggressively online in Europe. In 2013, it started to sell online in Japan. Online sales increased about 30% in FY 2012 (**internetretailer.com/2012/05/25/ralph-lauren-sees-more-global-e-commerce-coming-soon**). A similar global expansion was done by Baccarat, a large French manufacturer of jewelry, crystal, and stemware products. For details on how Baccarat is growing its online sales, see Enright (2012). For more on companies going global, see Chapter 12.

Conclusion

According to Isidore (2014) and many others, the future of brick-and-mortar retail does not look good. Many stores already have gone out of business. In addition, many retailers will go out of business sooner or later. Note that the online business is becoming more diversified. For example, Amazon.com is experimenting with the same-day delivery of vegetables and fruits, and China's e-commerce companies are moving on to banking (see Riley et al. 2014).

SECTION 3.9 REVIEW QUESTIONS

1. What are the major advantages of e-tailers over retailers?
2. Why is off-line retailing in bad shape?
3. Discuss some strategies for small businesses to survive and succeed.
4. Why do e-tailers go global?

3.10 ISSUES IN E-TAILING AND LESSONS LEARNED

The following are representative issues and problems (and some lessons learned from them) that need to be addressed when conducting B2C EC.

Disintermediation and Reintermediation

Disintermediation refers to the removal of an intermediary that is responsible for certain activities between trading partners (usually in a supply chain). As shown in part B of Figure 3.4, a manufacturer can bypass wholesalers and retailers, selling directly to consumers. Thus, B2C may drive regular retailers out of business. According to Lieber and Syverson (2012), half of the U.S. travel agencies went out of business between 1997 and 2007 due to online competition. For a vivid case of such disintermediation, see the Blue Nile case in Chapter 2. For bypassing intermediaries see Miller and Clifford (2013).

However, consumers might have problems selecting an online vendor, vendors might have problems delivering goods to customers, and both might need an escrow service to ensure the transactions. Thus, new types of intermediaries might be needed, and services might be provided by new or by traditional intermediaries. This new activity is called **reintermediation**. It is pictured in part C of Figure 3.4. An example of a company that provides these new roles of intermediation is Edmunds (**edmunds.com**), which provides consumers with information about cars (e.g., price comparisons, ratings, and the dealer costs). Another example would be travel agents who can arrange complicated trips, provide longer periods for holding reservations, arrange special tours and spot deals. Such new role playing companies can grow rapidly while traditional intermediaries decline.

Resistance to Change

Intermediaries that may be eliminated, or their status and pay may decrease, might resist the change. One example is the computerization of the Chicago Mercantile Exchange (CME) and the Chicago Board of Trade (CBOT). The resistance by brokers there has been going on for a long time.

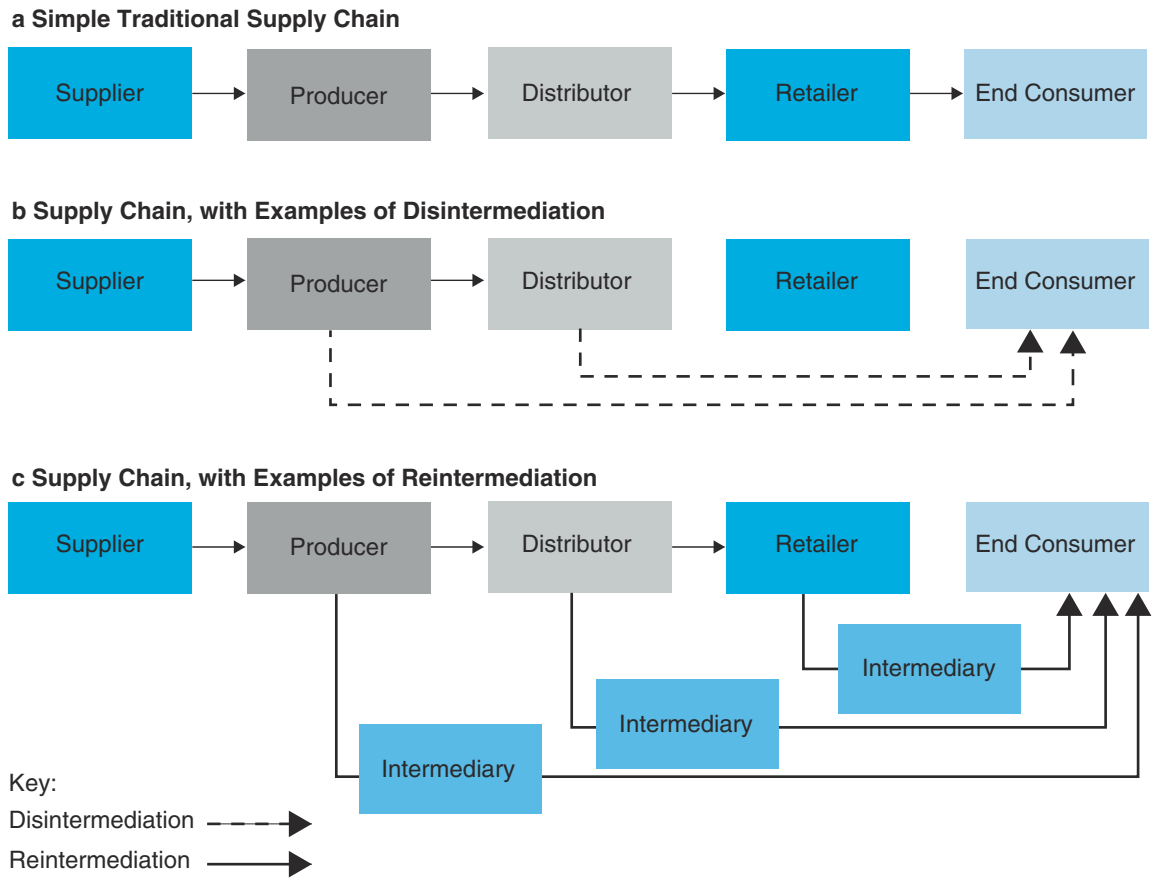

Figure 3.4 Disintermediation and reintermediation in the B2C supply chain

Channel Conflict

Many traditional retailers establish a supplemental marketing channel when they start selling online. Similarly, some manufacturers have instituted direct marketing initiatives parallel with their established channels of distribution, such as retailers or dealers. In such cases, *channel conflict* can occur. **Channel conflict** refers to the case in which online sales damage the well-being of an existing channel partner. The extent of this conflict varies according to the nature of the industry and the characteristics of particular firms, but sometimes a move to sell online can damage old, valued relationships between trading partners. Channel conflict may occur when a move to online trading simply shifts a company's customers from their traditional stores to an online environment, thus cannibalizing the sales from the former, and potentially negatively affecting the traditional outlets by rendering them less profitable. One model that can solve the conflict is to allow ordering and payment online, but the item is delivered to a physical store for pickup.

Product and Service Customization and Personalization

The Internet also allows for easy self-configuration ("design it your way"). This creates a large demand for customized products and services. Manufacturers can meet that demand by using a *mass customization* strategy (see **en.wikipedia.org/wiki/Build_to_order**). As indicated earlier, many companies offer customized products on their websites.

In conclusion, e-tailing is growing rapidly as an additional marketing channel. In other words, the *click-and-brick model is* a successful one regardless of the conflicts cited. For more about e-tailing and multichanneling retailing, see **dmsretail.com/etailing.htm**.

Lessons Learned from Failures and Lack of Success of E-Tailers

As in the physical world, companies can also fail when doing business online. Although thousands of companies have evolved their online strategies into mature websites with extensive interactive features that add value to the consumer purchasing process, many other sites remain simple "brochureware" sites with limited interactivity. Many traditional companies are in a transitional stage. Mature transactional systems include features for payment processing, order fulfillment, logistics, inventory management, and a host of other services. In most cases, a company must replicate each of its physical business processes and design several more that can be performed online only. Today's environment includes sophisticated access to order information, shipping information, product information, and more through Web pages, touch-tone phones, Web-enabled smartphones, and tablets over wireless networks. Faced with all of these variables, the challenges to profitably in implementing EC can be daunting.

A traditional brick-and-mortar store with a mature website that uses a successful click-and-mortar strategy such as those used by Target, Walmart, and Staples can create a successful multichannel business whose benefits can be enjoyed by customers who like to have options on how to buy.

SECTION 3.10 REVIEW QUESTIONS

1. Define disintermediation.
2. Describe reintermediation.
3. Describe channel conflict and other conflicts that may appear in e-tailing.
4. Explain personalization and customization opportunities in e-tailing. What are their benefits to customers?
5. What makes click-and-mortar companies successful?

MANAGERIAL ISSUES

Some managerial issues related to this chapter are as follows.

1. **What are the limitations of e-tailing? Where is e-tailing going?** In Korea, Internet retailing has become the second most important distribution channel, exceeding the national sales volume of all department stores. In many countries, B2C is the fastest growing form of retailing. The question is what will be the limits of e-tailing? The market concentration has already begun, setting a high bar for new e-tailers. However, small businesses can easily start their online channel as part of a stable e-mall service platform when they find a niche opportunity.

   Because many easy sources of funding have dried up and revenue models are being scrutinized, vendor consolidation will continue until greater stability within the e-tailing sector occurs. Ultimately, there will likely be a smaller number of larger sellers with comprehensive general sites (e.g., Amazon.com) and many smaller, specialized niche sites (e.g., Net-a-Porter, Blue Nile).
2. **How should we introduce wireless shopping?** In some countries (e.g., Japan, Korea, Finland, USA), shopping from smartphones is already very popular. In other countries, mobile shopping is not popular yet, although the platform itself may be available. Alternative channels (multichannel marketing) and a culture of a variety of communication channels is developing in many coun-

tries, facilitating mobile strategies. In addition, because the younger generation prefers the mobile platform, strategies for the younger generation need to be considered. Offering mobile shopping might not be simple or appropriate to all businesses, but it certainly will be dominant in the future.

3. **Do we have ethics and privacy guidelines?** Ethical issues are extremely important online, just as they are offline. In traditional systems, people play a significant role in ensuring the ethical behavior of buyers and sellers. Will online ethics and the rules of etiquette be sufficient to guide behavior on the Internet? Only time will tell. For example, as job-applicant information travels over the Internet, security and privacy become even more important. It is management's job to make sure that information from applicants is secure. Moreover, e-tailers need to establish guidelines for protecting the privacy of customers who visit their websites. Security and privacy must be priorities.
4. **How will intermediaries act in cyberspace?** The role of online intermediaries has become more and more important. In the banking, stock trading, job market, travel industry, and book sales sectors, the Internet has become an essential service channel. These intermediary services create new business opportunities for sellers and intermediaries.
5. **Should we try to capitalize on social networks?** Many organizations and individuals began advertising or selling products and services on Facebook and other social networks. Although large companies currently are concentrating on advertising, some are experimenting with B2C sales (see Chapter 7). Social commerce may become an extremely important marketing channel and should be at least experimented with by retailers.
6. **How should we manage multichannel marketing to avoid channel and/or price conflicts?** Managing multichannels requires a strategy on handling different types of transactions in the most appropriate and cost-effective way. Changing channels needs to be done together with appropriate conflict management.
7. **What are the major potential limitations of the growth of B2C EC?** First, the limitations depend on market demands for online products. The saturation effect may be strong. Second, the cost and availability of Internet access may influence growth. Third, cultural differences and habits may deter or slowdown e-shopping. Fourth, the ease of B2C shopping is important, and fifth, the availability of payments and order fulfillment infrastructure are critical success factors.
8. **How to deal with "big data"?** A large amount of data is collected in B2C and is growing rapidly. It is necessary to extract valuable information and knowledge from this data. The technologies that are used belong mostly to the category of business intelligence (BI); they range from data and Web mining to several other analytical tools.

SUMMARY

In this chapter, you learned about the following EC issues as they relate to the chapter's learning objectives.

1. **The scope and characteristics of e-tailing.** E-tailing, the online selling of products and services, is growing rapidly. Computers, software, and electronics are the major items sold online. Books, CDs, toys, office supplies, and other standard commodities also sell well. Even more successful are services that are sold online, such as airline tickets and travel services, stock trading, and some financial services.
2. **Classify e-tailing business models.** The major e-tailing business models can be classified by distribution channel—a manufacturer or mail-order company selling directly to consumers, pure-play (virtual) e-tailing, a click-and-mortar strategy with both online and traditional channels, and online malls that provide either referring directories or shared services. Social commerce facilitates group buying and location shopping.
3. **How online travel/tourism services operate.** Most services available through a physical travel agency also are available online. However, customers can get additional information more quickly using online resources. Customers can even submit bids to travel providers (e.g., using the C2B business model). Finally, travelers can compare prices, participate in online activities, read other travelers' recommendations, and view user-generated videos. Lately, social travel is becoming popular, with travelers learning from each other and organizing trips accordingly.
4. **The online employment market and its benefits.** The online job market is growing rapidly. The major benefits for employers are the ability to quickly reach a large number of job seekers at a low cost, conduct remote video interviews, and even conduct pre-employment qualification tests. Finally, résumés can be checked and matched against job requirements. Millions of job offers posted on the Internet help job seekers, who also can post their résumés for recruiters. Recruiting in social networks, especially LinkedIn and Facebook, is growing rapidly.
5. **The electronic real estate marketplace.** In most cases, the online real estate marketplace supports traditional operations. However, both buyers and sellers can save time and effort by using the electronic markets. Buyers can purchase properties in several locations much more easily than without the Internet, and in some situations

they have access to less expensive services (insurance, mortgages, etc.). Eventually, agents' commissions on regular transactions are expected to decline as a result of the electronic market for real estate, as more online sales directly by owner become popular.

6. **Online trading of stocks and bonds.** One of the fastest growing online businesses is the online trading of securities. It is inexpensive, convenient, and supported by a tremendous amount of financial and advisory information. Trading is very fast and efficient, almost fully automated, and is moving toward 24/7 global trading. However, security breaches are more possible, so good security protection is essential.
7. **Cyberbanking and online personal finance.** Branch banking is on the decline due to less expensive, more convenient online banking as the world becomes more accustomed to and trusting in cyberbanking. Today, most routine banking services can be done from anywhere. Banks can reach customers in remote places, and customers can conduct transactions with banks outside their community. This makes the financial markets more efficient. Online personal finance applications, such as bill paying, monitoring of accounts, and tax preparation, also are very popular.
8. **On-demand delivery service.** On-demand delivery service is needed when items are perishable or when delivering medicine, express documents, or urgently needed supplies. One example of on-demand delivery is e-groceries; these may be ordered online and are shipped or ready for store pickup within 24 h or less.
9. **Delivery of digital products.** Anything that can be digitized can be successfully delivered online. Delivery of digital products such as music, software, e-books, movies, and other entertainment online has been a success. Some print media, such as electronic versions of magazines or electronic books, also are successful when digitized and delivered electronically.
10. **Aiding consumer purchase decisions.** Purchase decision aids include shopping portals, shopbots and comparison agents, business rating sites, recommendations (including electronic ones), trust verification sites, and other tools. Tools include real-time mobile devices and extensive support from social networks.
11. **The new face of retail competition.** The surge in B2C has resulted in pressure on traditional retailers to add online channels and reduce prices. Even large companies such as Best Buy are struggling. The online retail giants, Amazon.com and eBay, are becoming more aggressive and competitive (e.g., adding same-day delivery), so their consumers are enjoying lower prices and better service. Traditional retailers also need a strategy to deal with the intense competition. New competition is also coming from Chinese and other foreign online vendors.
12. **Disintermediation and other B2C strategic issues.** Direct electronic marketing by manufacturers results in disintermediation by removing wholesalers and retailers. However, online reintermediaries provide additional services and value, such as helping consumers select among multiple vendors. Traditional retailers may feel threatened or pressured when manufacturers decide to sell directly to customers online; such direct selling can cause channel conflict. Pricing of online and off-line products and services is also an issue that frequently needs to be addressed.

KEY TERMS

Brick-and-mortar retailer
Business model
Channel conflict
Click-and-mortar retailer
Direct marketing
Disintermediation
E-grocer
Electronic (online) banking (e-banking)
Electronic retailing (e-tailing)
E-tailers
Event shopping
Internet Radio
Internet TV
Location-based e-commerce (l-commerce)
Multichannel business model
On-demand delivery service
Private shopping club
Reintermediation
Shopping portals
Shopping robots (shopping agents, shopbots)
Social TV
Virtual (pure-play) e-tailers

DISCUSSION QUESTIONS

1. Discuss the importance of comparison tools, product reviews, and customer ratings in online shopping.
2. Discuss the advantages of a specialized e-tailer, such as DogToys.com (**dogtoys.com**). Could such a store survive in the physical world? Why or why not?
3. Use Google to find the benefits of travel-related social networking sites. Discuss five of them.
4. Discuss the benefits of **salary.com**. Are there any disadvantages?

5. Why are online travel services a popular Internet application? Why do so many websites provide free travel information?
6. Compare the advantages and disadvantages of online stock trading with off-line trading.
7. Compare the advantages and disadvantages of distributing digitizable products electronically versus physical delivery.
8. Do you trust your personal data on social networks such as **linkedin.com** or **facebook.com**? How do you protect your privacy?
9. Many companies encourage their customers to buy products and services online, sometimes "pushing" them to do so. Why?
10. Would you use **monster.com** or **linkedin.com** for recruiting, or would you rather use a traditional agency? Why?
11. Travel social network WAYN (**wayn.com**) says that it is a bridge between two social sites: Facebook and TripAdvisor. Discuss.

TOPICS FOR CLASS DISCUSSION AND DEBATES

1. Discuss the advantages of established click-and-mortar companies such as Walmart over pure-play e-tailers such as Amazon.com. What are the disadvantages of click-and-brick retailers as compared with pure-play e-tailers? Also debate: Competition between pure-play e-tailers (e.g., Amazon.com, Blue Nile) and traditional retailers such as HP, Walmart, and other department stores that have added the Web as a part of a multichannel business model. Who may win? Under what assumptions?
2. Online employment services make it easy to change jobs; therefore, turnover rates may increase. This could result in total higher costs for employers because of increased costs for recruiting and training new employees, and the need to pay higher salaries and wages to attract or keep existing employees. What can companies do to minimize this problem?
3. Discuss each of the following as limiting factors on the growth of B2C EC: (a) Too much competition, (b) expensive technology, (c) people need desktop computers to shop online (but smartphones are changing this situation), (d) people need the social interaction of face-to-face shopping, (e) many people cannot afford Internet access, and (f) the fear of fraud and security breaching.
4. Debate: Some employers ask job applicants permission to log into their Facebook account during an in-person interview; others ask for complete, unfiltered access to the entire Facebook account. Some U.S. states propose legislation (several already have passed laws) banning employers (and universities) from using a prospective employee's Facebook content as selection criteria.
5. In April 2012, TripAdvisor announced on its website that it is the world's largest social travel site. Some people say that WAYN is the only truly social travel network. Compare the social networking activities of both sites. Debate the issue.
6. Debate: Should online sales be an independent division in a click-and-mortar firm?
7. Debate: What is the future of Amazon.com?
8. Read Berzon's 2012 article (**online.wsj.com/news/articles/SB10000872396390444082904577607661262270108**) and find more information about online poker. Then debate: Is poker a game of skill or it is just gambling?
9. Some love digital coupons, others say the idea is waste of time since coupons are not available for the products they want to buy. Research the topic and debate the value of digital versus paper coupons.
10. Investigate the impact of online casinos on physical ones. Discuss.

INTERNET EXERCISES

1. Many consumer portals offer advice and ratings on products or e-tailers. Identify and examine two separate general-consumer portals that look at sites and compare prices or other purchase criteria. Try to find and compare prices for some digital cameras, microwave ovens, and MP3 players. Visit **yippy.com**. How can this site help with your shopping? Summarize your experience. Comment on the strong and weak points of such shopping tools.
2. Visit **landsend.com** and prepare a customized order for an item of clothing. Describe the process. Do you think this will result in better-fitting clothes? Do you think this personalization feature will lead to greater sales volume for Lands' End?
3. Make your résumé accessible to millions of people. Consult **asktheheadhunter.com** or **careerbuilder.com** for help rewriting your résumé. See **monster.com** for ideas about planning your career. Get prepared for an online job interview and look at **monster-tronics.com** for interesting capabilities. Use the Web to determine what salary you can get in the city of your choice for the kind of job you want.
4. Visit **zillow.com**, **decisionaide.com**, or a similar site and compute the monthly mortgage payment on a 30-year loan at 5.5% fixed interest. Also check current interest rates. Estimate your closing costs on a $200,000 loan. Compare the monthly payments of the fixed rate

with that of an adjustable rate for the first year. Finally, compute your total payments if you take the loan for 15 years at the going rate. Compare it with a 30-year mortgage. Comment on the difference.

5. Access the Virtual Trader game at **virtualtrader.co.uk** and register for the Internet stock game. You will be bankrolled with a virtual £100,000 in a trading account every month. You can play other investment games at **investopedia.com/simulator** or find and create a free stock market game at **marketwatch.com/game**. Comment on your experiences.
6. Compare the price of a specific Sony digital camera at **shopping.com**, **mysimon.com**, **bizrate.com**, and **pricegrabber.com**. Which site locates the best deal? Where do you get the best information?
7. Enter **vineyardvines.com**. Identify all multichannels used in their retail operations. List the benefits to the company.
8. Enter **bazaarvoice.com** and find how consumers can engage in a dialog. Look at its Q&A functionality in both "Conversations" and "Connections." Write a report based on your findings.
9. Enter **couchsurfing.org** and examine how they connect potential travelers with hosts. Discuss the things that you like and the limitations of this service. Compare with home swapping sites such as **homeexchange.com**.
10. Enter **zillow.com/corp/ZillowPortfolio.htm** and see Zillow's portfolio. Examine their capabilities and the benefits to consumers. Write a report.
11. How can LinkedIn and Facebook help job seekers? How can they help employers? Relate your answers to what you can find on **indeed.com**.
12. Compare the sites **yelp.com** and **epinions.com**.
13. Visit **hayneedle.com**. What kind of a mall is this?
14. Enter **layar.com**. Find information about Layar Creator and other products that can support B2C shopping. Write a report.
15. Enter **play.google.com/store**. Relate the offerings of this site to topics in this chapter.

TEAM ASSIGNMENTS AND PROJECTS

1. **Assignment for the Opening Case**
   Read the opening case and answer the following questions.
   (a) What are Amazon.com's critical success factors? Is its decision to offer a much broader selection of items a good marketing strategy? With the increased services and diversification, do you think the company will be able to concentrate on its core competency of enhancing the Amazon.com brand? What about their long-term vs. short-term strategy?
   (b) Amazon.com operates Zappos (**zappos.com**) as a separate entity. Does this make sense? Why or why not?
   (c) Visit **amazon.com** and identify at least three specific elements of its personalization and customization features. Browse specific books on one particular subject, leave the site, and then go back and revisit the site. What do you see? Are these features likely to encourage you to purchase more books in the future from Amazon.com? Check the 1-Click feature and other shopping aids provided. List the features and discuss how they may lead to increased sales.
   (d) With what type(s) of companies does Amazon.com have alliances? Why?
   (e) Check all the personalization features on Amazon.com. List their advantages.
   (f) Find the technology-oriented activities at Amazon.com (e.g., Mechanical Turk; making e-readers). List the major ones and discuss the logic of such offerings.
   (g) Find some recent material on Amazon.com's marketing strategy and discuss your findings.
   (h) Examine social networking activities on Amazon.com. What are their purposes?
2. Each team will investigate the services of two online car-selling sites (from the following list or other sites). When the teams have finished, they should bring their research together and discuss their findings.
   (a) Buying new cars through an intermediary (**autobytel.com** or **carsdirect.com**).
   (b) Buying used cars (**autotrader.com**).
   (c) Buying used cars from auto dealers (**manheim.com**).
   (d) Automobile rating sites (**carsdirect.com** and **fueleconomy.gov**).
   (e) Car-buying portals (**thecarportal.com** and **cars.com**).
   (f) Buying collector cars (**classiccars.com** and **antiquecar.com**).
3. Each team (or team member) will review two or three travel-oriented social networks (e.g., **world66.com**, **virtualtourist.com**, **bootsnall.com**, **tripadvisor.com**, **travel.tripcase.com**, Lonely Planet's Thorn Tree travel forum **lonelyplanet.com/thorntree**, **wayn.com**, and **budgetglobetrotting.com**). Compare their functionalities. Then read Carey et al. (2012) and examine the various issues raised in this paper including the surfing strategy. Write a report.
4. Each team will represent a broker-based area (e.g., real estate, insurance, stocks, employment). Each team will find a new development that has occurred within the assigned area over the most recent three months. Look for vendor announcements on these sites, and search for new happenings in each area. In addition, examine the relevant

business news at **bloomberg.com**. After completing your research, as a team, prepare a report on disintermediation in your assigned area.

5. Watch the video "Internet Marketing and E-Commerce with Tom Antion Part One" (9:06 min) at **youtube.com/watch?v=tc1u9eqpf68** (Part Two at **youtube.com/watch?v=7jmK0_QTguk** is optional) and answer the following questions:
   (a) What revenue sources are cited?
   (b) What B2C revenue sources that you are aware of are not cited?
   (c) What are the two "affiliate" models? Compare these two models.
   (d) Why is eBay so great for selling?
   (e) Comment on the suggestions for products/services you can sell from your home.
   (f) What problems and limitations do you see for conducting business from your home?
6. View some videos about future retail shopping (both offline and online). Discuss what B2C e-commerce may look like in the future, considering future shopping innovations (e.g., see Microsoft's future vision on retailing and several videos offered by Metro AG in Europe on future shopping).
7. Your mission is to help people find jobs online. Each team evaluates several job sites and lists their capabilities and shortcomings. (Starting list: **craigslist.org**, **careerbuilder.com**, **dice.com**, **glassdoor.com**, **linkedin.com**, **mediabistro.com**, **monster.com**, **simplyhired.com**, and **tweetmyjobs.com**.) In addition, check virtual job fairs such as "Monster Virtual Job Fair" (**virtualjobfair.be**).
8. The team(s) investigates Pandora Radio (**pandora.com**). Concentrate on:
   (a) All sources of music they can stream.
   (b) All devices that can be used to access Pandora.
   (c) Their business model and competitiveness.
   (d) Present your findings.

CLOSING CASE: ETSY—A SOCIAL-ORIENTED B2C MARKETPLACE

Etsy is online marketplace where designers across the world sell unique handcrafted jewelry, clothing, vintage items (20 years or older), art, prints and posters, handmade goods, craft supplies, and more. According to its website, Etsy has created a community of sellers, each with a virtual storefront. The sellers are usually independent designers who sell small quantities of unique handcrafted goods. Etsy can be viewed as a designer's virtual fair where creators have their own virtual store with an "about" link so buyers can learn about the shop, read reviews, and contact the seller with any questions. Each seller may offer a link to their Facebook or Instagram page, so potential buyers can see products available to purchase. This is how Etsy emphasizes its social presence. For tips on social networking success on Etsy, see **blog.etsy.com/en/tags/etsy-success-social-networking**.

The Company's Mission

According to **etsy.com/about**, the company's mission is "to re-imagine commerce in ways that build a more fulfilling and lasting world." In 2012, Etsy became a "Certified B Corporation," which is "a new kind of company that uses the power of business to solve social and environmental problems" (see **blog.etsy.com/news/2012/etsy-joins-the-b-corporation-movement**).

The Community

According to **etsy.com/community**, Etsy is more than a marketplace. It is a community of artists, creators, collectors, thinkers, and doers. Members are encouraged to share ideas, attend events (in your area), and join streaming workshops. Community members can post comments and stories. Etsy describes itself as "the marketplace we make together."

Etsy uses several social media tools and networks. For example, in April 2009, it organized an "Etsy Day" promotion on Twitter. In March 2011, the company introduced a Facebook-type social networking system called "People Search," a tool for people to search through all Etsy buyers and sellers and add people to their "Circle." This addition resulted in criticism regarding privacy, and subsequently to the protection of such personal information on Etsy's site. For more details, see **huffingtonpost.com/2011/03/15/etsy-privacy-debacle-site_n_836277.html**.

The Business and Revenue Models

Etsy is a for-profit private company. Although there is no membership fee, Etsy charges 20¢ for each item listed for four months, or until that item sells. There is an additional fee of 3.5% of the sale price of that item once that item is sold, and if the seller uses the site's payment system (called Direct Checkout), there is an additional 3% fee (or more, depending on location of bank account) per transaction. Etsy declared that the company is profitable and intends to go public.

Competition

Many of Etsy's direct competitors are located outside the USA (e.g., German-based DaWanda; **en.dawanda.com**,

Swiss-based Ezebee.com; **ezebee.com**). See details at **en.wikipedia.org/wiki/Etsy**. In the USA, many handcraft creators sell on eBay and Amazon.com. Some competing websites sell only selected items (e.g., clothes, jewelry). Etsy has an official blog (see **blog.etsy.com/en**). It has a presence on Facebook (**facebook.com/Etsy**) and Twitter (**twitter.com/etsy**). As of mid-2016, the company has over 914,400 followers on Pinterest (see **pinterest.com/etsy**) where there are thousands of pins about Etsy merchandise organized on almost 100 boards.

Conclusion

In addition to the "People Search" privacy issue, the company was criticized for insufficient fraud detection efforts. For example, only original creations are allowed to be sold on Etsy, while reselling items is forbidden. Etsy is now insisting on transparency from all of its vendors, and will continue to investigate all shops "flagged" for possible violations (see **blog.etsy.com/news/2013/a-frank-conversation-about-resellers/?ref=about_blog_title**). Despite the criticism, the company is growing rapidly. Etsy now operates in Germany, France, and Australia, and plans expansion to other countries.

Sources: Based on Chow (2014), Feldmann (2014), **en.wikipedia.org/wiki/Etsy**, and **etsy.com/blog/news** (both accessed April 2016).

Questions

1. Explain why the company has been compared to a cross between Amazon.com, eBay, and a grandma's basement.
2. Examine the mission of the company and explain what the company is doing to attain its mission.
3. The sellers in this case are mostly small businesses. As such, Etsy is considered a B2C company. However, it can also be viewed as an enabler of P2P. Explain.
4. Compare and contrast similar transactions conducted on Etsy and on eBay.
5. Enter **storenvy.com** and look at their markets. Compare this site with Etsy. Write a report.
6. Investigate the connection between Pinterest and Etsy. Start with Feldmann (2014). Write a report.

ONLINE FILES

Available at **ecommerce-introduction-textbook.com**
No Online Files are available for this chapter.

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Business-to-Business E-Commerce

4

Contents

Electronic supplementary material: The online version of this chapter (doi:10.1007/978-3-319-50091-1_4) contains supplementary material, which is available to authorized users.

Learning Objectives

Upon completion of this chapter, you will be able to:

1. Describe the B2B field.
2. Describe the major types of B2B models.
3. Discuss the models and characteristics of the sell-side marketplace, including auctions.
4. Describe sell-side intermediaries.
5. Describe the characteristics of the buy-side marketplace and e-procurement.
6. Explain how reverse auctions work in B2B.
7. Describe B2B aggregation and group-purchasing models.
8. Define exchanges and describe their major types.
9. Describe third-party exchanges.
10. Describe how B2B can benefit from social networking and Web 2.0.
11. Describe collaborative commerce.

OPENING CASE: ALIBABA.COM—THE WORLD'S LARGEST B2B MARKETPLACE

Alibaba Group is a collection of Internet-based e-commerce companies, some of which are B2B (notably Alibaba.com); the others are B2C and EC services (e.g., payments). For a company overview, see **alibabagroup.com/en/about/overview**. The company started as a portal for connecting Chinese manufacturers with buyers from other countries. By 2014, Alibaba Group became the world's largest e-commerce enterprise. Its business-to-business (B2B) operation (Alibaba.com) is the world's largest marketplace. The fascinating story of the company is described by Charles (2014) and by Erisman (2015).

E. Turban et al., *Introduction to Electronic Commerce and Social Commerce*,
Springer Texts in Business and Economics, DOI 10.1007/978-3-319-50091-1_4

The Opportunity

The Alibaba Group was started in 1999 by Jack Ma and his partners. Ma envisioned an opportunity to connect foreign buyers with Chinese manufacturers, especially the small ones. These companies wanted to go global but did not know how to do it. The initial business was Alibaba.com, a B2B portal, which later on developed into a comprehensive B2B marketplace. The Alibaba Group also added a consumer-to-consumer (C2C) marketplace called Taobao (**taobao.com**). In 2004, Alibaba added the "Alipay Cross-Border E-Payment Service" (**alipay.com**). In 2007, the Alibaba Group founded Internet-based business management software company Alisoft (**alisoft.com**; introduced into **alibaba.com** in 2009), followed by Tmall.com (**tmall.com**), a giant B2C platform. The company established a cloud computing platform and restructured over time. In 2014, Alibaba Group had an IPO in the USA raising over $20 billion. This case concentrates on Alibaba.com, the B2B company (herein "Alibaba.com").

The Solution

Alibaba.com is an online marketplace composed of a platform for buyers, a platform for sellers, a community, and B2B services. The company's mission is to provide all the necessary support for buyers, suppliers, and traders. The components and role of the company are illustrated in Figure 4.1

- **Suppliers:** Post their catalogs, company information, special promotions, etc. on the suppliers' space. Alibaba.com helps to reach international buyers. Suppliers can get free online training.
- **Buyers:** Search for potential products and suppliers and also have the option to post what they need (requests) on the buyers' space and get quotes from suppliers. Buyers can verify the suppliers' worthiness. (See a video about suppliers' assessment at **sa.alibaba.com**). Alibaba.com provides inspection services with reliable experts. Buyers can compare prices and terms of service as well.
- **Services for Buyers and Suppliers:** Alibaba.com helps to communicate, negotiate, and assist in reaching a deal. They also arrange the payment process, insurance, and delivery details. Alibaba.com provides all the technology necessary to support the activities on its site. It also provides services such as escrow and handling customer complaints.
- **My Alibaba:** A personal communication and trade management tool on Alibaba.com. It is now separated for buyers and suppliers.
- **Tools and Resources:** Alibaba.com provides information and tools for export and import. It also provides a trade-show channel.
- **Alibaba Cloud Computing and Other Infrastructure:** The company is a developer of cloud computing services**.** The company is committed to supporting the growth of Alibaba Group companies and providing a comprehensive suite of Internet-based EC-oriented computing services, which include e-commerce data mining, high-speed massive e-commerce data processing capabilities, and data customization.
- **Alipay** (**alipay.com**) is a cross-border online payment platform, mainly used by buyers and sellers engaging in e-commerce transactions. It offers an easy, safe, and secure way for millions of individuals and businesses to make and receive payments on the Internet. By 2016, Alipay had 400 million registered users who made over 519 billion monthly payments; mobile users, through Mobile Alipay. Mobile Alipay is now the largest mobile platform in the world. See **expandedramblings.com/index.php/alipay-statistics**.

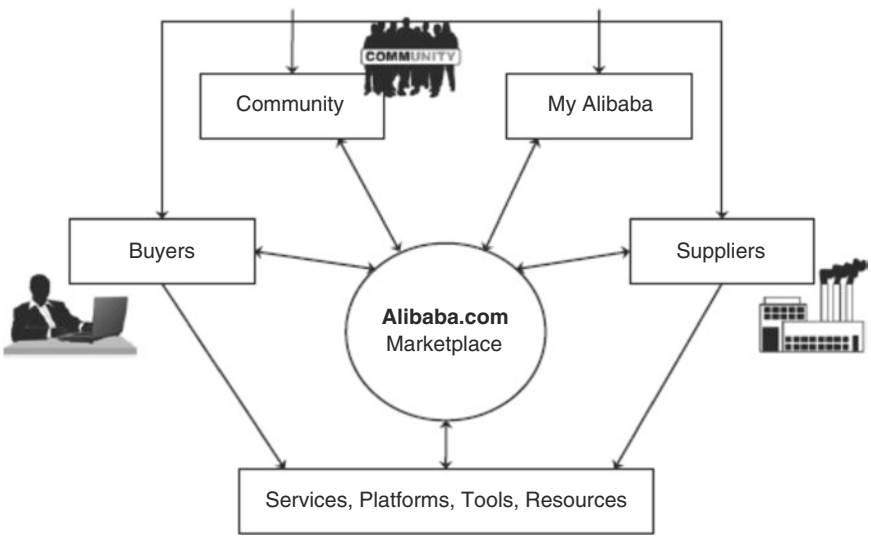

Figure 4.1 The role of Alibaba.com in B2B

- Alibaba.com Secure Payment (an escrow service; **activities.alibaba.com/alibaba/secure-payment.php**) is a service that holds the payment to the seller until both parties have confirmed that the transaction is complete. Alibaba Secure Payment also has a Dispute and Refund process if the buyer does not receive the goods or is unhappy with the delivery. For more information about the Escrow Service and the Dispute and Refund process, see **service.alibaba.com/buyer/faq.htm**.

Alipay also offers an online global payment solution to help buyers or sellers outside China to do business in China. Alipay supports transactions in 28 major foreign currencies (February 2016).

The Database

The center of Alibaba.com is its huge database, which is basically horizontal information organized into dozens of industry categories, including agriculture, apparel and fashion, automobiles, and toys. Each industry category is further divided into subcategories (over 800 in total). For example, the toy category includes items such as dolls, electronic pets, and wooden toys. Each subcategory includes classified postings organized into four groups: sellers, buyers, agents, and corporations. Each group may include many companies and products. (Some categories have thousands of product postings.) A powerful search engine helps navigate the database.

Community Services

Alibaba.com provides the following major features all related to import and export: free e-mail, help center, 24/7 online intelligent robot to assist with answering questions, tutorials for traders, Trade Alert free updates to your inbox, news, tradeshow information, legal information, arbitration, forums and discussion groups, trade trends, and so on. In addition, a supplier can create a personalized company Web page as well as a "product showroom"; members also can post their own marketing leads (where to buy and sell). Alibaba.com also offers the TradeManager mobile app (**trademanager.alibaba.com**), which is their Instant Messaging tool. TradeManager can be used to chat with buyers in real time, get real-time translation, easily search for buyers and suppliers, and get the latest trade results. The TradeManager app is provided in multiple languages and at relatively low fees (the IM is free). For details, see Charles (2014) and **trademanager.alibaba.com/features/introduction.htm**.

According to DYC Software Studio (**chat-translator.com**), DYC sells translation software called ChatTranslator for TradeManager, which is available in 20 languages. It can translate and send messages in any foreign language and translate replies from one language into the user's language. (For information about features and to purchase and download the software, see **chat-translator.com/products/chat-translator-trademanager.html** and **download.cnet.com/Chat-Translator-for-TradeManager/3000-20424_4-75212643.html**). To see more about the tools and features Alibaba offers to help buyers and sellers, see **alibaba.com/help/alibaba-features.html**.

The Competition

Many companies are attempting to rival Alibaba. For example, JD.com (**jd.com**, which merged with Tencent) is China's second largest e-commerce company. (It is used for both B2B and B2C.) Made-in-China.com (**made-in-china.com**), another world leading B2B portal, is another competitor. In the international market, companies such as TradeBanq (**tradebanq.com**), EC21 (**ec21.com**), Hubwoo (**hubwoo.com**), and Allactiontrade.com (**allactiontrade.com**) are all competing.

The Results

By 2016, Alibaba.com covered over 5200 product categories and had about 280 million registered, active buyers. The company conducts business in over 240 countries and regions, and it employs more than 35,000 people.

Sources: Based on Charles (2014), Chen (2016), Erisman (2015), **crunchbase.com/organization/alibaba**, **buyer.alibaba.com**, and **seller.alibaba.com** (all accessed March 2016).

Note: For seven things to know about Jack Ma, see **upstart.bizjournals.com/entrepreneurs/hot-shots/2013/09/25/meet-jack-ma-things-to-know-about.html**.

LESSONS LEARNED FROM THE CASE

B2B e-commerce, which constitutes over 85% of all EC volume, is composed of different types of marketplaces and trading methods. The opening case illustrates a marketplace for many buyers and sellers to make transactions. The case presents the technology support provided for the B2B marketplace. In addition, the case describes information about support services (e.g., escrow services). The case illustrates the services provided for sellers (which are discussed in more detail in Sections 4.4 through 4.6) and the services for buyers (described in Sections 4.8, 4.10, and 4.13). The case also demonstrates the role of marketplaces (Sections 4.15 and 4.17). All the major EC buying and selling B2B methods as well as types of B2B marketplaces and portals are described in this chapter. Finally, we relate B2B to social networking and other support services.

4.1 CONCEPTS, CHARACTERISTICS, AND MODELS OF B2B E-COMMERCE

B2B EC has some special characteristics as well as specific models, components, and concepts. The major ones are described next.

Basic B2B Concepts and Process

Business-to-business e-commerce (B2B EC), also known as *eB2B* (*electronic B2B*), or just B2B, refers to transactions between businesses conducted electronically over the Internet, extranets, intranets, or private networks. Such transactions may take place between a business and its supply chain partners, as well as between a business and a government, and with any other business. In this context, a *business* refers to any organization, private, public, for profit, or nonprofit. In B2B, companies aim to computerize trading transactions and communication and collaboration processes in order to increase efficiency and effectiveness. B2B EC is very different and more complex than B2C. It is much more difficult to sell to a company than to individuals. For a comprehensive discussion, see Wirthwein and Bannon (2014).

Key business drivers for electronic B2B (some of which were shown in the opening case) are the need to reduce cost, the need to gain competitive advantage, the availability of a secure Internet platform (i.e., the extranet), and the private and public B2B e-marketplaces. In addition, there is the need for collaboration between business partners, the need to reduce transaction time and delays along the supply chain, and the emergence of effective technologies for interactions and systems integration. Several large companies have developed efficient B2B buying and selling systems. An example is "Dell PremierConnect" that is illustrated in the video "Premier Connect Demo" at **youtube.com/watch?v=-GAZlWGJMLI**.

For B2B statistics, see Pick (2015).

The Basic Types of B2B Transactions and Activities

The number of sellers and buyers and the form of participation used in B2B determine the five basic B2B transaction activity types:

1. **Sell-side.** One seller to many buyers.
2. **Buy-side.** One buyer from many sellers.
3. **Marketplaces or exchanges.** Many sellers to many buyers.
4. **Supply chain improvements.**
5. **Collaborative commerce.**

The last two categories include activities other than buying or selling inside organizations and among business partners. They include, for example, removing obstacles from the supply chain, communicating, collaborating, sharing information for joint design and planning, and so forth.

Figure 4.2 illustrates these five B2B types. A brief explanation follows.

The Basic Types of B2B E-Marketplaces and Services

The following are the descriptions of the basic types of B2B e-marketplaces.

One-to-Many and Many-to-One: Private E-Marketplaces

In one-to-many and many-to-one markets, one company does either all the selling (*sell-side market*) or all the buying (*buy-side market*). Because EC is focused on a single company's buying or selling needs, this type of EC is also referred to as **company-centric EC**. Company-centric marketplaces—both sell-side and buy-side—are discussed in Sections 4.2, 4.3, 4.4, 4.5, and 4.6.

Many-to-Many: Public Exchanges (or E-Marketplaces)

In many-to-many e-marketplaces, many buyers and many sellers meet electronically to trade with one another. There are different types of such *e-marketplaces*, which are also known as **exchanges** (**trading communities** or **trading exchanges**). We will use the term *exchanges* in this book. Exchanges are usually marketplaces owned and run by a third party or by a consortium. They are described in more detail in Section 4.7. **Public e-marketplaces** are open to all interested parties (sellers and buyers). Alibaba.com is an example of an exchange.

Supply Chain Improvers and Collaborative Commerce

B2B transactions are conducted frequently along segments of the supply chain. Therefore, B2B initiatives need to be examined in light of other supply chain activities such as procurement of raw materials, fulfilling orders, shipments, and logistics (see Chapter 11). For example, Liz Claiborne, Inc. (retail fashion company) digitized its entire supply chain, reaping substantial results (see case study at **gxs.com/assets/uploads/pdfs/caseStudies/CS_L_Claiborne_GXS.pdf**).

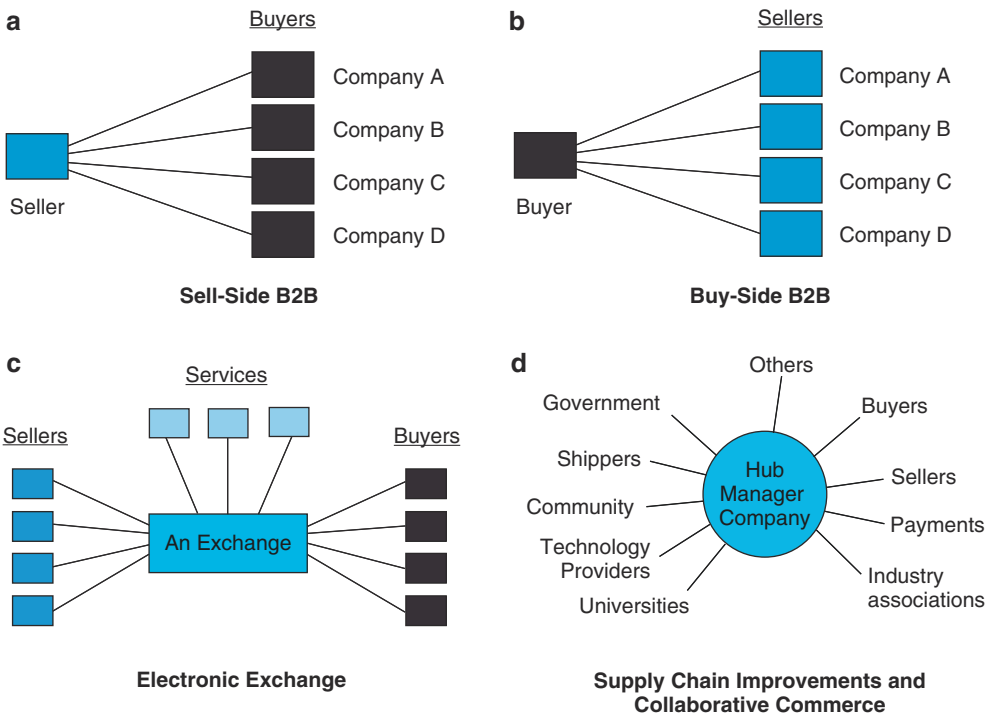

Figure 4.2 Five types of B2B e-commerce

Collaboration

Businesses deal with other businesses for purposes beyond just selling or buying. One example is that of *collaborative commerce*, which includes communication, joint design, planning, and information sharing among business partners (see Section 4.9).

Market Size and Content of B2B

The U.S. Census Bureau estimates B2B online sales to be about 40% of the total B2B volume depending on the type (e.g., 49% in manufacturing). Chemicals, computer electronics, utilities, agriculture, shipping and warehousing, motor vehicles, petrochemicals, paper and office products, and food are the leading items in B2B. According to the authors' experience and several sources, the dollar value of B2B comprises at least 85% of the total transaction value of all e-commerce, and in some countries, it is over 90% for a total of about $20 trillion worldwide. For statistics, see Pick (2015).

B2B EC is now in its sixth generation, as shown in Figure 4.3. This generation includes collaboration with suppliers, buyers, government, and other business partners via extensive use of mobile computing; use of blogs, wikis, and other Web 2.0 tools; deployment of in-house social networks; use of public social networks such as LinkedIn and Facebook; and increased use of intelligent systems. In addition, the sixth generation is capitalizing on mobile computing, especially tablets and smartphones.

The B2B field is very diverse, depending on the industry, products and services transacted, volume, method used, and more. The diversity can be seen in Figure 4.4 where we distinguish five major components: Our company, which may be manufacturer, retailer, service provider, and so forth, is shown in the center. It has suppliers (on the left) and retailers (on the right). Our company operations are supported by different services (bottom), and we may work with several intermediaries (top of Figure 4.4). The solid lines show the flow of information.

B2B Components

Next, we present various components of B2B commerce.

Parties to the Transaction: Sellers, Buyers, and Intermediaries

B2B commerce can be conducted *directly* between a *customer* and a *manufacturer* or it can be conducted via an *online intermediary*. An **online intermediary** is a third-party entity that brokers the transactions between the buyer and seller; it can be either virtual or click-and-mortar. Some of

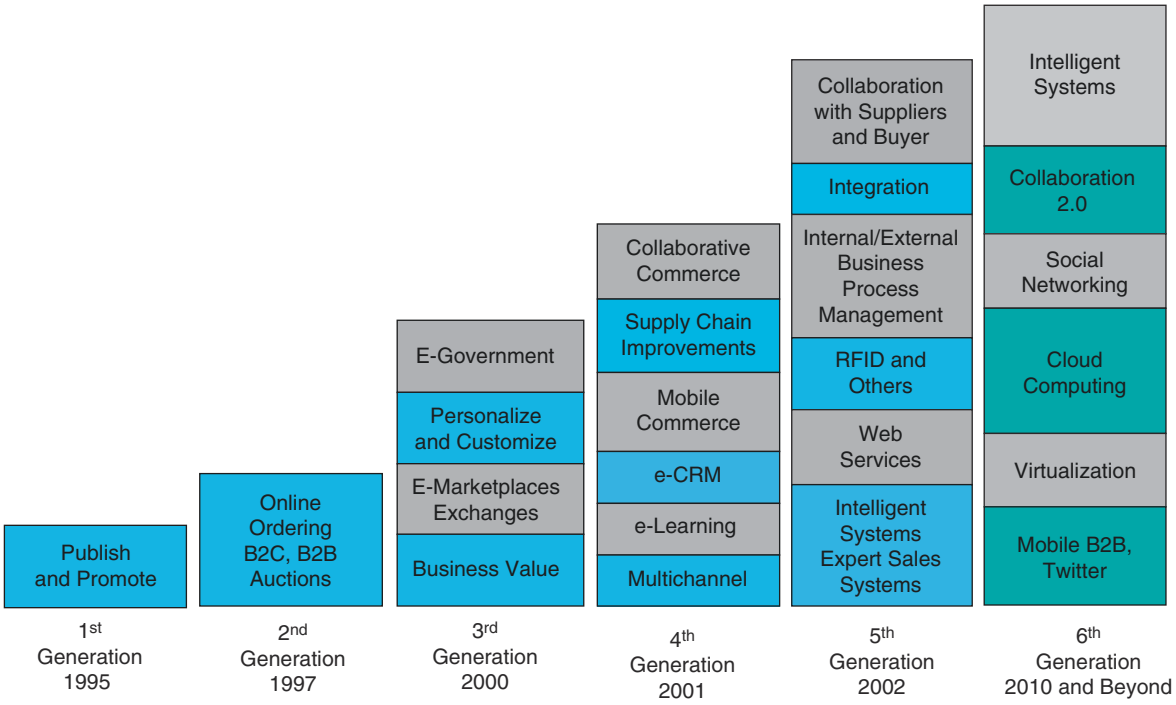

Figure 4.3 Generations of B2B e-commerce

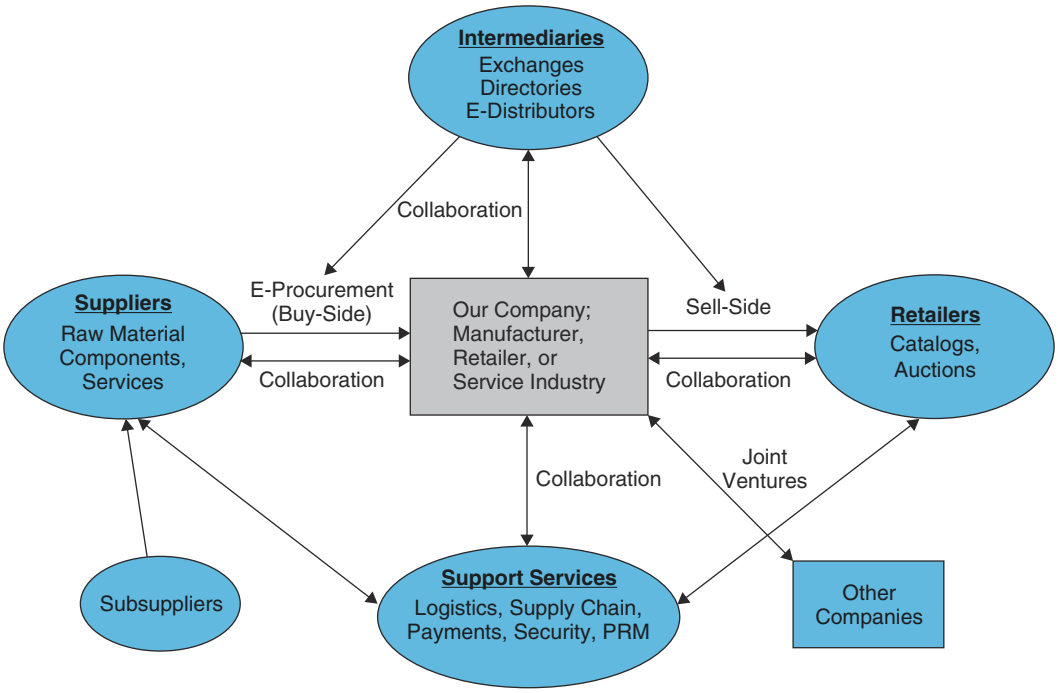

Figure 4.4 The components of B2B

the electronic intermediaries for individual consumers mentioned in Chapter 3 also can be used for B2B by replacing the individual consumers with business customers. Aggregations of buyers or sellers are typical B2B activities conducted by intermediaries.

Types of Materials Traded: What Do Firms Buy?

Two major types of materials and supplies are traded in B2B markets: *direct* and *indirect*. **Direct materials** are materials used in making products, such as steel in a car or paper in a book.

Table 4.1 Summary of B2B characteristics

Parties to transactions	**Types of transactions**
Direct, seller to buyer or buyer to seller	Spot buying
Via intermediaries	Strategic sourcing
B2B2C: A business sells to a business, but delivers to individual consumers	
Types of materials sold	**Direction of trade**
Direct materials and supplies	Vertical
Indirect (MROs)	Horizontal
Number and form of participation	**Degree of openness**
One-to-many: sell-side (e-storefront)	Private exchanges, restricted
Many-to-one: buy-side	Private exchanges, restricted
Many-to-many: exchanges	Public exchanges, open to all
Many, connected: collaborative, supply chain	Private (usually), can be public

Indirect materials are items, such as office supplies or light bulbs, which support operation and production. They normally are used in **maintenance, repair, and operation (MRO)** activities. Collectively, they are also known as *non-production materials*.

B2B Marketplaces and Platforms

B2B transactions are frequently conducted in marketplaces such as Alibaba.com. B2B marketplaces can be classified as *vertical* or *horizontal*. **Vertical marketplaces** are those for one particular industry or industry segment. Examples include marketplaces specializing in electronics, cars, hospital supplies, steel, or chemicals. **Horizontal marketplaces** are those in which trading is in a service or a product that is used in many types of industries. Examples are office supplies, cleaning materials, or paint. Alibaba.com is an example of a horizontal marketplace.

The types of materials traded and the types of B2B transactions are used to define the B2B marketplaces. One way of classifying these markets is:

- *Strategic (systematic) sourcing* and indirect materials = MRO hubs (horizontal markets for MRO)
- Systematic sourcing and direct materials = Vertical markets for direct materials
- *Spot buying* and indirect materials = Horizontal markets for spot sourcing
- Spot sourcing and direct materials = Vertical markets

The various characteristics of B2B transactions are presented in summary form in Table 4.1.

Service Industries Online in B2B

In addition to trading products between businesses, services also can be provided electronically in B2B. Just as service industries such as travel, banking, insurance, real estate, and stock trading can be conducted electronically for individuals (as discussed in Chapter 3), they also can be conducted electronically for businesses. The major B2B services are:

- **Travel and hospitality services.** Many large corporations arrange their travel electronically through corporate travel agents. For instance, American Express Global Business Travel offers several tools to help corporate travel managers plan and control their employees' travel. In addition to traditional scheduling and control tools, American Express offers the following EC-based tools (**amexglobalbusinesstravel.com/total-program-management**):
  - *TrackPoint* enables locating a traveler in real time.
  - *Travel Alert* provides travel advisories and updates, such as weather conditions and delays.
  - *Info Point* (**businesstravel.americanexpress.com/info-point**) is a website that includes detailed information about countries and cities around the world.
  - *Meetings and Events* (**amexglobalbusinesstravel.com/meetings-and-events**) assists in managing meetings, including searching for venues.
  - *American Express* has a presence on social networks (e.g., Facebook, Twitter, YouTube).
  - *Egencia LLC* (**egencia.com/en**; an Expedia company) partners with organizations to optimize the organizations' total travel activities by providing advice and travel management software. For details, see **egencia.com/en/about-egencia**.

  - Expedia (**expedia.com**), Travelocity (**travelocity.com**), Orbitz (**orbitz.com**), and other online travel services provide similar services for both B2C and B2B.
- **Real estate.** Commercial real estate transactions can be large and complex. Therefore, the Web might not be able to replace existing human agents completely. Instead, the Web can help businesses find the right properties, compare properties, and assist in negotiations. Some government-run foreclosed real estate auctions are open to dealers only and are conducted online.
- **Financial services.** Internet banking can be an efficient way of making business payments, transferring funds, or performing other financial transactions. For example, electronic funds transfer (EFT), which provides for electronic payments, is popular with businesses, as are electronic letters of credit. Transaction fees over the Internet are less costly than any other alternative method. To see how payments work in B2B, see Chapter 11. Businesses can also purchase insurance online, from both pure online insurance companies and click-and-mortar ones.
- **Banking and online financing.** Business loans can be solicited online from lenders. Because of the economic downturn, it is difficult for some business owners (even those with excellent credit scores) to obtain loans; therefore, they may turn to companies like Biz2Credit (**biz2credit.com**), a company that helps small businesses grow. Biz2Credit is an online credit marketplace that matches loan applicants with over 1200 lenders (see **biz2credit.com/about** and **cnbc.com/id/101009116**). Several sites, such as Garage Technology Ventures and LLC (**garage.com**), provide information about venture capital. Institutional investors use the Internet for certain trading activities.
- **Other online services.** Consulting services, law firms, medical services, and others sell enterprise knowledge and special services online. Many other online services, such as the purchase of electronic stamps (similar to metered postage, but generated on a computer), are available online (see **stamps.com**). Recruiting and staffing services can also be done online.

The Benefits and Limitations of B2B

The benefits of B2B are for buyers, sellers, or for both, and they depend on which model is used. In general, though, the major benefits of B2B (the beneficiaries are marked after each benefit: S = seller, B = buyer, J = joint) are that it:

- Creates new sales opportunities (S)
- Eliminates paper and reduces administrative costs (J)
- Expedites processing and reduces trading cycle time (J)
- Lowers search costs and time for buyers to find products and vendors (B)
- Increases productivity of employees dealing with buying and/or selling (J)
- Reduces errors and improves quality of service (J)
- Makes product configuration easier (B)
- Reduces marketing and sales costs (S)
- Reduces inventory levels and costs (J)
- Reduces purchasing costs by cutting down on use of intermediaries (B)
- Enables customized e-catalogs with different prices for different customers (J)
- Increases production flexibility, permitting on demand delivery (S)
- Reduces procurement costs (B)
- Facilitates customization via self-configuration (J)
- Provides for efficient customer service (B)
- Increases opportunities for collaboration (J)
- Web-based EC is more affordable than traditional EDI (J)
- Allows more business partners to be reached than with EDI (J)
- Reaches a more geographically dispersed customer base (S)
- Provides a better means of communication with other media (J)
- Provides 24/7 coverage of the shop front (J)
- Helps equalize small enterprises (B)

B2B EC development has limitations as well, especially regarding channel conflict and the operation of public exchanges. Furthermore, personal face-to-face interactions may be needed but are unavailable.

Implementing e-B2B might eliminate the distributor or the retailer, which could be a benefit to the seller and the buyer (though not a benefit to the distributor or retailer). In previous chapters, such a phenomenon is referred to as *disintermediation* (Chapter 3). The benefits and limitations of B2B depend on such variables as who buys what items, and in what quantities; who are the suppliers; how often a company buys, and so forth.

SECTION 4.1 REVIEW QUESTIONS

1. Define B2B.

2. Discuss the following: spot buying versus strategic sourcing, direct materials versus indirect materials, and vertical markets versus horizontal markets.
3. What are company-centric marketplaces? Are they public or private?
4. Define B2B exchanges.
5. Relate the supply chain to B2B transactions.
6. List the benefits and limitations of B2B.

4.2 B2B MARKETING: SELL-SIDE E-MARKETPLACES

A major portion of B2B is selling in what is known as *B2B marketing*. *B2B marketing*, which is also described in Online File W4.1, refers to marketing by manufacturers and wholesalers along the sell-side of the supply chain. A variety of methods exist. For information, see the periodic reports from eMarketer, such as eMarketer (2016).

Sell-Side Models

In the B2C model, a manufacturer or a retailer electronically sells directly to consumers from a *storefront* (or *webstore*). In a B2B **sell-side e-marketplace**, a business sells products and services to business customers electronically, frequently over an extranet. The seller can be a raw material producer selling to manufacturers, or a manufacturer selling to an intermediary such as a wholesaler, a retailer, or an individual business. Intel (**intel.com**), Exxon (**exxon.com**), Cisco Systems, Inc. (**cisco.com**), and Dell (**dell.com**) are examples of such sellers. Alternatively, the seller can be a distributor selling to retailers or businesses (e.g., W.W. Grainger, Inc.; **grainger.com**). In either case, sell-side e-marketplaces involve one seller and many potential buyers. In this model, both individual consumers and business buyers might use either the same private sell-side marketplace (e.g., **dell.com**) or a public marketplace.

The one-to-many model has three major marketing methods: (1) selling from *electronic catalogs* with fixed prices; (2) selling via *forward auctions*; and (3) one-to-one selling, usually under a *negotiated* long-term contract. Such one-to-one negotiation is familiar: The buying company negotiates the price, quantity, payments, delivery, and quality terms with the selling company. We describe the first method in this section and the second method in Section 4.3.

For 33 case studies, see Petersen (2015).

B2B Sellers

Sellers in the sell-side marketplace may be click-and-mortar manufacturers or intermediaries (e.g., distributors or wholesalers). The intermediaries may even be pure online companies (e.g., Alibaba.com).

We now turn our attention to the most common sell-side method—selling online from a company's e-catalog.

Sales from Catalogs: Webstores

Companies can use the Internet to sell directly from their online catalog. A company might offer one catalog for all customers or a *customized catalog* for each large customer (possibly both). For example, Staples (**staples.com**), an office-supply vendor, offers its business customers a personalized software catalog of about 100,000 products at different pricing schemes (see their ordering site at **order.staplesadvantage.com**).

Many companies use a multichannel marketing strategy where one channel is e-commerce.

In selling online to business buyers, manufacturers might encounter a similar problem to that of B2C sellers, namely conflict with the regular distribution channels, including corporate dealers (channel conflict). To avoid conflicts, some companies advertise online, but sell only in physical stores.

Distributors' Catalogs

Webstores are used by manufacturers (e.g., Gregg's Cycles) or by *distributors*. Distributors in B2B are similar to retailers in B2C. They can be general (like W.W. Grainger, see Section 4.2) or they can concentrate on one area, much like Toys "R" Us (**toysrus.com**) in B2C.

Example: Stone Wheel

Stone Wheel (**stonewheel.com**) distributes over 100,000 different auto parts from 15 warehouses serving over 3500 independent repair shops in the Midwest region of the USA. They deliver within 30 min, using their own vehicles. Using the e-catalog, customers can order the exact part, saving time and minimizing misunderstandings and errors.

Self-Service Portals

Portals are used for several purposes, one of which is to enable business partners to conduct self-service, as is shown in the following example.

Example: Whirlpool B2B Trading Portal

Whirlpool (**whirlpool.com**) is a large global manufacturer of home appliances. The company needs to operate efficiently to survive in an extremely competitive market. It must collaborate with its business partners along the selling segments of the supply chain and provide them with outstanding customer support.

The company sells its products via all types of retailers and distributors (25% of which are small), located in over 170 countries. Until 2000, the small retailers had entered their orders from Whirlpool manually. This process was slow, costly, and error prone.

Therefore, Whirlpool developed a B2B trading partner portal (for the small retailers), which enabled self-ordering, therefore reducing the transaction cost considerably.

The system was tested with low-volume items and then extended to larger volume items. In addition, more features were added. Adding the portal has increased Whirlpool's competitive advantage.

For additional information, see IBM (2000) and **whirlpool corp.com**.

Benefits and Limitations of Online Sales from Catalogs

Successful examples of the B2B online direct sales model include manufacturers, such as Dell, Intel, IBM, and Cisco, and distributors, such as Ingram Micro (**ingrammicro.com**) that sells to value-added retailers; the retailer adds some service along with the product. Sellers that use this model can be successful as long as they have a solid reputation in the market and a large enough group of loyal customers.

While the benefits of direct online sales are similar to that of B2C, there are limitations also. One of the major issues facing direct sellers is finding buyers. Many companies know how to advertise using traditional channels, but are still learning how to contact would-be business buyers online. (Note: This is where Alibaba.com and similar companies provide help.) In addition, B2B sellers may experience channel conflicts with their existing distribution systems. Another limitation is that if traditional electronic data interchange (EDI)—the computer-to-computer direct transfer of business documents—is used, the cost might be passed on to the customers, and they could become reluctant to go online. The solution to this problem is transferring documents over extranets and using an Internet-based EDI (see Online Tutorial T2). Finally, the number of business partners online must be large enough to justify the system infrastructure and operation and maintenance expenses.

Comprehensive Sell-Side Systems

Sell-side systems must provide several essential functionalities that enable B2B vendors to execute sales efficiently, provide outstanding customer service, allow integration with existing IT systems, and provide integration with non-Internet sales systems. For an example of such a system provided by Sterling Commerce (an IBM Company), see **ibm.com/software/info/sterling-commerce**.

Selling via Distributors and Other Intermediaries

Manufacturers can sell directly to other businesses, and they do so if the customers are large buyers. However, manufacturers frequently use intermediaries to distribute their products to a large number of smaller buyers. The intermediaries buy products from many other manufacturers and aggregate those products into one catalog from which they sell to customers or to retailers. Many of these distributors also are selling online via webstores.

Some well-known online distributors for businesses are Sam's Club (**samsclub.com**), Avnet (**avnet.com**), and W.W. Grainger (**grainger.com**). Many e-distributors sell in horizontal markets, meaning that they sell to businesses in a variety of industries. However, some distributors sell to businesses that specialize in one industry (vertical market), such as Boeing PART Page (see **boeing.com/assets/pdf/commercial/aviationservices/brochures/MaterialsOptimization.pdf**). Most intermediaries sell at fixed prices; however, some offer quantity discounts, negotiated prices, or conduct auctions.

Amazon Business

This site provides services to different types of sellers as well as a marketplace. For details, see **amazon.com/business**.

SECTION 4.2 REVIEW QUESTIONS

1. What are buy-side and sell-side transactions? How do they differ?
2. List the types of sell-side B2B transaction models.
3. Describe customer service in B2B systems.
4. Describe the direct online B2B sales process from catalogs.
5. Discuss the benefits and limitations of direct online B2B sales from catalogs.
6. What are the advantages of using intermediaries in B2B sales?
7. Compare an e-distributor in B2B to Amazon.com. What are the similarities? What are the differences?
8. State two benefits to Whirlpool and their customers from the portal.

4.3 SELLING VIA E-AUCTIONS

Auctions are gaining popularity both as B2B buying and as sales channels. Some major B2B auction issues are discussed in this section.

The Benefits of Auctions on the Sell-Side

Many companies use *forward auctions* to liquidate their surplus products or capital assets. In such a situation, items are usually displayed on an auction site (private or public) for quick clearance. Forward auctions offer the following benefits to B2B sellers:

- **Revenue generation.** Forward auctions support and expand online and overall sales. Forward auctions also offer businesses a new venue to quickly and easily dispose of excess, obsolete, and returned products (e.g., see **liquidation.com**).
- **Cost savings.** In addition to generating new revenue, conducting e-auctions reduces the costs of selling the auctioned items, which helps increase the seller's profits.
- **Increased "stickiness."** Forward auctions give websites increased "stickiness," namely, potential buyers stay there longer. *Stickiness* is a characteristic that measures customer loyalty to a site that eventually results in higher revenue.
- **Member acquisition and retention.** Registered members of auctions can invite their business contacts. In addition, auction software aids enable sellers to search and report on virtually every relevant auction activity. Such information can be analyzed and used for business strategy.

Forward auctions can be conducted in two ways. A company can conduct its forward auctions from its own website or it can sell from an intermediary auction site, such as **liquidation.com** or **ebay.com**. Let us examine these options.

Auctioning from the Company's Own Site

For large and well-known companies that frequently conduct auctions, it makes sense to build an auction mechanism on the company's own website. Why should a company pay a commission to an intermediary if the intermediary cannot provide the company with added value? Of course, if a company decides to auction from its own site, it will have to pay for infrastructure, and operate and maintain the auction site. Note that, if the company already has an electronic marketplace for selling from e-catalogs, the additional cost for conducting auctions might not be too high.

Using Intermediaries in Auctions

Several intermediaries offer B2B auction sites (e.g., see **assetnation.com** and **liquidation.com**). Some companies specialize in government auctions while others focus on surplus stock auctions (e.g., **govliquidation.com**). An intermediary can conduct private auctions either from the intermediary's or from the seller's sites. Alternatively, a company can conduct auctions in a public marketplace, using an intermediary (e.g., eBay, which has a special "business exchange" for small companies).

Using an intermediary to conduct auctions has many benefits. The first is that no additional resources (e.g., hardware, bandwidth, engineering resources, or IT personnel) are required. There are no hiring costs for using corporate resources. B2B auction intermediary sites also offer fast time-to-market as they are capable of running the auction immediately. Without the intermediary, it can take weeks for a company to prepare an auction site in-house.

Another benefit of using intermediaries relates to payments, which are handled by the intermediary.

For an example of using an intermediary in B2B auction services, see Liquidity Services Inc. (**liquidityservicesinc.com**).

For more about B2B online auctions, see **vasthouse.com/b2b-online-auctions.php** and **liz.petree.tripod.com/test_2/auctions.html**.

Examples of B2B Forward Auctions

The following are examples of B2B auctions:

- Whirlpool Corp. sold $20 million in scrap metal in a single auction via **equipmentone.com**; the sale price received was 15% higher than prior e-auctions.
- Sam's Club (**samsclub.com**) auctions thousands of items (especially electronics) at Sam's Club Auctions (**auctions.samsclub.com**). Featured auctions include the current bid, the number of bids, and the open and close date. They liquidate overstock items, returns, and out of style goods.
- Yahoo! conducts both B2C and B2B auctions in Hong Kong, Taiwan, and Japan.

To learn more about B2B auctions, see **vasthouse.com**.

SECTION 4.3 REVIEW QUESTIONS

1. List the benefits of using B2B auctions for selling.
2. List the benefits of using auction intermediaries.

3. What are the major purposes of forward auctions, and how are they conducted?
4. Comment on the number of bidders and bids using an online auction as compared to using an offline auction.

4.4 ONE-FROM-MANY: E-PROCUREMENT AT BUY-SIDE E-MARKETPLACES

The term *procurement* refers to the purchase of goods and services by organizations. Procurement is usually done by *purchasing agents*, also known as *corporate buyers*.

The buyer's purchasing department sometimes has to enter the order information manually into its own corporate information system. Furthermore, manually searching webstores and e-malls to find and compare suppliers and products can be slow and costly. As a solution, large buyers can open their own marketplaces called **buy-side e-marketplaces**, and invite sellers to browse and offer to fulfill demand.

Inefficiencies in Traditional Procurement Management

Procurement management refers to the process of planning, organizing, and coordinating of all the activities pertaining to the purchasing of the goods and services needed by an organization. It involves the B2B purchase and sale of supplies and services, as well as the flow of required information. Approximately 80% of an organization's purchased items, mostly MROs, constitute 20–25% of the total purchase value. In this case, much of the buyers' time is spent on clerical activities, such as entering data and correcting errors in paperwork.

The procurement process may be lengthy and complex due to the many activities performed. The following are the major activities that may be included in a single purchase:

- *Search for items* using search engines, catalogs, virtual fairs and showrooms, and sellers' sales presentations.
- *Learn details of items and buying terms* using comparison engines and quality reports, and research industry report and vendors' information.
- *Negotiate or join group purchasing* using software support (if available).
- *Determine when and how much to order each time*. Authorize corporate buyers.
- *Join business-oriented social networks* such as **linkedin.com**.
- *Sign agreements or contracts* using e-contract management (e.g., from Ariba, Inc. **ariba.com**; a SAP company); arrange financing, escrow insurance, etc.
- *Create specific purchasing order(s)* using a computerized system.
- *Arrange packing, shipments, and deliveries* using electronic tracking, RFID, etc.
- *Arrange invoicing, payments, expense management, and purchasing budgetary control* using software packages (e.g., from **ariba.com**).

An example of the traditional procurement process that is often inefficient is shown in Figure 4.5. For high-value items, purchasing personnel need to spend considerable time and effort on procurement activities. However, the purchasers may not have time to do a quality job since they are busy with the many items of small value such as MROs.

Other inefficiencies, ranging from delays in deliveries to the high cost of rush orders, also may occur in conventional procurement. This situation is called **maverick buying**, which occurs when a buyer makes unplanned purchases of items needed quickly, resulting in buying at non-pre-negotiated, and usually higher, prices.

To correct the situation(s) that may result from traditional procurement, companies must reengineer their procurement systems, implement new purchasing models, and, in particular, introduce e-procurement. Let us elaborate on the generic procurement methods first.

Procurement Methods

Companies use different methods to procure goods and services depending on factors such as what and where they buy, the quantities needed, and how much money is involved. Each method has its own process benefits and limitations. To minimize the inefficiencies described earlier, companies automate activities in the process. This is the major objective of e-procurement. Examples of companies utilizing efficient methods are Walmart (**walmart.com**), Dell (**dell.com**), and Starbucks (**starbucks.com**) to name a few. The major procurement methods include the following:

- Buy directly from the catalogs of manufacturers, wholesalers, or retailers, and possibly by negotiation (Sections 4.2 and 4.3).
- Buy at private or public auction sites in which the buying organization is one of many (Section 4.5).

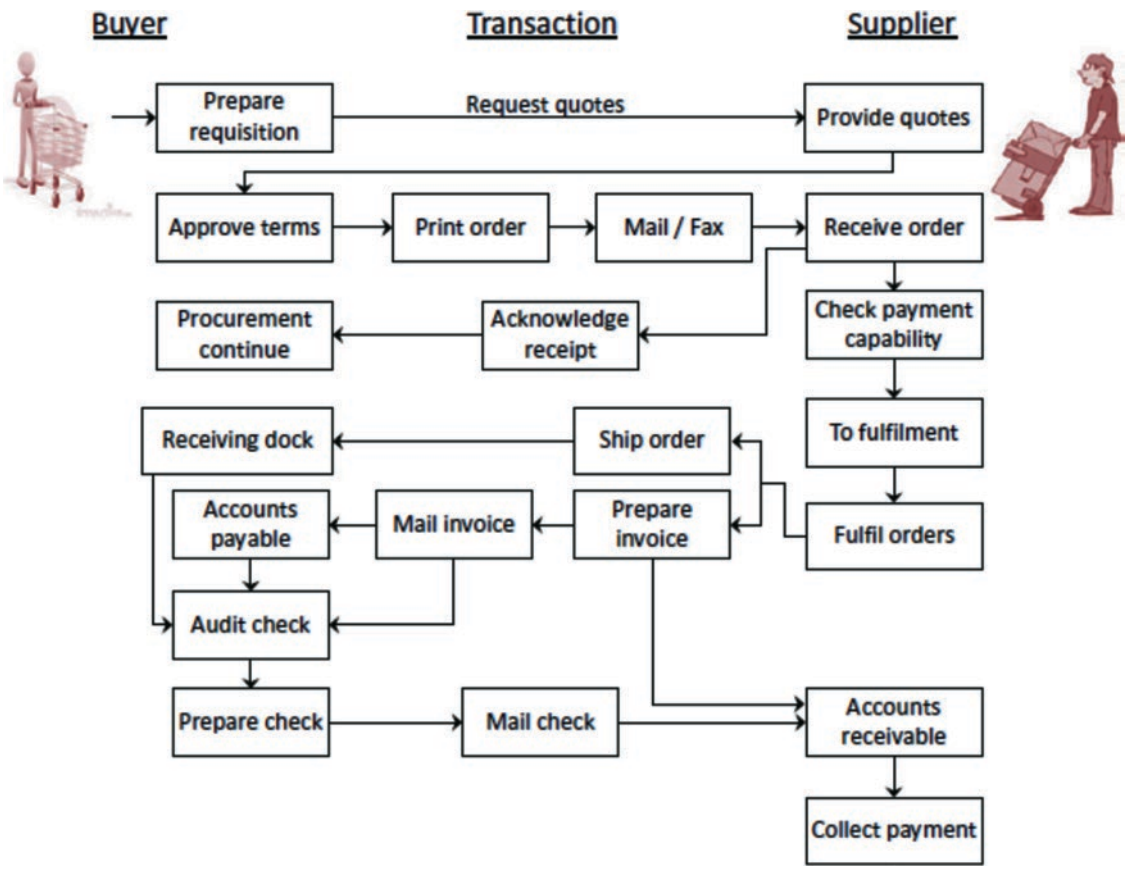

Figure 4.5 Traditional (manual) procurement process

- Conduct bidding in a reverse auction system where suppliers compete against each other. This method is used for high-value items or when large quantities are involved (Section 4.5).
- Buy from the catalog of an intermediary (e-distributor) that aggregates sellers' catalogs (Section 4.6).
- Buy from the company's own internal buyer catalog. Such catalogs usually include agreed-upon prices of items from many suppliers. This is part of *desktop purchasing*, which allows the users to bypass the procurement department (Section 4.6).
- Join a group-purchasing system that aggregates participants' demands, creating a large volume. Then the group may negotiate prices or initiate a tendering process (Section 4.6).
- Buy at an exchange or industrial mall (Section 4.7).

E-Procurement Concepts

E-procurement (electronic procurement) is the online purchase of supplies, materials, energy, work, and services. It can be done via the Internet or via a private network such as an electronic data exchange (EDI). For the different types of EDI and the trading community, see **edibasics.com/types-of-edi**.

Some activities done by e-procurement include enabling buyers to search for products and suppliers, comparing prices, facilitating reverse auctions for buyers, and automating paperwork and documentation.

Some of these activities are done in private marketplaces, others in public exchanges.

The Goals and Process of E-Procurement

As stated earlier, e-procurement frequently automates activities in the purchasing process from multiple suppliers via the Web for better execution and control.

Improvements to procurement have been attempted for decades, usually by using information technologies. Using e-procurement results in a major improvement. For comprehensive coverage and case studies, see **zdnet.com**.

Essentially, e-procurement automates the process of auctions, contract management, vendor selection, and management.

For an overview of e-procurement goals and processes, see **plenitude-solutions.com/index.php?option=com_content&view=article&id=54&Itemid=62**.

The general e-procurement process (with the exception of tendering) is shown in Online File W4.2. For a free e-book on e-procurement, see Bausa Peris et al. (2013).

Example: Volvo's E-Procurement

Volvo is a premium Swedish car manufacturer (now owned by a Chinese company). The company operates in dozens of countries worldwide. The company has more than 30 purchasing centers on six continents. In the past, this has resulted in inconsistent purchasing practices, lack of collaboration among the centers, and inefficient and inconsistent procurement processes. To overcome the problems, management decided to use a unified e-procurement system. They selected Ariba's Sourcing and Ariba's Contract Management solutions (Ariba is a B2B SAP company). The system assures standardization of the purchasing processes, sharing of best practices activities, and streamlining of the contracting process and its management. All these systems are digital. The e-procurement resulted in a greater cohesion among the sourcing centers, better use of best practices, and reduced cost of procurement while its effectiveness increases.

Types of E-Procurement

Four major methods of e-procurement are available: (1) Buy at buyer's own website, (2) buy at sellers' store, (3) buy at exchanges, and (4) buy at others' e-market sites. Each method includes several activities, as illustrated in Figure 4.6. Some of these will be described in Section 4.7.

The seven main types of e-procurement are as follows: (1) e-sourcing, (2) e-tendering, (3) e-reverse auctioning, (4) e-informing, (5) Web-based ERP (enterprise resource planning), (6) e-market sites, and (7) E-MRO (maintenance, repair, and operating).

The Benefits and Limitations of E-Procurement

E-procurement has the ability of improving supply chain management, and providing real-time information on what is going on in the supply chain (known as *visibility* of the supply chain), starting with the customers' needs.

The Benefits of E-Procurement

By automating and streamlining the procurement process, corporate purchasing buyers can focus on more strategic activities that result in:

- Increasing the productivity of purchasing agents, providing them with more nonroutine time and reducing job pressures, possibly reducing purchasing departments' overhead.
- Lowering purchase per item prices through activities such as product standardization, reverse auctions,

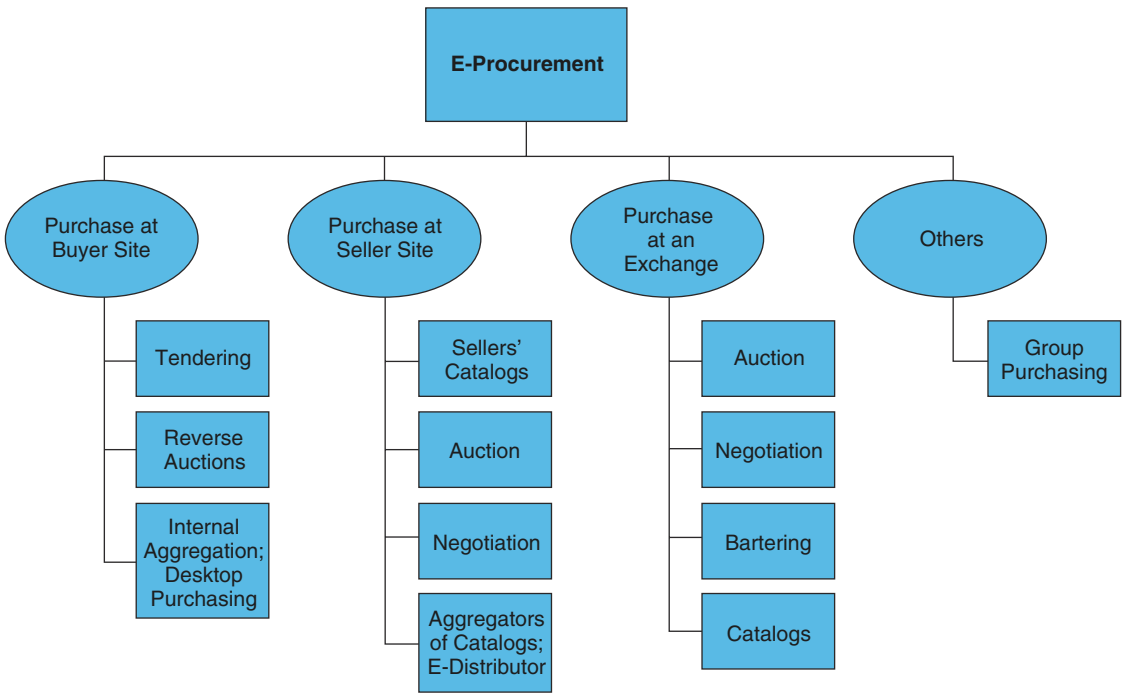

Figure 4.6 E-procurement methods

volume discounts, and consolidation of purchases from fewer suppliers.
- Improving information flow and its control (e.g., price comparisons).
- Reducing the frequency and cost of maverick buying.
- Improving the payment process, and sellers' savings due to expedited payment cycle.
- Establishing more efficient and collaborative partner relations due to information sharing.
- Improving the manufacturing process for the suppliers.
- Ensuring delivery on time and fewer stock-outs.
- Reducing the skill requirements and training needs of purchasing agents.
- Reducing the number of suppliers.
- Streamlining and expediting the purchasing process.
- Controlling inventories more effectively at the buyers' end.
- Streamlining invoice reconciliation and dispute resolution.
- Reducing the administrative processing cost per order by as much as 90% by reducing purchasing overheads and intermediary fees.
- Finding new suppliers that can provide goods and services faster and/or less expensively (e.g., by going global and use online price comparisons).
- Integrating budgetary controls into the procurement process (e.g., **ariba.com**).
- Minimizing human errors in the buying or shipping processes.

For more on the benefits of e-procurement and on implementation issues, see the video titled "eProcurement Case Study: Oldcastle Materials" (3:16 min) at **youtube.com/watch?v=PPVC_CaG1S4**.

The Limitations and Challenges of E-Procurement

Unfortunately, e-procurement practices have some limitations and risks such as:

- The total cost (TCO) may be too high.
- It may be subject to hacker attacks.
- It may be difficult to get suppliers to cooperate electronically.
- The system may be too complex (e.g., when it uses a traditional EDI; see Online Tutorial T2).
- It may be difficult to have internal and external integration (sometimes it involves different standards).
- The technology may change frequently.

For software issues, see **eprocurementsoftware.org**. For an example of how procurement is used in government, see NC E-Procurement (**eprocurement.nc.gov**). Governments frequently use reverse auctions for procurement, which we present next.

Procurement is an extremely important success factor for many companies. Therefore, it is important to learn about the future of e-procurement as well. For ideas about procurement in 2020, see Oka et al. (2011). To learn about Shoplet's platform for e-procurement, see Regal (2014) and **shoplet.com/about**.

SECTION 4.4 REVIEW QUESTIONS

1. Define the procurement process.
2. Describe the inefficiencies of traditional procurement.
3. List the major procurement methods.
4. Define e-procurement and list its goals.
5. List the major e-procurement methods and list some activities in each.
6. List the major benefits of e-procurement.

4.5 REVERSE AUCTIONS AT BUY-SIDE E-MARKETPLACES (E-TENDERING)

A major method of e-procurement is using reverse auctions. A **reverse auction** is a process in which many sellers (suppliers) compete to fulfill orders requested by one buyer. Recall from our earlier discussion that a *reverse auction* is a tendering system where suppliers are invited to bid on the fulfillment of an order, and the lowest bid wins. In B2B usage of a reverse auction, a buyer may open an e-market on its own server (or use an independent auctioneer such as eBay) and invite potential suppliers to bid on the items. This "invitation" to such reverse auctions is a form or document called a **request for quote (RFQ)**. Traditional tendering usually implies one-time sealed bidding, whereas an e-reverse auction opens the process to competing *sequential bidding*. For a comprehensive overview of reverse auctions, see **reverseauctions.com**, **epiqtech.com/reverse_auctions-Overview.htm**, and **reverseauctions.gsa.gov**.

Governments and large corporations frequently mandate reverse auctions, which may provide considerable savings because more suppliers are participating in a more competitive process. The electronic process is faster and administratively much less expensive. It also can benefit suppliers in finding RFQs. Reverse auctions are very important B2B mechanisms in e-procurement.

The Major Benefits of Reverse Auctions

The major benefits of the technology to a buyer are: (a) lower cost of items purchased, (b) reduction of administrative costs of procurement, (c) reduction of corruption and bribes, and (d) decrease in time to receive the goods, which may result from the suppliers' ability to produce their products and services faster (see closing case).

For suppliers, as seen in the opening case, savings comes from a reduction in: (a) time required to find customers, (b) administrative costs, and (c) time needed by managers to conduct manual bids.

Note that some question the value of reverse auctions (e.g., see Rockwell 2013).

Conducting Reverse Auctions

As the number of reverse auction sites increases, suppliers may not be able to monitor all relevant open RFQs manually. This problem has been addressed with the introduction of online directories that list open RFQs. Another way to solve this problem is through the use of monitoring software agents. Software agents also can aid in the bidding process itself. Examples of agents that monitor and support the bidding process are **auctionsniper.com** and **auctionflex.com**.

Alternatively, third-party intermediaries may run the electronic bidding, as they do in forward auctions (e.g., see Opentext Corporation; **opentext.com**). Auction sites such as **ebay.com**, and **liquidation.com** also belong to this category. Conducting reverse auctions in B2B can be a fairly complex process. This is why using an intermediary may be beneficial.

The reverse auction process is demonstrated in Figure 4.7. As shown in the figure, the first step for the would-be buyer is to post bid invitations. When bids arrive, contract and purchasing personnel for the buyer evaluate the bids and decide which one(s) to accept.

An example of e-tendering is provided in Case 4.1.

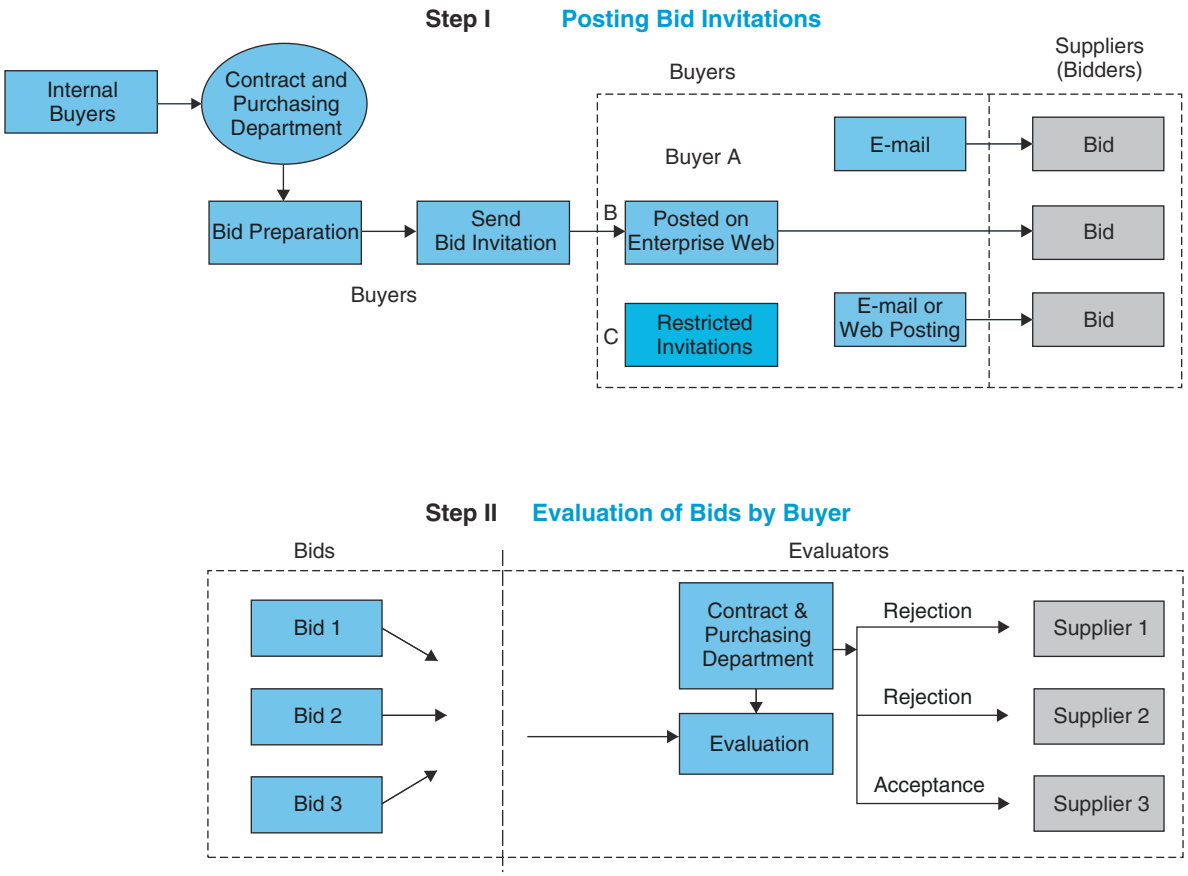

Figure 4.7 The reverse auction process

CASE 4.1: EC APPLICATION BRANAS ISAF COMPETES BY USING E-TENDERING

Branas Isaf is a small UK company that provides therapeutic care for children who exhibit harmful behavior. A central part of the company is its education department, which provides several types of training.

The Problem

The company has grown rapidly since 2005 and has doubled in size to 25 employees. The company serves both the private and the public sectors in the UK.

Branas Isaf's major competitive advantages are: (1) competitive fees, (2) provision of customized training, and (3) provision of on-site training. These advantages enable the company to compete with large training institutions such as colleges.

Branas Isaf frequently bids on jobs, especially in the public sector where tendering is mandatory. Many of its 1000 customers began using electronic tendering over the Internet. Thus, to maintain its competitive advantage, Branas Isaf decided to participate in e-tendering also. This case describes Branas's experience with its first electronic bid.

The Solution

The UK government mandated that all bids for government-related jobs must be done via the eTendering (also called e-tendering) system, including the Government Work Based Learning Programme, on which Branas bids on as a supplier. Branas followed these steps on the eTendering portal, where requests for bids are posted:

1. Electronically submitted a prequalification questionnaire.
2. Accepted the terms and conditions of BravoSolution eTraining System.
3. Downloaded online supplier guidance material.
4. Created a user name; received a password.
5. Found the specific invitation to tender (ITT) on which it wanted to bid online.
6. Pressed the "Express Interest" button—moved automatically to "My ITTs."
7. Downloaded all the necessary documents for the specific bid.
8. Made a decision to bid and pressed the "Reply" button.
9. Accessed the project's details; found and filled out a questionnaire.
10. Submitted the tender electronically and uploaded all necessary attachments. (It is possible to update or change the documents until the deadline is reached.)

Sending and receiving messages are embedded in the portal with e-mail alerts. Acceptance notification is done in the same manner. Once the bid is accepted by the system, a "winner" icon is displayed.

The Results

Since its inception in late 2006, the practice of e-tendering at Branas has grown rapidly. Branas employees have become experts in using the computerized system. While the cost to Branas declined only slightly, the opportunity for such a small company to compete with very large competitors increased significantly.

Furthermore, since most nonprofit organizations and many for-profit ones mandate e-tendering, bidders have no choice but to use the system. In addition, Branas understands that e-tendering is clearly more beneficial for its customers as well as being a more sustainable way of doing business. Overall, Branas has been able to maintain its competitive advantage and continue to grow rapidly.

Sources: Based on **eProc.org** (2010), **branas.co.uk**, and **etenderwales.bravosolution.co.uk** (both accessed March 2016).

Questions

1. Discuss the drivers of e-tendering for Branas.
2. Given the small size of the company, was it an advantage or disadvantage to participate?
3. Is the process of e-tendering simple or complex? Explain.
4. Why do buyers choose e-tendering instead of regular tendering?
5. What are the benefits of e-tendering for a small company such as Branas?

E-Tendering by Governments

Most governments must conduct tendering when they buy or sell goods and services. Doing this manually is slow and expensive. Therefore, many governments are moving to e-reverse auctions for their purchasing.

Group Reverse Auctions

To increase their bargaining power and get price discounts, companies, like individuals, can buy in a group, and the group can use a reverse auction to get an even better deal than a quantity discount.

B2B reverse auctions can be done in a private exchange or at an aggregator's site for a group of buying companies. Such *group reverse auctions* are popular in South Korea and usually involve large conglomerates. For example, the LG Group operates the LG MRO Auction for its member companies,

and Samsung Group operates the Samsung iMarketKorea (**imarketkorea.com**), which provides procurement services and MRO goods. Samsung's iMarketKorea's revenue comes primarily from B2B transactions (see Online File W4.3). This practice is popular in the healthcare industry in the United Kingdom, the United States, and other countries where hospitals are banding together to buy their supplies at a quantity discounted low prices.

SECTION 4.5 REVIEW QUESTIONS

1. Describe the manual tendering system and its deficiencies.
2. How do online reverse auctions work?
3. List the benefits of Web-based reverse auctions.
4. Describe group reverse auctions.

4.6 OTHER E-PROCUREMENT METHODS

Other innovative e-procurement methods have been implemented by companies. Some common ones are described in this section.

Desktop Purchasing

Desktop purchasing refers to purchasing by employees without the approval of supervisors and without the involvement of a procurement department. This usually is done by using a *purchasing card (P-card)*. Desktop purchasing reduces the administrative cost and the cycle time involved in purchasing urgently needed or frequently purchased items of small dollar value. This approach is especially effective for MRO purchases.

The desktop purchasing approach can be implemented by collaborating with external private exchanges. For instance, Samsung Electronics of South Korea, a huge global manufacturer, and its subsidiaries, have integrated its iMarketKorea (**imarketkorea.com**) exchange (see Online File W4.3) with the e-procurement systems of its buying agents. This platform can also be linked easily with *group purchasing*, which is described next.

Group Purchasing

Many companies, especially small ones, are moving to *group purchasing*. With **group purchasing**, orders from several buyers are aggregated so that better prices due to larger quantities purchased can be negotiated. This model is similar to the one we described for B2C. For B2B group purchasing in China, see Young (2015). Two sub-models are in use: internal aggregation and external (third-party) aggregation.

Internal Aggregation of Purchasing Orders

Large companies, such as GE, spend many millions of dollars on MROs every year. These companies aggregate the orders from their subsidiaries and various departments (sometimes there are hundreds of them) for quantity discounts. They can cut administrative costs by 20%.

External Aggregation for Group Purchasing

Many SMEs would like to enjoy quantity discounts but have difficulty finding others to join a group purchasing organization to increase the procurement volume. Finding partners can be accomplished by an external third party such as BuyerZone (**buyerzone.com**), the Healthcare Supply Chain Association (**supplychainassociation.org**), or the United Sourcing Alliance (**usa-llc.com**). The idea is to provide SMEs with better prices, larger selections, and improved services by aggregating demand online and then either negotiating with suppliers or conducting reverse auctions. The external aggregation/group-purchasing process is shown in Figure 4.8.

Several large companies, including large CPA firms and software companies such as EDS Technologies (**edstechnologies.com**) and Ariba, Inc. (**ariba.com**), provide external aggregation services, mainly to their regular customers. Yahoo! also offers such services. A key to the success of these companies is a critical mass of buyers.

Buying from Other Sources

Section 4.2 described how companies use e-distributors as sales channels. When buying small quantities, purchasers often buy from an e-distributor. Another option for e-procurement is to buy at a B2B exchange using one of several available methods. In all of these options, one may automate some actions in the process, such as the generation of a purchasing order (e.g., see **esker.com** and **ariba.com**).

Acquisition via Electronic Bartering

Bartering is the exchange of goods or services without the use of money. The basic idea is for a company to exchange its surplus for something that it needs. Companies can advertise their surpluses in classified ads and may find a partner to make an exchange, but in many cases, a company will have

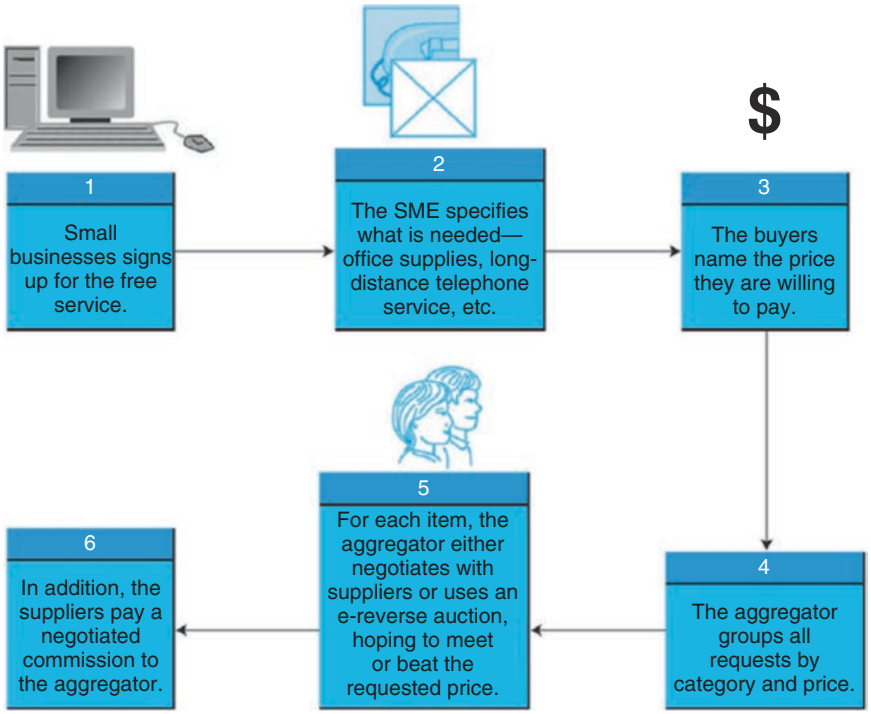

Figure 4.8 The group-purchasing process

little success in finding an exact match on its own. Therefore, companies usually ask an intermediary to help.

A bartering intermediary can use a manual search-and-match approach or it can create an electronic bartering exchange. With a **bartering exchange**, a company submits its surplus to the exchange and receives points of credit, which the company can then use to buy items that it needs. Popular bartering items are office spaces, idle facilities and labor, products, and even banner ads. For examples of bartering companies, see U-Exchange (**u-exchange.com**) and Itex (**itex.com**).

Selecting an Appropriate E-Procurement Solution

Having many procurement methods, consultants, and software makes the selection of the right method(s) difficult. Ariba, Inc. (**ariba.com**) provides an innovative score sheet that companies use to evaluate vendors based on the described success factors. The success factors are grouped by cost reduction, increased agility, managing complete commerce, and fulfilling tactical requirements.

When organizations make such decisions, these decisions may be influenced by factors such as: Who is buying? What are you buying? How much information do you need to make the decisions? What is the reputation of the vendor(s)? What testimonials are available?

SECTION 4.6 REVIEW QUESTIONS

1. Describe a buyer-operated procurement marketplace and list its benefits.
2. Describe the benefits of desktop purchasing.
3. Discuss the relationship of desktop purchasing with group purchasing.
4. Explain the logic of group purchasing and how it is organized.
5. How does B2B bartering work?
6. What are the major considerations for selecting an e-procurement vendor and solution?

4.7 B2B EXCHANGES (E-MARKETPLACES): DEFINITIONS AND CONCEPTS

The term *B2B exchange*, or simply *exchange*, implies the existence of a marketplace with many potential buyers and many potential sellers. In addition to being online trading venues, many exchanges provide support services such as payments and logistics software and consulting services. They also act as industry portals.

Exchanges are known by a variety of names: *e-marketplaces, trading exchanges*, *trading communities, exchange hubs, Internet exchanges, Net marketplaces*, and *B2B portals*. We will use the term *exchange* in this book to describe the general many-to-many e-marketplaces, but we will use some

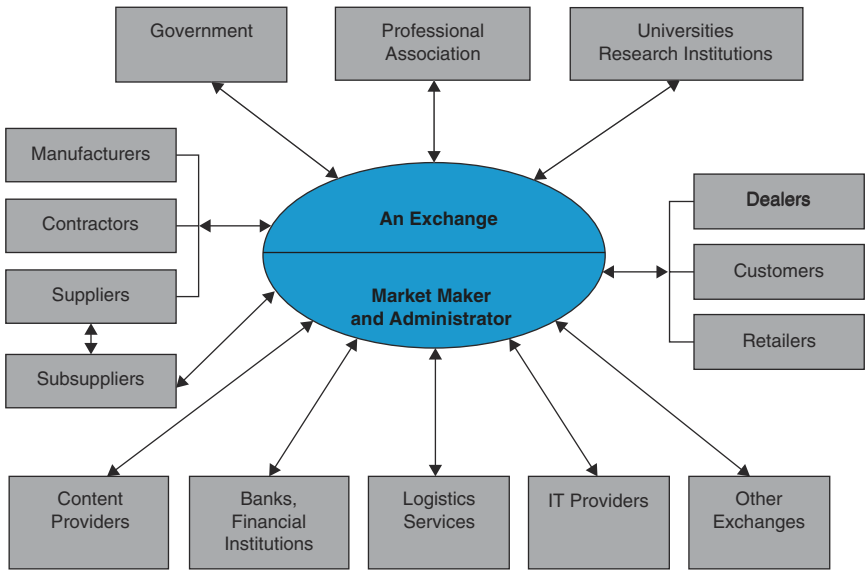

Figure 4.9 The community of an exchange: flow and access to information

of the other terms in more specific contexts (e.g., see **epiqtech.com/others-B2B-Exchanges.htm**).

Despite their variety, all exchanges share one major characteristic: Exchanges are electronic trading-community meeting places for many sellers and many buyers, and possibly for other business partners, as shown in Figure 4.9. At the center of every exchange, there is a market maker that operates the exchange and, in some cases, may also own it.

Exchanges can be horizontal, serving many industries (e.g., **ariba.com** or **alibaba.com**), or vertical, serving one or a few connected industries (e.g., see **supplyon.com** for automotive; and **oceanconnect.com** for refineries and shipping services). In an exchange, just as in a traditional open-air marketplace, buyers and sellers can interact and negotiate prices, quantities, and other terms.

Global Exchanges

Most large exchanges, such as Alibaba and Amazon Business operate in many countries. Such activities, as will be described in Chapter 12, require special arrangement such as dealing with country regulations, money transfers, language translation, and more. For examples and details, see Blur (2014).

Functions of and Services Provided by Exchanges

Exchanges have the following four major sets of functions: (1) Matching and connecting buyers and sellers, (2) facilitating transactions, (3) developing and maintaining exchange policies and infrastructure, and (4) providing services to buyers and sellers. Details of these functions are provided next.

Functions and Services of B2B Exchanges

The following are the major functions of B2B exchanges (compiled from Demery 2015, E-Commerce Wiki 2013, and the authors' experiences):

1. Matching buyers and sellers. The matching of buyers and sellers includes such activities as:
   - Presentation of product offering (e.g., the company's catalogs)
   - Aggregating and posting different products for sale—to meet buyers' need
   - Providing price comparisons
   - Organizing bids (bartering) and (auctions)
   - Providing sellers' profiles and product information
   - Matching suppliers' offerings with buyers' requests
   - Supporting negotiations between buyers and sellers
   - Providing directories of sellers
   - Maintaining security, privacy, and anonymity
2. Facilitating transactions. Facilitating transactions by optimizing the purchasing and sales processes, including the following activities:
   - Allowing for efficient trading between participants
   - Providing for B2B auctions
   - Providing the trading platform with mechanisms such as arranging payment, insurance, order fulfillment, and security

- Providing escrow services
- Arranging for group (volume) purchasing and other discounts
- Defining terms and other transaction values, including negotiation
- Inputting searchable information, including industry news
- "Grant[ing] exchange access to users and identify[ing] company users eligible to use exchange
- Collecting transaction fees and providing the necessary software and its integration with buyers and/or sellers systems, including EDI, XML, etc.
- Providing analysis and statistics of products' transactions
- Registering and qualifying buyers and suppliers"

The types of services provided by an exchange depend on the nature of the exchange. For example, the services provided by a stock exchange are completely different from those provided by a steel or food exchange or by an intellectual property or patent exchange. However, most exchanges provide the services illustrated above. Note that, some B2B exchanges may have individuals as either sellers or buyers, in addition to corporations. An example is **localdirt.com**, an online marketplace that connects thousands of farmers with many buyers, promoting efficient trading of local produce.

Ownership of B2B Exchanges

Exchanges, portals, and directories are usually owned by a third-party operator. Both sellers and buyers prefer such an arrangement. Alternatively, exchanges may be owned by a few very large sellers or buyers. This kind of arrangement is referred to as a *consortium*.

Third-Party Independent Exchanges

Third-party exchanges are electronic intermediaries. The intermediary not only presents catalogs, but also tries to *match* buyers and sellers and encourages them to make transactions by providing electronic trading tools and rooms.

Example 1: Intercontinental Exchange Group (ICE)

The Intercontinental Exchange (**theice.com**) is an Internet-based global network of B2B exchanges (23 regulated exchanges and 6 central clearing houses [2014 data]) that operates marketplaces that trade commodities contracts and over-the-counter (OTC) energy and commodity features as well as related financial products. While the company's original focus was energy products, recent acquisitions have expanded its activity into "soft" commodities (grains, sugar, cotton, and coffee), foreign exchange, and equity index features. For details, see **intercontinentalexchange.com/about**.

ICE is linked electronically to all its customers (members). Trading is global and is done 24/7. Currently, ICE is organized into three business lines:

- **ICE Markets.** Futures, options, and OTC markets. Energy futures are traded via ICE Futures Europe; soft commodity futures/options are handled by ICE Futures U.S.
- **ICE Services.** Electronic trade confirmations and education.
- **ICE Data.** Electronic delivery of market data, including real-time trades, historical prices, and daily indices.

ICE offers market participants a range of trading and risk management services globally:

1. Benchmark futures contracts
2. Risk management via a global central counterparty clearinghouse
3. Integrated access to global derivatives markets
4. Leading electronic trading platform
5. Transparency and regulation
6. Independence governance

Intercontinental Exchange owns several pioneering exchanges such as ChemConnect.

Example 2: The Receivables Exchange

The Receivables Exchange is a website where businesses seeking financing can sell their receivables to those who are willing to loan them money. (The receivables are used as collateral for the loans.) The process involves auctions and is managed by The Receivables Exchange, LLC. (**recx.com**). A demo is available on the site.

For a list of exchanges all over the world, see **internetworldstats.com/links2.htm**.

Example 3: SolarExchange.com

SolarExchange.com is a global *solar marketplace* facilitating B2B online *auctions* for solar-related materials and finished goods. This exchange is a global community where suppliers collaborate with buyers from anywhere in the world.

According to the company, their service portfolio "spans the solar supply chain, delivering procurement management, risk management, online auctions, price indexes, human resource sourcing and a knowledge base serving the solar industry."

The major benefits, according to the company, are:

- "Connect with the global solar trading community
- Reduce costs by automating solar procurement and sale activities
- React rapidly to changing market conditions for greater competitive advantage
- Extend your market reach through access to new trading partners and suppliers

- Accelerate sales cycles and minimize inventory risk
- Lower operating costs and improve margins
- Promote your brand to increase awareness and drive commerce activities
- Source global talent"

(see **solarexchange.com/solarxpages/StaticAboutUs.aspx**).

For how this exchange works and the bidding process, see **solarexchange.com/solarxpages/StaticGetStarted.aspx** and **solarexchange.com/solarxpages/StaticBiddingProcess.aspx**.

Consortium Trading Exchanges (CTE)

A **consortium trading exchange (CTE)** is an exchange formed and operated by a group of major companies in one industry. They can be suppliers, buyers, or both. The major declared goal of CTEs (also called consortia) is to provide services that support trading activities. These services include links to the participants' back-end processing systems as well as collaborative planning and design services. Examples of consortia exchanges are **avendra.com** in the hospitality industry and OceanConnect **oceanconnect.com** in the shipping industry.

Note that some consortia have hundreds of members in the same industry.

Dynamic Pricing in B2B Exchanges

The market makers in both vertical and horizontal exchanges match supply and demand in their exchanges, and this matching determines prices, which are usually *dynamic* and are based on changes in supply and demand. **Dynamic pricing** refers to the rapid movement of prices over time and possibly across customers. Stock exchanges are a prime example of dynamic pricing. Another good example of dynamic pricing occurs in auctions, where prices vary all the time.

The typical process that results in dynamic pricing in most exchanges includes the following steps:

1. A company posts a bid to buy a product or an offer to sell one.
2. An auction (forward or reverse) is activated.
3. Buyers and sellers can see the consecutive bids and offers but usually do not see who is making them. Anonymity often is a key ingredient of dynamic pricing (e.g., in stock markets).
4. Buyers and sellers interact with bids and offers in real time.
5. Sometimes buyers join together to obtain a volume discount price (group purchasing).
6. A deal is struck when there is an exact match between a buyer and a seller on price, volume, delivery date, and other variables, such as location or quality.
7. The deal is finalized, and payment and delivery are arranged.

Advantages, Limitations, and the Revenue Model of Exchanges

Exchanges have several benefits, for buyers and sellers, including making markets more efficient, providing opportunities for sellers and buyers to find new business partners, reducing the administrative costs of ordering MROs, and expediting trading processes. They also facilitate global trade and create communities of informed buyers and sellers.

Despite these benefits, beginning in 2000, exchanges started to collapse, and both buyers and sellers realized that they faced the risks of exchange failure or deterioration. The potential benefits and risks of B2B exchanges for buyers and for sellers are summarized in Table 4.2. As the table shows, the benefits outnumber the risks.

Revenue Models

Exchanges, like all organizations, require revenue to survive. Therefore, an exchange's owners, whoever they are, must decide how they will earn revenue. The potential sources of revenue for exchanges are similar to those discussed in Chapter 1. They include transaction fees, membership fees, service fees, advertising fees, and auction fees (paid by the sellers and/or buyers). In addition, for a fee, exchanges offer software, computer services, management consultation, and so forth.

Note: For many new B2B e-marketplaces, see Demery (2015).

SECTION 4.7 REVIEW QUESTIONS

1. Define B2B exchanges and list the various types of exchanges.
2. List the major functions of exchanges and the services they provide.
3. What is dynamic pricing? How does it work?

Table 4.2 Potential gains and risks in B2B exchanges

	For buyers	For sellers
Potential gains	One-stop shopping, huge	New sales channel
	Search and comparison shopping	No physical store is needed
	Volume discounts	Reduced ordering errors
	24/7 ordering from any location	Sell 24/7
	Make one order from several suppliers	Community participation
	Huge, detailed information	Reach new customers spending only little cost
	Access to new suppliers	Promote the business via the exchange
	Status review and easy reordering	An outlet for surplus inventory
	Community participation	Can go global more easily
	Fast delivery	Efficient inventory management
	Less maverick buying	Better partner relationship management
	Better partner relationship management	Loss of direct CRM and PRM
Potential risks	Unknown vendors; may not be reliable	More price wars
	Loss of customer service quality (inability to compare all services)	Competition for value-added services
		Must pay transaction fees; possible loss of customers to competitors

4. List the potential advantages, gains, limitations, and risks of exchanges to buyers.
5. List the major advantages and limitations to sellers.
6. List the major ownership types in B2B exchanges.
7. Define consortium trading exchanges.

4.8 B2B IN WEB 2.0 AND SOCIAL NETWORKING

Although a large number of companies conduct social networking activities that target individual consumers (B2C), there also is increasing activity in the B2B arena. However, the potential in B2B is large, and new applications are added daily. The opportunities of B2B social networking depends on the companies' goals and the perceived benefits and risks involved (for more information see **adage.com/article/btob/social-media-increasingly-important-b-b-marketers/291033**).

E-Communities in B2B

B2B applications may involve many participants: buyers and sellers, service providers, industry associations, and others. In such cases, the B2B market maker needs to provide community services, such as chat rooms, bulletin boards, and possibly personalized Web pages.

E-communities connect employees, partners, customers, and any combination of the three. E-communities offer a powerful resource for e-businesses to leverage online discussions and interactions in order to maximize innovation and responsiveness. It is therefore beneficial to study the tools, methods, and best practices of building and managing B2B e-communities. Although the technological support of B2B e-communities is basically the same as for any other online community, the nature of the community itself and the information provided by the community are different. For a list of B2B communities, see DiMauro (2014).

B2B e-communities are mostly communities of transactions and, as such, members' major interests are trading and business-related information gathering. Many of the communities are associated with vertical exchanges; therefore, their needs may be specific. Communities also support partner-to-partner collaboration and networking. For example, see **partners.salesforce.com** for partnership software. However, it is common to find generic services such as classified ads, job vacancies, announcements, industry news, and so on. For B2B social communities, see Brooks et al. (2013). Communities promote collaboration. The newest variation of these communities is the business-oriented or professional social network such as **linkedin.com**, presented in Chapter 8.

The Opportunities of Social Commerce in B2B

Companies that use B2B social networking may experience the following advantages:

- Use the network to advertise to large audiences and create brand awareness.
- Discover new business partners and sales prospects.
- Enhance their ability to learn about new technologies, competitors, customers and the business environment.
- Generate sales leads via "contacts," especially on **linkedin.com** and by tweeting (**twitter.com**), or engaging on **facebook.com**. See Templeman (2015).
- Post questions and facilitate discussions on **linkedin.com** by searching the "Help Center," asking the community a question through the "Help Forum," or by using the posting module on your homepage to ask your network a question. Post questions on the question and answer forums on other social networks.
- Improve participation in industry association activities (including lobbying).
- Create buzz about upcoming product releases.
- Drive traffic to their Facebook page and other social sites and engage visitors there (e.g., provide games, prizes, competitions). Word of mouth also may increase traffic.
- Create social communities to encourage discussions among business partners (e.g., customers and suppliers) about their products.
- Use social networks, such as **facebook.com** and **linkedin.com**, to recruit new talent.

For more opportunities using **linkedin.com**, see Tepper (2015).

More uses of B2B social networking are seen in *enterprise social networks,* which are private social networks within enterprises (see Chapter 8).

The Use of Web 2.0 Tools in B2B

Many companies are using blogs, microblogs, wikis, RSS feeds, video ads, podcasts, and other tools in B2B EC. For example, Eastern Mountain Sports (**ems.com**) uses blogs (**blog.emsoutdoors.com**), RSS feeds, and wikis to communicate and collaborate with their suppliers and distributors. Thousands of other companies are using (or experimenting with) these tools. For a study on using YouTube for B2B, see **scgpr.com/41-stories/youtube-for-b2b-marketers**; and on using Twitter, see Tepper (2015). For comprehensive coverage, see Bodnar and Cohen (2012). For case studies, see Ueland (2015).

Example: Orabrush Inc.

Orabrush Inc. (**orabrush.com**) is a startup company that makes tongue cleaners that reduce bad breath. The company created funny YouTube videos targeting Walmart employees. In a short time, the company had over 160,000 subscribers on YouTube, and more than 39 million views. In addition, the company advertised on Facebook at a cost of $28, resulting in 300,000 fans. This publicity convinced some Walmart buyers to try the product, and Orabrush landed a huge contract with Walmart. For details, see Neff (2011).

B2B Games (Gamification)

Virtual games, or **gamification**, refer to virtual games designed to support B2B training and decision-making. Players compete against each other and make market predictions. For details, see Petersen (2015).

Virtual Trade Shows and Trade Fairs

Virtual trade shows and fairs are gaining popularity. They are primarily B2B oriented.

Virtual trade shows are an application of virtual worlds. A **virtual trade show**, also known as a *virtual trade fair*, is the online analogy of a physical trade show. These are temporary or permanent showplaces where exhibitors present their new products to potential customers. For a detailed description of virtual trade shows, see Online File W4.4.

For a large number of screen shots of virtual trade show, conduct a Google search for "Virtual Trade Show."

Example: MarketPlace365

MarketPlace365 (**marketplace365.com**) is a vendor that gives companies tools to build virtual trade shows and attract traffic to the shows. For details, see **marketplace365.com** and **marketplace365.com/Marketing/features.aspx**.

Note: Social media can be used to support exhibits even in physical trade shows. For more on using social media at trade shows, see Browne (2013) and download his free "Social Media Tradeshow Marketing Checklist" at **tradeshowguy-blog.com/downloads/Social-Media-Tradeshow-Marketing-Checklist.pdf**.

Social Networking in B2B

Businesses can use B2B social networking to improve knowledge sharing, collaboration, and feedback. Furthermore, social networking sites may also prove beneficial in aiding troubleshooting and problem-solving efforts. Companies (especially small ones) are using social networks and Yahoo! Answers (**answers.yahoo.com**) and specialized groups

within LinkedIn; for example, for problem-solving. B2B participants need to look into social networking as part of their overall EC strategy, otherwise they may miss an opportunity to reach the B2B audience and differentiate themselves from the competition.

By the end of 2013, social networking was playing a much more important role in B2B. Both small and large businesses are using social networks quite successfully to find and retain new business. Other applications include:

- Several companies globally use social networks for various networking functions.
- Some businesses have found new customers via social networks.
- Some companies include social networking activity to both acquire and retain customers in the marketing budget.

The main uses of social networks are keeping in contact with business contacts; meeting with special interest groups; learning useful business intelligence; and organizing, managing, and connecting with customer groups.

For some interesting applications and tips, see Monty (2015).

Social media use among B2B marketers is already very high. However, many do not calculate the return on investment for social media. In 2013, Twitter and LinkedIn were the most-used social networks in B2B. By 2016, LinkedIn and Facebook were at the top.

Using Twitter in B2B

Twitter is used extensively in B2C mainly as a communication tool for customer service advertising campaigns, customer engagement platforms, CRM, and market research. Similar uses are evidenced in B2B. The applications include the monitoring of conversations for identifying business opportunities, enabling small businesses to engage with potential customers, making contacts with potential customers, and customers discovering potential suppliers.

Examples of Other Activities of B2B Social Networks

The following are examples of some social network-oriented B2B activities:

- **Location-based services.** These may provide opportunities for B2B.
- **Corporate profiles on social networks.** LinkedIn and Facebook include substantial information on companies and their individual employees. In fact, employee profiles can be part of a company's brand. For example, as early as 2014, IBM had over 300,000 employees registered on LinkedIn; Microsoft had approximately 134,000 as of early 2014. In addition, some sites feature company profiles, with comments by employees and customers.

Success Stories

BtoB's Interactive Marketing Guide (available periodically at **btobonline.com**; now part of AdAge) provides examples of successful B2B implementation (e.g., look for Cisco Systems, Arketi Group, and Hewlett Packard Co.).

For case studies, read Simply Zesty's eBook titled "50 Brilliant Social Media B2B Case Studies" (available for purchase at **simplyzesty.com/Blog/Article/June-2011/50-Brilliant-Social-Media-B2B-Case-Studies**).

The Future of B2B Social Networking

Marketing users are developing social media and search tools. Products such as Google's OpenSocial may increase interest in social networking.

Businesses must embrace social networking in order to better understand their customers and business partners.

SECTION 4.8 REVIEW QUESTIONS

1. List some of the opportunities for corporations to use social networking in B2B EC.
2. What are some of the benefits of social networking for B2B EC?
3. List some Web 2.0 social software for B2B applications.
4. Describe some of the applications of B2B in social networks.
5. Discuss the strategies for B2B social networking.
6. Define e-communities in B2B.

4.9 COLLABORATIVE COMMERCE

Collaborative commerce is an e-commerce technology that can be used to improve collaboration within and among organizations, frequently in supply chain relationships.

Essentials of Collaborative Commerce

Collaborative commerce (c-commerce) refers to electronic support for business collaboration. It enables companies to collaboratively plan, design, develop, manage, and research products, services, and innovative business processes, including EC

applications. An example would be a manufacturer who is collaborating electronically with an engineering company that designs a product or a part for the manufacturer. C-commerce implies communication, information sharing, and collaborative planning done online by using tools such as groupware, blogs, wikis, and specially designed EC collaboration tools. Sometimes as a digital partnership, c-commerce can drive significant business success (see McCafferty 2015). Many collaboration efforts are done along the supply chain where the major benefits are cost reduction, increased revenue, fewer delays, faster movement of goods, fewer rush orders, fewer stock-outs, and better inventory management. C-commerce is strongly related to **e-collaboration**, which is collaboration using digital technologies among people for accomplishing a common task.

The Elements and Processes of C-Commerce

The elements of the processes of c-commerce vary according to situations. For example, in many cases, c-commerce involves a manufacturer (or an assembler) who collaborates with its suppliers, designers, and other business partners, as well as with its customers and possibly the government. The major elements of the collaboration process are illustrated in Figure 4.10. Notice that the collaboration process is based on the analysis of internal and external data that are made visible via a visualization portal. On the lower left side of the figure, we show the cyclical process of c-commerce. The people involved in this cycle use the information in the displays as well as the interactions among the major groups of participants (shown on the right side of the figure). The elements of c-commerce can be arranged in different configurations, one of which is a hub.

Collaboration Hubs

A popular form of c-commerce is the *collaboration hub*, which is often used by the members of a supply chain. A **collaboration hub (c-hub)** is the central point of interaction and of a company's supply chain. A single e-hub can host multiple *collaboration spaces* in which trading partners transact, collaborate, communicate, and share information.

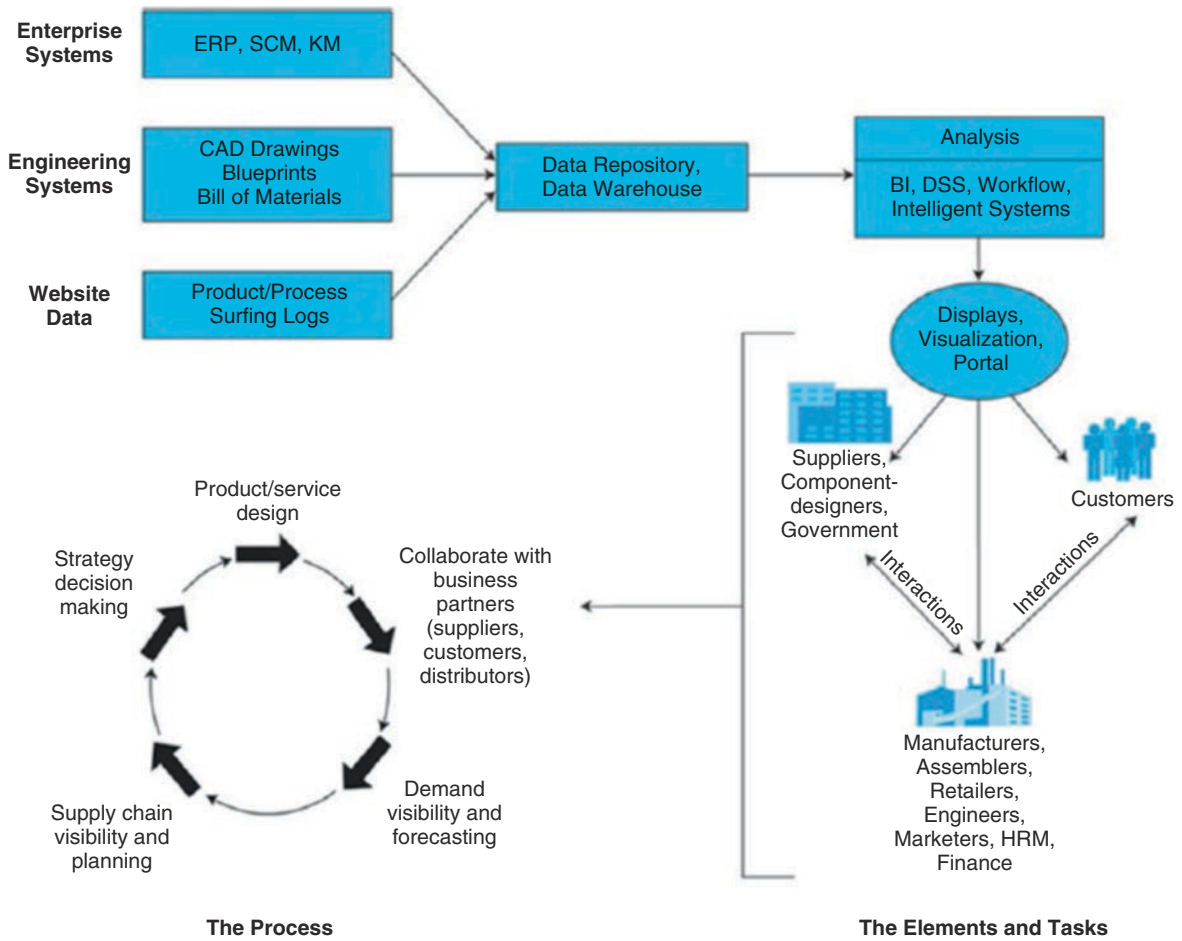

Figure 4.10 Elements and process of c-commerce systems

Improving Collaborative Commerce

C-commerce can be divided into two major categories: internal and external. *Internal collaboration* refers to interdepartmental collaboration such as collaboration among organizational employees and collaboration of departments with their mobile employees. It also refers to collaboration among teams and individual employees who are off premises. *External collaboration* refers to any collaboration between an organization and others in the external environment.

A large number of electronic tools are available to improve collaboration, starting with e-mail and wikis and ending with collaborative spaces and comprehensive tools such as Microsoft SharePoint (**office.microsoft.com/en-us/sharepoint**), Salesforce Chatter (**salesforce.com/ap/chatter/overview**), and Jive Software (**jivesoftware.com**). For example, SAP Inc. provides a social-based layer of software products that optimizes collaboration.

A large number of publications are available on how to improve c-collaboration. For a 2016 list of collaboration software products, see **captera.com/collaboration-software**. For a comprehensive coverage, see Beard (2014).

Representative Examples of Collaborative Commerce

Leading technology companies such as Dell, Cisco, and HP use collaborative commerce mostly for supply chain improvement such as e-procurement. Other collaboration EC initiatives are used to increase efficiency and effectiveness of operation as can be seen in the following examples.

Vendor-Managed Inventory Systems

Vendor-managed inventory (VMI) refers to a process in which retailers make their suppliers responsible for monitoring the inventory of each item they supply, and determining when to order each item, and how much to order each time. Then the orders are generated electronically and fulfilled by the vendors. (A third-party logistics provider (3PL) can also be involved in VMI by organizing the shipments as needed.) The retailer provides the supplier with real-time usage (depletion) information (e.g., point-of-sale data), inventory levels, and the threshold below which orders need to be replenished. With this approach, the retailer is no longer involved with inventory management, and the demand forecasting becomes the responsibility of the supplier who can calculate the need for an item before the item is depleted. In addition, instead of sending purchase orders, customers electronically send daily information to the supplier, who generates the replenishment orders for the customer based on this demand information (see **datalliance.com/whatisvmi.html**). Thus, administrative costs are reduced, inventories are kept low, and stock-outs become rare. A VMI also can be conducted between a supplier and its subsuppliers. For more information, see **en.wikipedia.org/wiki/Vendor-managed_inventory**, **vendormanagedinventory.com**, and SAP (2016). Representative VMI software solutions are provided by Vecco International (**veccointl.com**) and JDA Software Group, Inc. (**jda.com**).

Example: VMI and Information Sharing Between a Retailer (Walmart) and a Supplier (P&G)

Walmart provides P&G access to sales information on every item P&G sells to Walmart. The sales information is collected electronically by P&G on a daily basis from every Walmart store. By monitoring the inventory level of its items, P&G knows when the inventories fall below the threshold that triggers an automatic order fulfillment and a shipment. Everything is done electronically. The benefit for P&G is accurate demand information; the benefit for Walmart is adequate inventory, and both enjoy reduced administrative costs (minimum paper orders and manual work). P&G has similar agreements with other major retailers; Walmart has similar agreements with other major suppliers.

Retailer–Supplier Collaboration

In addition to VMI, retailers and the suppliers can collaborate in other areas as illustrated in the following example.

Example: Target Corporation

Target Corporation (**corporate.target.com**) is a large retail conglomerate. It conducts EC activities with tens of thousands of trading partners. The company has an extranet-based system for those partners who are not connected to its value-added network (VAN)-based EDI (see Online Tutorial T2). The extranet enables the company not only to reach many more partners but also to use many applications not available on the traditional EDI. The system enables the company to streamline its communication and collaboration with suppliers. It also allows the company's business customers to create personalized Web pages, as shown in Figure 4.11. Target now has a business website called Partners Online (**partnersonline.com**), which it uses to communicate with business partners, providing them with valuable information.

Reducing Transportation and Inventory Costs

Cost reduction in shipping and inventory can be achieved through collaboration. An example is the collaboration between Amazon.com (**amazon.com**) and shippers such as UPS (**ups.com**). Amazon.com delivers millions of items every week from its distribution centers. Rapid delivery is critical and collaboration with the shippers is essential.

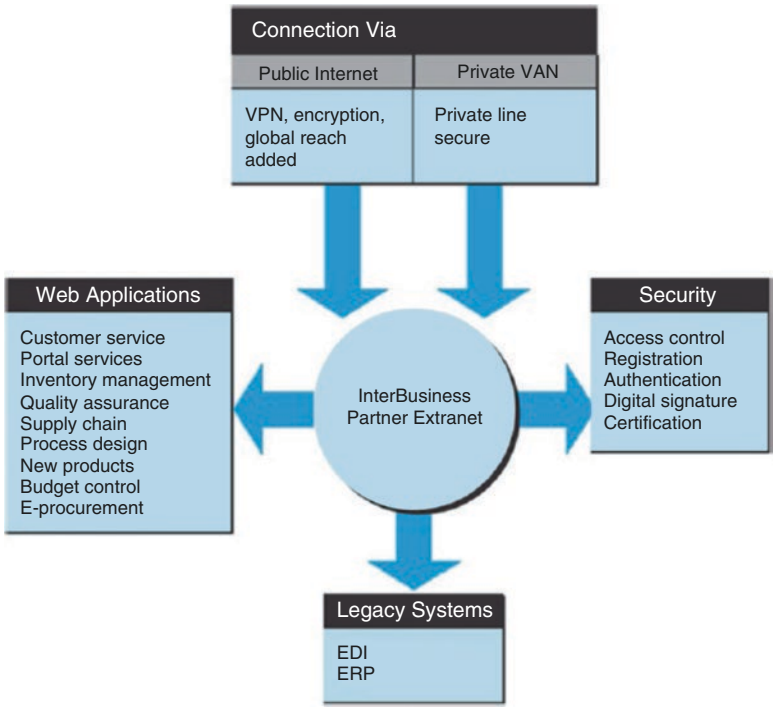

Figure 4.11 Target's extranet

Reduction of Design Cycle Time

The following examples demonstrate cycle time reduction through c-collaboration.

Example 1: Clarion Malaysia

Clarion Malaysia (**clarion.com/my/en/top.html**), a subsidiary of the global car-audio electronics company Clarion Group, manufactures audio electronic systems for cars.

Using computerized technologies provided by IBM, such as computer-aided design (CAD) and product cycle management, the two companies reduced the time-to-market by about 40%, while at the same time improving the design of the products because engineers were able to spend more time creating innovative designs. In addition, closer interaction with Clarion's customers is easier now throughout the design process. Finally, there is also a reduction in tooling preparation time.

Companies such as Commerce Guys (**commerceguys.com**) offer a socially oriented collaboration platform (e.g., see **drupalcommerce.org**).

Elimination of Channel Conflict: Collaboration with Dealers and Retailers

As discussed in Chapters 3 and 4, a conflict between manufacturers and their distributors, including retailers and/or dealers, may arise when customers order online directly from the manufacturer. One solution mentioned earlier is to order from the manufacturer and pick up the merchandise from a local retailer or dealer instead. This requires collaboration between the manufacturer and the local vendor. One company that provides the support for such collaborative EC is JG Sullivan Interactive, Inc. (see **jgsullivan.com/#digital_asset_management**). Their product allows manufacturers to sell online with minimal channel conflict. Another example is Cisco Systems (see **cisco.com/c/en/us/solutions/collaboration/index.html**).

Example: Whirlpool Corp.

Whirlpool (**whirlpool.com**) is another company that experienced the problem of channel conflict. Consumers prefer to buy appliances (sometimes customized) online, directly from Whirlpool. Whirlpool's nationwide network of dealers was not happy with the direct ordering. Note that, some appliances (e.g., a dishwasher, a washing machine) need to be installed, a job usually organized by the dealers.

JG Sullivan's system for Whirlpool was then used globally. The system was designed to enable direct online ordering, and at the same time manage the delivery, installation, warranty, and services by the local dealers. This made customers as well as dealers happy, since marketing and sales expenses decreased significantly. Also, the direct contact with customers allowed Whirlpool to know their customers better.

Social Collaboration

A growing area in c-commerce is **social collaboration**, which refers to the process where people, individually or in groups, interact and share information and knowledge while in social networks, or when pursuing social goals. According to Carr (2015), online collaboration should be social enough to enable employees to be more productive yet not distract their work. For a discussion, see McCafferty (2015).

A large number of collaborative software are available to support social collaboration. For example, see **g2crowd.com/categories/team-collaboration**. For more information, see **en.wikipedia.org/wiki/Social_collaboration**.

Barriers to C-Commerce

Despite the many potential benefits, and with the exception of some very large companies, c-commerce adaptation is moving ahead slowly. Reasons cited in various studies include technical factors involving a lack of internal integration and standards. Other reasons include network security and privacy concerns, and some distrust over who has access to and control of information stored in a partner's database. Internal resistance to information sharing and to new approaches and lack of company skills to conduct c-commerce are also possible factors. Gaining agreement on how to share costs and benefits can also prove problematic.

Finally, global collaboration may be complicated by additional barriers ranging from language and cultural misunderstandings to insufficient budgeting.

Overcoming Barriers to C-Collaboration

Specialized c-commerce software tools may lessen some of the barriers to c-commerce. In addition, as companies learn more about the major benefits of c-commerce—such as smoothing the supply chain, reducing inventories and operating costs, and increasing customer satisfaction—it is expected that more companies will implement c-commerce. New approaches, such as the use of cloud computing and its variants and the use of Web Services, could significantly lessen the implementation problem. The use of collaborative Web 2.0 tools based on open source could help as well. Finally, it is essential to have a collaborative culture within and among organizations.

Collaboration Processes and Software

A large number of proprietary methods and supportive communication and collaborative software are available to support c-commerce.

SECTION 4.9 REVIEW QUESTIONS

1. Define c-commerce.
2. List the major types and characteristics of c-commerce.
3. Describe some examples of c-commerce.
4. Describe the elements and processes of c-commerce.
5. List some major barriers to c-commerce. How can a company overcome these limitations?
6. How is C2C practiced in social networking?

MANAGERIAL ISSUES

Some managerial issues related to this chapter are as follows.

1. **Which B2B model(s) should we use for e-procurement?** When evaluating the various upstream B2B models, we need to match the suitable e-procurement goals with solution strategies depending upon whether the purchases are direct material or indirect material. Four typical goals that should be distinguished are organizational operational efficiency, minimum price, minimum inventory and stock-outs, and low administrative costs. For each of these goals, the appropriate solution and system should be designed accordingly. Managing many small and medium suppliers that do not have sophisticated systems is a challenging goal.
2. **Which B2B model(s) should we use for online B2B sales?** A key issue for B2B sales is how to reconcile with the multiple buyers who adopt different EDI and ERP systems. The Enterprise Application Integration (EAI) solution transforms the internal data of multiple EDI formats used by different buyers. The integration of various types of EDI standards with ERP solutions is another challenge to overcome. In addition to contract management, B2B marketers use auctions, liquidations, and social networks to increase sales.
3. **Which solutions and vendor(s) should we select?** Vendors normally develop and deploy B2B applications, even for large organizations. Two basic approaches to vendor selection exist: (1) Select a primary vendor such as IBM (**ibm.com**), Microsoft (**microsoft.com**), or Oracle (**oracle.com**). This vendor will use its software and procedures and add partners as needed. (2) Use an integrator that will mix and match existing products and vendors to create "the best of breed" for your needs.
4. **What is the organizational impact of B2B?** The B2B system will change the role of the procurement department by redefining the role and procedures of that department. The function of the procurement department may be completely outsourced. A procurement

policy portfolio is necessary to balance strategic sourcing items, spot purchasing items, and design a supply relationship management system.

5. **What are some ethical issues in B2B?** Because B2B EC requires the sharing of proprietary information, business ethics are necessary. Employees should not be able to access unauthorized areas in the trading system, and the privacy of trading partners should be protected.
6. **Which type of social network should we use—private (proprietary) or public?** There are successes and failures in both types. Some large companies have both types (e.g., **northwesternmutual.com**). In most cases, it is better to use public networks such as **linkedin.com** and **facebook.com**.
7. **Which business processes to automate?** It depends on the company, industry, and value chain. However, as illustrated in this chapter, selling and purchasing and other activities along the supply chains are the prime targets. These include payments (financial supply chains). Also important are logistics, shipments, and inventory management.
8. **How difficult is it to introduce e-collaboration?** Dealing with the technological aspects of e-collaboration may be the easy part. Tackling the behavioral changes needed within an organization and its interactions with the trading partners may be the greater challenge. Change management may be needed for the newly created collaborations, to deal with issues such as the resistance to change. In addition, the responsibilities of the collaborative partners must be articulated with the business partners. Finally, e-collaboration costs money and needs to be economically and organizationally justified; however, justification may not be an easy task due to the intangible risks and benefits involved.
9. **How much can be shared with business partners? Can they be trusted?** Many companies are sharing forecast data and actual sales data. However, when it comes to allowing real-time access to product design, inventory, and interface to ERP systems, there may be some hesitation. It is basically a question of security and trust. The more information that is shared, the better the collaboration. However, sharing information can lead to accidently giving away some trade secrets. In some cases, there is an organizational cultural resistance against sharing (some employees do not like to share information, even within their own organization). The business value of sharing needs to be assessed carefully against its risks.
10. **Who benefits from vendor-managed inventory?** When VMI systems are deployed, both sellers and retailers reap benefits. However, small suppliers may not have the ability to systematically monitor and manage inventory of their business customers. In this case, the large buyer will need to support the inventory management system on behalf of its suppliers. Sensitive issues must be agreed upon when initiating VMI. One such issue is how to deal with item shortages created in the system.

SUMMARY

In this chapter, you learned about the following EC issues as they relate to the chapter's learning objectives.

1. **The B2B field.** The B2B field comprises e-commerce activities between businesses. B2B activities account for 77–95% of all EC. B2B e-commerce can be done by using different models.
2. **The major B2B models.** The B2B field is quite diversified. It can be divided into the following segments: sell-side marketplaces (one seller to many buyers), buy-side marketplaces (one buyer from many sellers), and trading exchanges (many sellers to many buyers). Each segment includes several business models. Intermediaries play an important role in some B2B models.
3. **The characteristics and models of sell-side marketplaces.** Sell-side B2B EC is the online direct sale by one seller (a manufacturer or an intermediary) to many buyers. The major technology used is electronic catalogs, which also allow for efficient customization, configuration, and purchase by customers. In addition, forward auctions are becoming popular, especially for liquidating surplus inventory. Sell-side auctions can be conducted from the seller's own site or from an intermediary's auction site. Sell-side activities can be accompanied by extensive customer service. E-commerce allows customization of products and services in personalized catalogs.
4. **Sell-side intermediaries.** The primary role of intermediaries in B2B is to provide value-added services for manufacturers and business customers. Intermediaries can also support group buyers, conduct auctions, and aggregate catalogs of many sellers.
5. **The characteristics of buy-side marketplaces and e-procurement.** Today, companies are moving to e-procurement to expedite purchasing, save on item and administrative costs, and gain better control over the purchasing process. Major procurement methods are reverse auctions (bidding systems), buying from webstores and catalogs, negotiating, buying from an intermediary that aggregates sellers' catalogs, internal marketplaces and group purchasing, desktop purchasing, buying in exchanges or industrial malls, and e-bartering. E-procurement offers the opportunity to achieve significant cost and time savings.

6. **B2B reverse auctions.** A reverse auction is a tendering system used by buyers to get better prices from suppliers competing to fulfill the buyers' needs. Auctions can be done on a company's website or on a third-party auction site. Reverse auctions can lower buyers' costs dramatically, both in product costs and in the time and cost of the tendering process.
7. **B2B aggregation and group purchasing.** Increasing the bargaining power and efficiency of companies can be done by aggregating either the buyers or the sellers. Aggregating suppliers' catalogs into a buyer's catalog, for example, gives buying companies better control of purchasing costs. In desktop purchasing, employees are empowered to buy up to a certain limit without the need for additional approval. Employees view internal catalogs with pre-agreed-upon prices with the approved suppliers and then buy within their budget. Industrial malls or large distributors specialize in one industry (e.g., computers) or in industrial MROs. They aggregate the catalogs of thousands of suppliers. A purchasing agent can place an order for parts or materials, and shipping is arranged by the supplier or the mall owner. Buyer aggregation through group purchasing is very popular because it enables even SMEs to get better prices on their purchases. In addition to direct purchasing, items can be acquired via bartering.
8. **Exchanges defined and the major types of exchanges.** Exchanges are e-marketplaces that provide a trading platform for conducting business among many buyers, many sellers, and other business partners. Types of public e-marketplaces include B2B third-party trading exchanges and consortium trading exchanges. Exchanges may be vertical (industry oriented) or horizontal.
9. **Third-party exchanges.** Third-party exchanges are owned by an independent company and usually are operated in highly fragmented markets. They are open to anyone and, therefore, are considered public exchanges. They try to maintain neutral relations with both buyers and sellers.
10. **B2B in Web 2.0 and social networks.** Although considerable B2C social networking activities exist, B2B activities are just beginning. A major success has been seen in the use of blogs and wikis to collaborate with suppliers and customers. Large companies use social networking to create and foster business relationships. Smaller companies use social networking for soliciting expert opinions. Other companies use it for finding business partners, cultivating business opportunities, recruiting employees, and finding sales leads.
11. **C-commerce.** Collaborative commerce (c-commerce) refers to a planned use of digital technology by business partners. It includes planning, designing, researching, managing, and servicing various partners and tasks, frequently along the supply chain. C-commerce can be conducted between different pairs of business partners or among many partners participating in a collaborative network. Collaboration with Web 2.0 tools and in social networks adds a social dimension that could improve communication, participation, and trust. There are many new tools, some of which are being added to traditional collaboration tools. Better collaboration may improve supply chain operation, knowledge management, and individual and organizational performance.

KEY TERMS

Bartering exchange
Business-to-business e-commerce (B2B EC)
Buy-side e-marketplace
Collaborative commerce (c-commerce)
Collaborative hubs (c-hubs)
Company-centric EC
Consortium trading exchange (CTE)
Desktop purchasing
Direct materials
Dynamic pricing
E-collaboration
E-procurement (electronic procurement)
Exchanges (trading communities or trading exchanges)
Gamification
Group purchasing
Horizontal marketplaces
Indirect materials
Maintenance, repair, and operation (MRO)
Maverick buying
Online intermediary
Procurement management
Public e-marketplaces
Request for quote (RFQ)
Reverse auction
Sell-side e-marketplace
Social collaboration
Vendor-managed inventory
Vertical marketplaces
Virtual trade shows

DISCUSSION QUESTIONS

1. Explain how a catalog-based sell-side e-marketplace works and describe its benefits.
2. Discuss the advantages of selling through online auctions over selling from catalogs. What are the disadvantages?

3. Discuss and compare all of the mechanisms that group-purchasing aggregators can use.
4. Should desktop purchasing only be implemented through an internal marketplace?
5. Compare and contrast a privately owned exchange with a private e-marketplace.
6. Compare external and internal aggregation of catalogs.
7. Relate social commerce to B2B group buying.
8. Compare an organizational buyer to an individual consumer.
9. It is said that c-commerce signifies a move from a transaction focus to a relationship focus among supply chain members. Discuss.

TOPICS FOR CLASS DISCUSSION AND DEBATES

1. Discuss B2B opportunities in social networking.
2. Discuss the risks in B2B social networking.
3. Discuss how globalization is related to B2B.
4. Relate B2B to the four Ps of marketing (product, pricing, placement, and promotion) and the four Cs (content, connection, communication, and conversion).
5. Discuss potential channel conflicts in B2B.
6. What is the contribution of B2B directories such as Alibaba.com to global trade? What are the potential limitations?
7. Debate: Some say that exchanges must be owned by a third-party intermediary and that consortiums should not be allowed.
8. Discuss why **facebook.com** is not as good as **linkedin.com** in generating sales leads.
9. In class, watch the video "B2B Marketing in a Digital World" (4:11 min) at **youtube.com/watch?v=-nTkBhsUIRQ**. Discuss the implications for a progressive marketing manager.
10. Research companies that conduct liquidations. Concentrate on: **liquidation.com**, **govliquidation.com**, and **govdeals.com**. Examine the similarities and uniquenesses in the services provided. Discuss the value added to the companies that use these services.

INTERNET EXERCISES

1. **Tripadvisor.com** launched a B2B division in 2010. Find information about the benefits to a company using it and to its business customers.
2. Examine the following sites: **ariba.com**, **ibm.com**, and **ibxplatform.com**. Review their products and services. How do they support mobile marketing and social commerce?
3. Match a B2B business model with the services on each site listed in the previous question.
4. Visit **ebay.com** and identify all of the activities related to its small business auctions. What services are provided by eBay? Then, enter eBay Business & Industrial area at **ebay.com/rpp/business-industrial**. What kind of e-marketplace is this? What are its major capabilities?
5. Enter **ondemandsourcing.com** and use the free registration to view the product demo. Prepare a list of benefits to small- and medium-sized organizations.
6. Enter **bitpipe.com** and find recent B2B vendor reports related to e-procurement. Identify topics not covered in this chapter.
7. Visit **iasta.com** and **cognizant.com**. Examine the major tools they sell for conducting various types of e-procurement. List and analyze each tool.
8. Enter **blog.marketo.com** and find eight recent successful applications of social B2B. Prepare a list of topics covered at the site. Write a brief summary about the content, including tips and guides and lessons learned.
9. Enter **smallbusiness.yahoo.com/ecommerce** and summarize one of the "Success Stories."
10. Enter **eprocurement.nc.gov**. What e-procurement methods does it provide? What are the benefits of each method?
11. Enter **equinix.com** and identify the B2B services they provide.
12. Enter **collaborativeshift.com** or other c-collaborative sites, and read about recent issues related to e-collaboration. Prepare a report.
13. Enter **opentext.com** or **kintone.cybozu.com/us**. Read the company vision for collaborative commerce and view the demo. Explain in a report how the company facilitates c-commerce.

TEAM ASSIGNMENTS AND PROJECTS

1. **Assignment for the Opening Case**
   Read the opening case and answer the following questions.
   (a) What directory services are provided by Alibaba.com?
   (b) Identify the revenue sources of Alibaba.com.
   (c) Find information about the 2014 IPO. Do you think that the company valuation is realistic?
   (d) Enter **slideshare.net/yanhufei/case-study-alibaba-final-v-11** and review the Alibaba.com case study. Expand on the answers to questions which are designated by your teacher.
   (e) Describe Alibaba's business model.

(f) Enter **sa.alibaba.com** and watch the video about supplier assessment at Alibaba.com (3:31 min); summarize its content.
(g) Watch the video titled "e-Riches 2.0—The Best Online Marketing Book by Scott Fox" (6:18 min) at **youtube.com/watch?v=6O747UHN9Mw**. What have you learned from this video?

2. Each team should explore a different social networking B2B activity and prepare a summary paper for a class presentation. The paper should include the following about the activity or method:
   (a) The mechanisms and technologies used
   (b) The benefits to buyers, suppliers, and others (if applicable)
   (c) The limitations to buyers, suppliers, and others (if applicable)
   (d) The situations for which each method is recommended. Hint: Look at Leake et al. (2012), and vendors' products.
3. Each team finds a global B2B intermediary that competes with **alibaba.com** (e.g., **globalsources.com**). Prepare a list of services available to sellers and to buyers from both Alibaba.com and your chosen competitor.
4. Enter **amazon.com/Amazon-Business-Tour/dp/B00WN5U03W** and view the video tutorial. Also explore the site. Describe the benefits to manufacturers and distributors as well as customers.
5. Enter **ariba.com** and find out what its software solutions such as Ariba Commerce Cloud can do to facilitate inter-enterprise commerce. Also examine the company's solution for sourcing, procurement, and contract management. Present your findings to the class.
6. View the slide presentation "Vision 2020: Ideas for Procurement in 2020 by Industry-Leading Procurement Executives" by Oka and 13 other procurement executives (2011) available at **slideshare.net/Ariba/vision2020-thefutureofprocurement**. Each team analyzes the ideas of several contributors and presents the highlights to the class.
7. Watch the video titled "eProcurement Case Study: HOYER Group" (3:44 min) at **youtube.com/watch?v=BFaJPeDQyIs&noredirect=1**. Answer the following questions.
   (a) What problems did the Hoyer Group face?
   (b) What were some of the software requirements?
   (c) How did they evaluate the software? What criteria did they use?
   (d) What have you learned from the video?
8. The class researches Ariba's supplier network and compares it to several similar networks (e.g., to IBM Sterling B2B Collaboration Network). Each team examines one comparison and makes a presentation to the class.
9. View the video "Panel Discussion on Collaborative Commerce (Pt.1) @ Ariba LIVE 2011" (12:36 min) at **youtube.com/watch?v=bucxXpDvWDI**. (Part 2 (11:11 min) at **youtube.com/watch?v=dV_KUJ0eVuE** is optional.) Answer the following questions:
   (a) What benefits do the buyers see? Relate these benefits to collaborative commerce.
   (b) How is EC used to support c-commerce?
   (c) How can buyer/supplier relationships be fostered with c-commerce?
   (d) Run a similar panel discussion in class. If possible, ask large buyers to attend and take part.
   (e) How is bringing business partners online accomplished?
   (f) What role does Ariba play? (Check its website **ariba.com**.)
   (g) What have you learned from this video about the benefits of c-commerce and e-commerce?

CLOSING CASE: THE UNIVERSITY OF SHEFFIELD'S E-TENDERING SYSTEM

The University of Sheffield in Sheffield, England (**sheffield.ac.uk**), is a leading large public teaching and research institute with over 25,000 registered students and over 5300 staff (see **sheffield.ac.uk/about/facts**).

The University's research output is recognized all over the world. Despite its excellent reputation, it operates on a tight budget. One area where the university saved a considerable amount of money was in procurement.

Due to its research activities, the university purchases over £110 million of supplies a year from about 12,000 suppliers, of which 4500 are regular. The university needed an electronic system in order to minimize procurement delays, standardize processes across all departments, and reduce potential errors. In addition, the administrative expenditures (e.g., postal cost, employees' time, photocopying) were very high. As of 2005, the university has enhanced an e-tendering system as part of its government mandated e-procurement system.

The E-Tendering Initiative

The objective of the procurement department, which initiated the e-tendering initiative, was and still is to support the university in attaining its mission. The initiative must also comply with public procurement regulations. The system was built with software called *in-Tend* (a standard European Union tendering tool) in collaboration with users, suppliers, the staff of the procurement department, and the IT development team.

The E-Tendering Process

The procurement department communicates with the participants via the portal In-Tend Ltd. (**in-tend.co.uk**). In-Tend Ltd. provides policy and open tendering information, including historical bidding data, contracts, and the tendering process to registered suppliers. This portal is very user friendly, allowing small suppliers to participate in biddings. The system is highly secured. (For features of the portal, see **tender-notification.co.uk/features.aspx**.)

The Process

The university has dozens of departments that need to purchase materials and supplies. The requirements are submitted to the central Procurement Office (PO) that arranges the reverse auctions. The PO started the project by standardizing the ordering process and examining all related existing information systems. After extensively testing and training the staff, a small scale tendering job was tested with the local suppliers. Once satisfied, the PO deployed the system, which is used for about 200 tenders each year. The tenders are both for goods and for services.

Bidders can download all the needed documents and upload their bids electronically. The electronic processes resulted in financial savings as well, with an improved level of support to potential bidders.

The PO facilitated connections with the local business community, in order to induce the local businesses to submit bids (e.g., promoting prequalification and facilitating the finding of current opportunities).

Sources: Based on CIPS Knowledge Works (2006); **sheffield.ac.uk/procurement**, **sheffield.ac.uk/finance/regulations/p_flowchart**, and **in-tendhost.co.uk/sheffield/aspx/Home** (all accessed April 2016).

Questions

1. Why does a public university need to comply with government regulations that may reduce its efficiency?
2. Find information on the software In-Tend at **in-tend.co.uk**. Why is it so popular?
3. Examine the information available to suppliers on the portal. How does the tendering provide a fair chance for bidders?
4. Trace the flow of information in an e-tender at the university. Write a report.
5. What procurement services are provided to the internal staff? What services are provided to suppliers and other external companies or individuals (e.g., stockholders)?

ONLINE FILES

Available at **ecommerce-introduction-textbook.com**

W4.1 B2B Internet Marketing
W4.2 The E-Procurement Process: The Buyers View
W4.3 Application Case: iMarketKorea
W4.4 Virtual Trade Shows and Trade Fairs

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Innovative EC Systems: From E-Government to E-Learning, Knowledge Management, E-Health, and C2C Commerce

5

Contents

Learning Objectives

Upon completion of this chapter, you will be able to:

1. Describe various e-government initiatives.
2. Describe e-government activities and implementation issues including government 2.0 and m-government.
3. Describe e-learning, virtual universities, and e-training.
4. Describe e-books and their readers.
5. Describe knowledge management and dissemination as e-commerce.
6. Describe and discuss online advisory systems.
7. Describe e-health.
8. Describe C2C activities in e-commerce.

OPENING CASE: COMPASS GROUP TURNS MANAGERS INTO DETECTIVES TO ENHANCE E-TRAINING

Compass Group (**compass-group.com**) is a UK-based major provider of food and support services worldwide with 470,000 employees in 52 countries. The support services include security, janitorial services, building operations and maintenance, and project management. (See **compass-group.com/Support-Services-wwd.htm** and **compass-group.com/about-us.htm**.) The company has over 10,000 client sites (2016).

The Problem

The company's regional managers used financial performance software to analyze trends and review statistical data available in financial statements related to their functional areas. By defining the causes of problems and explaining unusual financial deviations from budgets, corrections could be planned. However, the company found that the managers had difficulty using the software. Therefore, Compass Group

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E. Turban et al., *Introduction to Electronic Commerce and Social Commerce*,
Springer Texts in Business and Economics, DOI 10.1007/978-3-319-50091-1_5

decided to partner with City & Guilds Kineo to train the managers using the financial software from Kineo Learning Solutions (**kineo.com/solutions**). However, some managers were skeptical about e-training (an application of e-learning), so in order to alleviate concerns and secure collaboration and use, it was necessary to convince them of the program's usefulness.

The Solution

To train the regional managers, Compass Group decided to use an attractive approach that would enable rapid mass training at low cost. They decided on e-training.

The implementation team created the "Compass Detective Board Game." The participating managers played the role of "detectives" in the game. Each detective needed to analyze performance and find solutions to problems ("crimes"). Each player had an adaptation to her/his functional area, based on real-life situations. The players received assistance in problem-solving so they could gain experience. The players were able to come up with answers to questions such as how to react to a price cut by a competitor or how to determine when a budget deviation is significant. (Read the case study at **kineo.com/case-studies/process-and-technical/compass-group-systems-training**.)

The Results

In the first 6 months of its existence, the project had some outstanding successes:

- *Improved perceived performance:* Most participants agreed that their performance was likely to improve, thanks to the training.
- *Train large numbers of people, quickly:* The e-learning enabled training many more managers rather than using conventional training (at the same cost and time frame).
- *Cost reduction:* The Compass Group saved £495,000 in 6 months, compared with the costs for conventional training.

Sources: Based on City & Guilds Kineo (2011), Training Press Releases (2011), **compass-group.com,** and **en.wikipedia.org/wiki/Compass_Group** (both accessed March 2016).

LESSONS LEARNED FROM THE CASE

E-learning (and e-training) is an EC application that helps organizations electronically teach a large number of students or employees, who are frequently in different locations, to ensure that they can grow and handle their jobs effectively. E-training at Compass Group is based in part on making sure that employees know why training is important to their business, clients, and customers. By creating an e-training program that engaged the trainees, the company not only reduced training costs and successfully trained the employees, it also motivated many employees to embrace e-training. E-learning and e-training are major topics in this chapter. Other innovative systems described in this chapter are e-government, e-books, knowledge management, e-health, and consumer-to-consumer EC.

5.1 DIGITAL GOVERNMENT: AN OVERVIEW

Electronic government, also known as *e-government* or *digital government*, is a growing e-commerce application area that encompasses many topics. The area's major objective is to bring public sector institutions into the digital age. For an overview, see Brown et al. (2014). This section presents the major ones.

Definition and Scope

E-government refers to the use of information technology in general, and e-commerce in particular, to improve the delivery of government services and activities in the public sector, such as providing citizens with more convenient access to information and services, and providing effective delivery of government services to citizens and businesses as well as improving the performance of government employees. It also is an efficient and effective way for governments to interact with citizens, businesses, and other entities and to improve governmental business transactions (such as buying and selling goods and services), and to operate effectively within the governments themselves. E-government includes a large number of activities, as can be seen in the New Zealand case (Online File W5.1) and in **en.wikipedia.org/wiki/E-Government**. For details, see Shark and Toporkoff (2008). For resources, see **w3.org/egov**.

Table 5.1 Representative categories of e-government performance objectives

G2C	G2B
• Reduce the time needed to interact with the government	• Increase the ability for businesses to find, view, and comment on rules and regulations
• Create a friendly single point of access to government services for individuals	• Reduce the burden on businesses by enabling online filing of taxes and other documents
• Reduce the time spent in finding federal jobs	• Reduce the time to fill out export forms and locate related information
• Reduce the average time for citizens to find benefits and determine eligibility	• Reduce the time for businesses to comply with government regulations
• Increase the number of citizens who use the Internet to find information on recreational opportunities	
• Meet the high public demand for information	
• Improve the value of government services to its citizens	
• Expand access to information for people with disabilities	
• Make obtaining financial assistance from the government easier, cheaper, quicker, and more comprehensible	
G2G	**IEE**
• Decrease time needed to respond to emergency incidents by government agencies	• Increase availability of training programs for government employees
• Reduce the time to verify public records	• Reduce the average time to process clearance forms
• Increase the number of grant programs available for electronic applications	• Increase use of e-travel services within each agency
• Increase efficiency of communication between federal, state, local, and tribal governments	• Reduce time and overhead costs to purchase goods and services throughout the federal government
• Improve collaboration with foreign partners, including governments and institutions	• Plan IT investments more effectively
• Automate internal processes to reduce costs within the federal government by disseminating the best practices across agencies	• Secure better services at a lower cost
	• Cut government operating costs

Sources: Based on Egov (2003) and the authors' experience

Note that e-government also offers an opportunity to improve the efficiency and effectiveness of the internal operation of a government.

E-government includes the following major categories: government-to-citizens (G2C), government-to-business (G2B), government-to-government (G2G), internal efficiency and effectiveness (IEE), and government-to-employees (G2E). The major activities of the first four categories are provided in Table 5.1 (also see Digital Government Strategy 2012 and Egov 2003). For a description of the range of e-government activities in the United States, see Digital Government Strategy (2012) and **whitehouse.gov/omb/e-gov**. Of special interest is the recent document title "Digital Government" (**whitehouse.gov/sites/default/files/omb/egov/digital-government/digital-government.htm**). For examples of e-government in Singapore, see **egov.gov.sg**.

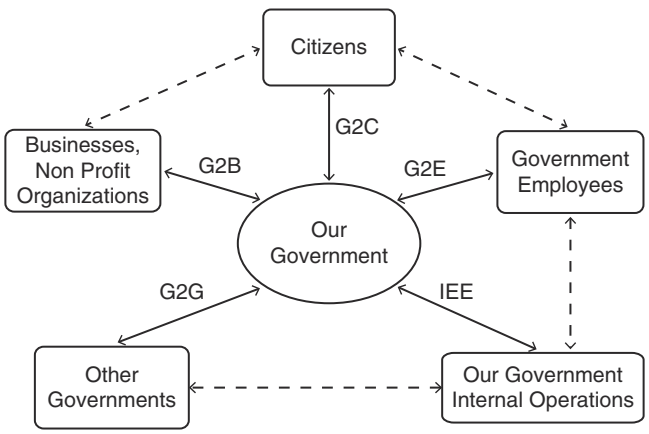

Figure 5.1 E-government categories of activities

Example: The European Commission

The European Commission's Digital Agenda website (**ec.europa.eu/digital-agenda/welcome-digital-agenda**) is an example of a comprehensive e-government system. It is one of the European Union's seven flagships for achieving its 10-year growth strategy. The site is divided into several topics—notably, life and work, public services, ongoing studies, smart cities, and e-health and aging. For details, see **ec.europa.eu/digital-agenda/welcome-digital-agenda**.

The above categories are based on different entities with whom the government is interacting. However, these entities are also interconnected, as shown in the broken lines of Figure 5.1.

The following is a brief description of the major activities conducted between the government and each major entity.

Government-to-Citizens

The **government-to-citizens (G2C)** category includes all the interactions between a government and its citizens that take place electronically. G2C can involve dozens of different initiatives. The basic idea is to enable citizens to interact electronically with the government from anywhere and at anytime. G2C applications enable citizens to ask questions of government agencies and receive answers, pay taxes, receive payments and documents, and schedule services, such as employment interviews and medical appointments. For example, in many U.S. states, residents can renew driver's licenses, pay traffic tickets, and make appointments for vehicle emission inspections and driving tests—all online.

The major features of government websites are: information on how to contact the government, public notices to citizens, links to other sites, educational material, publications, statistics, legal notes, and databases. The major areas of such G2C activities are social services, tourism and recreation, public safety, research and education, downloadable forms, discovery of government services, tax filing, information about public policy, and advice about health and safety issues. G2C is now available on mobile/wireless devices in many countries and local governments.

Another area of G2C activity takes place by solving citizens' problems. The government (or a politician) can use CRM-type software to assign inquiries and problem cases to appropriate staff members (as shown on **ict.govt.nz**). Subsequently, workflow CRM software can be used to track the progress of the problems' resolution.

Note that over 20 countries block some websites for political, social, or other reasons (e.g., China, North Korea, Iran, Syria). For more on G2C, see **usa.gov/Citizen/Topics/All-Topics.shtml**. For an overview of major citizens' groups and the services provided to them by the U.S. Department of Labor, see **dol.gov/_sec/e_government_plan/p41-43_appendixe.htm**.

Two popular examples of G2C are provided next.

Electronic Voting

Voting processes may be subject to errors, manipulation, and fraud. In many countries, there are attempts to "rig" the votes; in others, the losers want a recount. Voting may result in major political crises, as has happened in several countries. Problems with the U.S. 2000 and 2004 presidential elections have accelerated the trend toward electronic voting.

The voting process encompasses a broad spectrum of technological and social activities from voter registration and voter authentication to the casting of ballots and subsequent tallying of results. For an example of this process, see Figure 5.2. Electronic voting automates some or all steps in the process.

Fully electronic voting systems have raised considerable controversy because of a variety of relevant factors, such as the proprietary nature of the software. Typical issues are the difficulties in selling the systems to voters, complex auditing, and the lack of experience in some steps of the process.

Note: A debatable issue is the possibility of fraud in electronic voting (Madden 2015).

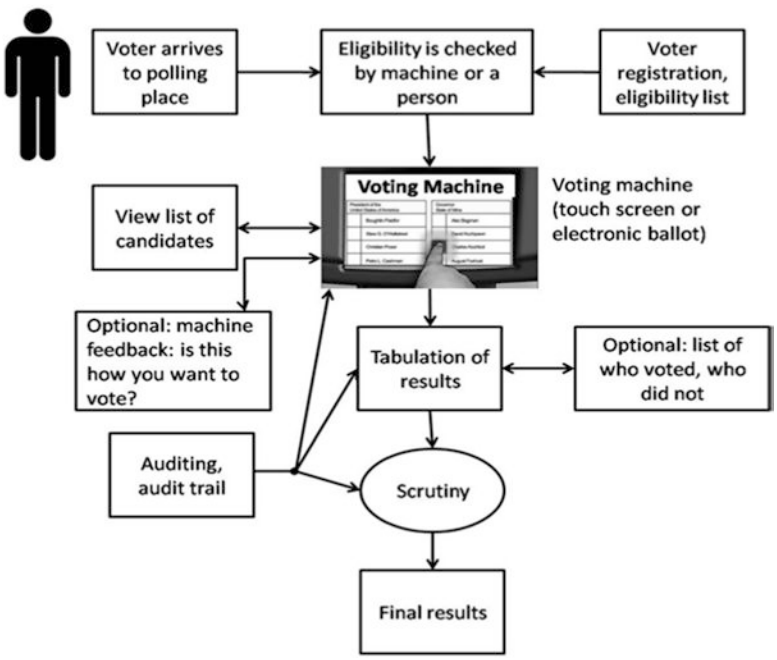

Figure 5.2 The process of using a voting machine

For more information on e-voting, see **en.wikipedia.org/wiki/Electronic_voting** and the Electronic Frontier Foundation (**eff.org**).

Electronic Benefits Transfer

One e-government application that is not new is the electronic benefits transfer (EBT). It has been available since the early 1990s and is now in use in many countries. The U.S. government transfers billions of dollars in benefits to many of its citizens on a regular basis. Beginning in 1993, an attempt was made to deliver benefits to recipients' bank accounts. However, more than 20% of payments go to citizens who do not have a bank account. To solve this problem, the government initiated the use of smart cards (see Chapter 11). Benefit recipients can load the money they receive onto the cards and use the cards at automated teller machines (ATMs), point-of-sale locations, and grocery and other stores, just like other prepaid value cards. The advantage is not only the reduction in processing costs (from about 50¢ per paper check to 2¢ for electronic payment) but also the reduction of fraud. With biometrics (see Chapter 10) coming to smart cards and PCs, officials expect a substantial reduction in fraud. EBT has been implemented in all states since 2004. For more information on EBT in government, see **fns.usda.gov/ebt/general-electronic-benefit-transfer-ebt-information**.

In several developing countries (e.g., India, Brazil), governments are using mobile payments to transfer benefits to citizens.

Government-to-Business

Governments seek to automate their interactions with businesses. Although we call this category **government-to-business (G2B)**, the relationship works two ways: government-to-business and business-to-government. Thus, G2B refers to activities where the government sells products to businesses or provides businesses with services and vice versa. Two key G2B activities are e-procurement and the auctioning of government surpluses. For other U.S. G2B initiatives for businesses and nonprofits, see **usa.gov/Business/Business-Gateway.shtml**.

Government E-Procurement

Governments buy large amounts of MROs (maintenance, repair, and operations; Chapter 4) and other materials directly from suppliers. In many cases, RFQ (or tendering) systems are mandated by law. For years, these RFQs were done manually; the systems are now moving online. These systems utilize reverse (buy-side) auction systems, such as those described in Chapter 4. Governments provide all the support for such tendering systems. For additional information about such reverse auctions, see GSA Auctions (**gsaauctions.gov**). For an overview of and to watch a video about GSA auctions, see **gsa.gov/portal/content/100747?utm_source=FAS&utm_medium=print-radio&utm_term=gsaauctions&utm_campaign=shortcuts**. In the United States, for example, the local housing agencies of HUD (Housing and Urban Development), which provides housing to low-income residents, are moving to e-procurement.

Example 1: Procurement at GSA
The U.S. General Services Administration (**gsa.gov**) uses technologies such as demand aggregation and reverse auctions to buy items for various units of the federal government (see also **governmentauctions.org** and **liquidation.com**).

Example 2: The U.S. SBA
The Procurement Marketing and Access Network of the Small Business Administration (**sba.gov**) has developed a service called PRO-Net (**pro-net.sba.gov**). It is a searchable database that contracting officers in various U.S. government units can use to find products and services sold by small, disadvantaged businesses, or businesses owned by women.

Group Purchasing

Many government agencies also utilize online group purchasing, which was described in Chapters 3 and 4. A related aspect is *quantity discount*, where suppliers post prices that get lower as quantities of orders increase. A similar method occurs when government buyers initiate group purchasing by posting product requests that other buyers may review and then join the group(s).

Forward and Reverse E-Auctions

Many governments auction equipment surpluses or other goods, ranging from vehicles to foreclosed real estate. These auctions are now moving to the Internet. Governments can auction from a government website or they can use third-party auction sites such as **ebay.com**, **bid4assets.com**, or **governmentauctions.org**. The U.S. General Services Administration (GSA) in the United States operates a property auction site online (see **gsaauctions.gov**), where real-time auctions for surplus and seized goods are conducted. Some of these auctions are restricted to dealers; others are open to the public (see **governmentauctions.org**). More common is the use of revere auctions for purchasing goods and services, as described in Chapter 4.

Government-to-Government

The **government-to-government (G2G)** category consists of EC activities between different units of governments, including those within one governmental body. Many of these are aimed at improving the effectiveness and the

efficiency of government operations. Here is a G2G example from the United States:

- **Intelink.** Intelink (**intelink.gov**) is an intranet that contains classified information that is shared by the numerous U.S. intelligence agencies. It is a U.S. Government computer system that is provided only for authorized U.S. government use.

Government-to-Employees and Internal Efficiency and Effectiveness

Governments are introducing various EC initiatives internally. Two areas are illustrated next.

Government-to-Employees (G2E)

Governments are just as interested, as private sector organizations are, in providing services and information electronically to their employees. **Government-to-employees (G2E)** applications refer to e-commerce activities between the government and its employees. Such activities may be especially useful in enabling efficient e-training of new employees, e-learning for upgrading skills and communication and collaboration activities. Other typical services are: e-payroll, e-human resources management, and e-recruiting.

Examples of G2E services are provided in Online File W.5.1.

Internal Efficiency and Effectiveness (IEE)

Governments have to improve the efficiency and effectiveness of their operations in order to stay within their budgets and avoid criticism. Unfortunately, not all governments (or units within governments) are efficient or effective. Automation, including e-commerce, provides an opportunity to significantly improve operations.

The following example illustrates some e-commerce applications for improving IEE.

Example

The U.S. Office of Management and Budget (OMB) (**whitehouse.gov/omb**) provides a list of activities related to IEE in their FY 2011 "Report to Congress" (see Office of Management and Budget 2012).

This list includes topics such as:

- Federal Cloud Computing Program Management
- Innovative Wireless and Mobile Apps Platform
- FedSpace (a collaborative platform for Federal employees)
- Federal Data Center Consolidation Initiative
- Small Business Dashboard
- IT Dashboard (also available via mobile devices)
- Performance.gov (a website with information about performance improvement activities)

In addition, there are traditional IEE-related initiatives such as e-payroll, e-record management, e-training, integrated acquisition, and e-HRM.

Implementing E-Government

Like most other organizations, government entities want to become digital. Therefore, one can find a large number of EC applications in government organizations. For many practices and examples, see Mei Hua and Rohman (2015), Wohlers and Bernier (2016), and the government innovators network at **innovations.harvard.edu**.

This section examines some of the trends and issues involved in implementing e-government (see Chan et al. 2011 for an overview). Note that one of the major implementation inhibitors is the desire of many governments to maintain control over the use and dissemination of data and knowledge.

The Transformation to E-Government

The transformation from traditional delivery of government services to full implementation of e-government may be a lengthy process. The business consulting firm Deloitte and Touche conducted a study that identified six stages in the transformation from traditional to e-government. These stages do not have to be sequential, but frequently are, with a seventh stage added by the authors, as shown in Online File W5.2.

All major software companies provide tools and solutions for conducting e-government. One example is Cognos (an IBM Company; see **ibm.com/software/analytics/cognos**). The company also provides free white papers.

E-Government 2.0 and Social Networking

By employing social media tools, new business models, and embracing social networks and user participation, government agencies can raise the effectiveness of their online activities to meet users' needs at a reasonable cost. Such initiatives are referred to as **Government 2.0**. For extensive coverage of content and applications of this topic, see Imholt (2015) and Grogan (2015). Government agencies around the world are now experimenting with social media tools as well as with their own pages and presence on public social

network sites. Governments are using Web 2.0 tools mainly for collaboration, dissemination of information, e-learning, and citizen engagement.

Example

The U.S. Coast Guard uses YouTube, Twitter, and Flickr to disseminate information and discuss their rescue operations. Notable is FEMA's Twitter feed (previously "FEMA in Focus"), a channel that provides dissemination of FEMA-related information (see **twitter.com/fema**). Law enforcement agencies use social media (such as Facebook and Twitter) to hunt for criminals. (For some examples, see **digitaltrends.com/social-media/the-new-inside-source-for-police-forces-social-networks**.) For more on how government agencies are expanding their use of social media, see **federalnewsradio.com/445/3547907/Agencies-open-the-door-to-innovative-uses-of-social-media**. For more examples, see Grogan (2015).

The Potential of E-Government 2.0

Many governments are embarking on government 2.0 initiatives. Several examples are provided in Online File W.5.1.

For an extensive list of resources on social networks in governments, including reports, applications, and policies, see **adobe.com/solutions/government.html?romoid=DJHAZ**. For extensive coverage of e-government, see **wisegeek.com/what-is-e-government.htm**.

M-Government

Mobile government (m-government) is the implementation of e-government applications using wireless platforms and mobile devices, especially smartphones. It is done mostly in G2C (e.g., see Government of Canada Wireless Portal; **mgovworld.org**). M-government uses wireless Internet infrastructure and devices. It is a value-added service, because it enables governments to reach a larger number of citizens (e.g., via smartphone or Twitter) and it can be more cost-effective than wireline-based EC platforms. It is very useful in disasters (e.g., emergency notifications), is fast (e.g., in conducting surveys and polls), and it is convenient for citizens as well. In addition, governments employ large numbers of mobile workers who are supported by wireless devices.

Example: Public Buses in Honolulu

An example of a mobile government project is the city government–run bus location system (an app) in Honolulu, Hawaii called "DaBus" (**honolulu.gov/mobile**). Using your cell phone, you can find the estimated arrival time of any of the buses at more than 4000 bus stops. Buses are equipped with GPS devices (Chapter 6) that transmit the bus's location in real time. The system then calculates the estimated arrival time for each stop. Similar systems exist in many other places (e.g., in Singapore "IRIS," in the USA "NextBus," and in the UK "JourneyPlanner" apps).

M-government can help make public information and government services available anytime and anywhere. See **usa.gov/mobileapps.shtml**. A specific example of m-government would be texting a mass alert to the public in the event of a major disaster.

The Benefits of M-Government

The major benefits of m-government are:

- More citizens and employees can be reached (anyplace, anytime).
- Cost reduction (e.g., by increasing productivity of employees; reduced budgets).
- Modernizing the operations of the government (e.g., employ mobile devices).
- Employees can bring their own mobile devices to work, saving hardware and software costs.
- Providing quality, flexible services to the public.
- Increasing the reach and speed for public dissemination of information.

In addition, many of the generic benefits of m-commerce (Chapter 6) are valid in m-government too.

Some Implementation Issues

Representative issues of implementing m-government are:

- An expensive infrastructure may be needed to supplement the existing traditional infrastructure. More infrastructures are needed for the wireless systems as well as for the increased volume of information flow (see the closing case in this chapter).
- It may be difficult to maintain security and privacy of information on public mobile networks.
- For many citizens, mobile devices are too small or complex to use.
- In many countries there is a lack of standards and legislation regarding the use of data delivered wirelessly.

SECTION 5.1 REVIEW QUESTIONS

1. Define e-government.
2. What are the four major categories of e-government services?
3. Describe G2C.

4. Describe how e-voting works.
5. Describe the two main areas of G2B activities.
6. How does government use EC internally and when dealing with other governments?
7. Describe e-government social networking activities. What are some potential benefits?
8. Describe m-government and its implementation issues.

5.2 E-LEARNING, E-TRAINING, AND E-BOOKS

The topic of e-learning is gaining much attention, especially because that even first-rate universities such as MIT, Harvard, and Stanford in the United States and Oxford in the United Kingdom are implementing it. Figure 5.3 shows the forces that are driving the transition from traditional education to online learning. E-learning also is growing as a method for training and knowledge creation in the business world and is becoming a major e-business activity. In this section, we will discuss several topics related to e-learning.

The Basics of E-Learning: Definitions and Concepts

There are several definitions of e-learning. A working definition of **e-learning** is the use of online delivery of educational materials and methods, using information technologies, for the purposes of learning, teaching, training, or gaining knowledge at anytime, and at many different locations (see **people.howstuffworks.com/elearning1.htm**, **en.wikipedia.org/wiki/E-learning**, and **webopedia.com/TERM/E/e_learning.html**).

E-learning is broader than the term *online learning*, which generally refers exclusively to Web-based learning. E-learning includes *m-learning* (or *mobile learning*) that is used when the material is delivered wirelessly to smartphones, tablets, or other mobile devices (description to follow). E-learning is synonymous with *computer-based instruction*, *computer-based training*, *online education*, and other terms.

It appears in a variety of electronically supported learning and teaching activities, ranging from virtual classrooms to mobile conferences. E-learning includes a variety of methods of computer-facilitated learning ranging from self-study with DVDs to online degrees offered by universities. E-learning may also include the use of Web-based teaching materials and hypermedia, multimedia CD-ROMs, learning and teaching portals, discussion boards, collaborative software, e-mail, blogs, wikis, chat rooms, computer-aided assessments, educational animation, simulations, games, learning management software, and more.

An interesting school without classrooms is the Hellerup School in Denmark. Students there "learn by doing" and even determine the best way they can learn. For how the school operates, see **theglobeandmail.com/report-on-business/economy/canada-competes/no-classrooms-and-lots-of-technology-a-danish-schools-approach/article12688441** and Millar (2013). For more on e-learning, see **en.wikipedia.org/wiki/E-learning**. For a community and resources for e-learning professionals, see **elearningguild.com**.

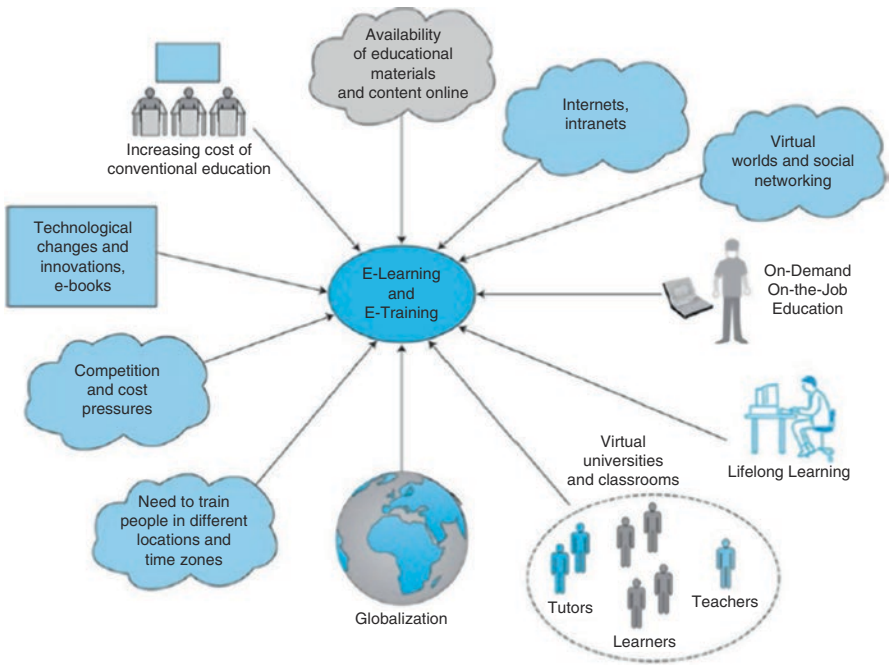

Figure 5.3 The drivers of e-learning

M-Learning

A special category of e-learning is **m-learning**, or mobile learning, which refers to e-learning or other forms of education using mobile devices. Thus, one can learn at any place where a mobile device works. M-learning deals with communication and teaching in wireless environments. Special attention is given to situations where the instructors and the teaching materials are mobile. This technology enables learners to work and collaborate more easily than in off-line situations. An example is MobileLearn (**waldenu.edu/experience/learning/mobilelearn**), an online learning program offered by Walden University (**waldenu.edu**), an online university that extensively uses m-learning. Some off-line universities are using mobile learning as well. One such university is Abilene Christian University (**acu.edu**); faculty are focused on using tablets for learning and teaching (see **acu.edu/technology/mobilelearning**). For further details including case studies and resources, see **m-learning.org** and **en.wikipedia.org/wiki/M-learning**. See also a slide presentation titled "What is M-Learning" at **slideshare.net/aurionlearning/what-is-mlearning**.

Benefits and Drawbacks of E-Learning

E-learning has many benefits both to the teaching institutions and to the learners. However, it also has several drawbacks, thus making it a controversial topic.

Benefits of E-Learning

In the Internet age, skills and knowledge need to be *continually updated* and refreshed (lifetime learning) to keep up with today's fast-paced business and technological changes. This means that more people need to learn and frequently do so in nontraditional ways. E-learning supports such learning due to the following capabilities and benefits.

- **Education.** Students can learn at home and keep their regular jobs while in school. Busy homemakers can earn degrees.
- **Learning and training time reduction.** E-learning can expedite training time by up to 50%.
- **Cost reduction.** The cost of providing a learning experience can be reduced by 50–70% when classroom lectures are replaced by e-learning sessions. This includes reduced faculty cost, no classrooms, and less or no travel time.
- **Large number and diversity of learners.** E-learning can provide training to a large number of people from diverse cultural backgrounds and educational levels, even though they are at different locations in different time zones. Large companies such as Cisco Systems, Inc. (**cisco.com**) provide online training courses to a large number of employees, customers, and business partners.
- **Innovative teaching.** Ability to provide innovative teaching methods such as special engagements, interaction with experts, interaction with learners in other countries, and so forth.
- **Measurement and assessment of progress.** Ability to assess progress in real time, find areas of difficulties, and design remedial work.
- **Self-paced and motivation learning.** E-learning students usually are self-paced and self-motivated. These characteristics may result in higher content retention (25–60% higher than with traditional lecture-based training).
- **Richness and quality.** E-learning enables the use of top instructors as well as employing rich multimedia support. This may make learning more enjoyable. Difficult content can be made interesting and easy to understand. Overall, the quality of learning may increase.
- **Flexibility.** E-learners are able to adjust the time, location, content, and speed of learning according to their own personal schedules.
- **Updated and consistent teaching material.** It is almost impossible to economically update the information in textbooks more frequently than every 2 or 3 years; e-learning can offer real-time access to the most updated knowledge. Delivery of e-learning may be more consistent than that of material presented in traditional classroom learning, because variations among teachers and teaching materials are minimized.
- **Ability to learn from mobile devices.** This helps learning in any place and at anytime as well as providing support to learners by teachers and peers.
- **Expert knowledge.** In contrast with the knowledge of a single instructor in the classroom, e-learning may include the knowledge of several experts, each of whom prepares a teaching module in his or her area of expertise.
- **Fear-free environment.** E-learning can facilitate learning for students who may not wish to join a face-to-face group discussion to interact with peers or teachers.

E-learning can be very useful in developing countries. For an example of positive results in Jamaica, see Thompson (2014). For the top ten e-learning statistics in 2014 with an infographic, see **elearningindustry.com/top-10-e-learning-statistics-for-2014-you-need-to-know**. For how to teach with e-learning including the design of material, see Clark and Mayer (2016).

Drawbacks and Challenges of E-Learning

Despite the numerous benefits for both the learners and the teaching organizations, e-learning does have some drawbacks, such as the following:

- **Need for instructor retraining.** Some instructors do not have the knowledge to teach by electronic means and may require training, which costs money.
- **Equipment needs and support services.** Additional funds are needed (by the teaching institute) to purchase e-learning systems that supplement traditional ones. These are needed for e-learning creation, use, and maintenance.
- **Lack of face-to-face interaction and campus lifestyle.** Many feel that the intellectual stimulation that takes place through interaction in a classroom with "live" instructors and peers cannot fully be replicated with e-learning.
- **Assessments and examinations.** In the higher education environment, one criticism is that professors may not be able to adequately assess student work completed through e-learning. There is no way of knowing, for example, who actually completed the assignments or exams. (Nevertheless, the same is true for any homework done outside the classroom).
- **Maintenance and updating.** Although e-learning materials are easier to update than traditionally published materials, there are practical difficulties (e.g., cost, instructors' time) in keeping e-learning materials current. The content of e-learning material can be difficult to maintain due to the lack of ownership of, and accountability for, website material. The developers of online content might not be those who update it.
- **Need for reliable wireline and wireless communication networks and devices.** Privacy needs to be protected as well as systems need to be secured.
- **Protection of intellectual property.** It is difficult and expensive to control the transmission of copyrighted works downloaded from the e-learning platform.
- **Student retention.** Without some human feedback and intervention, it may be difficult to keep certain students engaged and energetic.

The top constraints for corporate e-learning are: (1) too costly to create and maintain; (2) difficulties persuading people to learn in new ways; (3) insufficient technological support; (4) employee hesitation to contribute to social learning; and (5) learners may prefer traditional classroom instruction.

Advanced technologies can reduce some of the above and other drawbacks and constraints. For example, some online software products have features that help stimulate student thinking. Biometric controls can be used to verify the identity of students who are taking examinations from a distance. However, these features add to the costs of e-learning.

For more about the disadvantages of e-learning, see **peoplelearn.homestead.com/ELearning/Introduction/Disadvantages.html**.

Distance Learning and Online Universities

The term **distance learning**, also known as *distance education*, refers to education where the teacher and students are in different locations. In such a case, the student is separated from a classroom by distance and possibly time. Sometimes students meet once or twice at a physical location in order to get to know each other, meet the instructor or coordinator, or take examinations. Distance learning is becoming widely used in universities and learning institutions around the globe. Major universities offer courses and degrees via this mode, which is becoming more recognized and acceptable. For details, see **onlineeducation.net**.

Virtual Universities—Real Degrees

The concept of **virtual universities**, online universities where students take classes from home via the Internet, is expanding rapidly. Hundreds of thousands of students in many countries, from the United Kingdom to Israel to Thailand, are taking online classes. A large number of existing universities, including Stanford University and other top-tier universities, offer online education of some form; for example, MIT offers thousands of their courses online (see courses at **ocw.mit.edu**). Millions of independent learners from all over the world (students, professors, self-learners) log on to the MIT OpenCourseWare site each year (see **ocw.mit.edu/about** and **ocw.mit.edu/about/site-statistics**). Some universities, such as University of Phoenix (**phoenix.edu**), National University (**nu.edu**), and the University of Maryland (**umuc.edu**), offer hundreds of courses and dozens of degrees online to students worldwide. The California Virtual Campus (**cvc.edu**) provides a directory and links to thousands of courses and online degree programs offered by colleges and universities in California (see **cvc.edu/courses**). For information about distance learning resources and online universities, see **distancelearn.about.com**. For a list of the

Figure 5.4 The Engkey—Robot English teacher. (Source: The Korea Advanced Institute of Science and Technology.) Used with permission

top online MBA programs in the world, see **onlinemba.com/rankings**.

Innovations in E-Learning

There are many innovations in e-learning, one of which is shown in the following example.

Example: E-Learning via Robots

In December 2010, the city of Daegu in South Korea introduced 29 robots into 19 elementary schools. Each robot, about 3.2 feet tall, was designed to teach English to the students. Developed by the Korea Institute of Science and Technology (KIST), the robots roll around on wheels and ask questions in English (see Figure 5.4). (For details, see **cnet.com/news/korean-schools-welcome-more-robot-teachers**.)

The robots can be moved around the classroom by the instructor (via remote control), which facilitates the interaction of teachers with students. The robots can read books to the students and even "dance" to music. The robots display the face of a "teacher." The tutoring is actually provided by experienced teachers in the Philippines, who are paid much less than Korean teachers. The robots are programed to use the most effective and current teaching methods (e.g., using multimedia games).

Cameras detect the Filipino teachers' facial expressions and instantly reflect them on the robot's avatar face. The students participate more actively, especially the shy ones who are afraid of speaking out loud. The robots are also used in remote rural areas where English teachers are in short supply.

For more examples on educational robotic teachers, see **nytimes.com/2010/07/11/science/11robots.html?pagewanted=all&_r=0**. For more on robotic telepresence for distance education, watch the 2 min video and see the text at **verizon.com/powerfulanswers/solutions/education**.

Online Corporate Training

Like educational institutions, a large number of business organizations are using e-learning on a large scale. Many companies, such as Cisco Systems (**cisco.com**), offer online training. A study by the American Society for Training and Development found that nearly one-third of corporate training content was delivered electronically.

Corporate training is driven by multiple factors and is often done via intranets and corporate portals. However, the students use the Internet as well. It has several variations, one of which is *on-demand online training*, which is offered by software companies such as Citrix Systems (**citrix.com**). However, in large corporations with multiple sites, and for studies from home, the Internet is used to access the online material. Vendors' success stories of online training and educational materials can be found at **adobe.com/resources/elearning** and at **brightwave.co.uk**. For a comprehensive guide to online training, see Kaattari and Trottier (2012).

Example: Dresser-Rand

Dresser-Rand is a global U.S. corporation that makes compression equipment. It has over 5500 employees in 50 different locations in 26 countries that speak 14 different languages. The company needs to do extensive training due to growth and employee retirement. Previously, the company used over 600 training vendors to conduct training. A major challenge was the update of the teaching material due to technological changes. Using the learning management system (LMS) from Coastal eLearning (**training.dupont.com**; now a part of DuPont Sustainable Solutions), the company deployed a comprehensive online training program via Dresser-Rand University, saving over $1 million per year. To read the case study, see **training.dupont.com/pdf/case-study/dresser-rand-v1211.pdf**.

Using Computer Games for Training Current and New Employees

There is a trend to use computer simulation games for training.

Example: Marriott International

Marriott International developed a game "My Marriott Hotel," available on Facebook for help in recruiting and training. The players learn how hotels and their restaurants operate. Initially, Marriott developed a game for the kitchen. The players needed to choose what ingredients to use for different foods (based on price and quality). The players also learned how to select employees from a pool of candidates and make decisions about equipment purchasing. They also learned about food quality.

Social Networks and E-Learning

Since its inception, social networking has been interrelated with learning. A new term, **social learning**, also known as *e-learning 2.0*, has been coined to describe the learning, training, and knowledge sharing in social networks and/or facilitated with social software tools. Social environments facilitate high-tech-based training, making it possible for learners to share their experiences with others. Thus, several companies already are using social media for training and development purposes (e.g., see **advancinginsights.com**). Social learning is based on *social learning theory.* For details, see **en.wikipedia.org/wiki/Social_learning_theory**.

Some students use Facebook, LinkedIn, Pinterest, Twitter, and so forth to connect with other pupils. For example, learners can study together, discuss topics or brainstorm online. Unfortunately, the distractions found on some networks can make it difficult to focus on learning. Some companies use social media to engage employees in group learning via knowledge sharing.

Several social networks (or communities) are dedicated to learning and training (e.g., see **elearning.co.uk**). An example of a social network for learning is LearnHub (**learnhub.com**), which is dedicated to international education. Some scholars believe that the future of e-learning is social learning.

Social networking technology possesses the following capabilities that may facilitate learning:

- *Connect learners in a learning project.* It enables people to connect in real time for discussion, collaboration, and problem-solving.
- *Make "social" part of the company's learning strategy.*
- *Build the know-how of experts.*
- *Enable learners to engage.* Generation X and Millennial workers use Web 2.0 tools extensively for interacting among themselves and with others. Organizations can reach out to this group and use social networks for training.
- *Use platforms such as Pinterest to develop creativity in design and to use images to sharpen some learning skills.*
- *Provide relevant content prior to off-line meetings for voting, or requesting supplements.* This can enrich and facilitate classroom delivery.
- *Link learners to relevant resources and let them rate and share opinions.*
- *Quickly identify the training needs and implementation issues of individuals and groups.*
- *Have learners provide social support to each other.*
- *Improve and expedite learning-related communication (e.g., via Twitter).*

Many universities combine e-learning and social networking; also, numerous professors have blogs and wikis for their classes and encourage communication and collaboration via Facebook.

Visual Interactive Simulation

An effective technology for e-training and e-learning is *visual interactive simulation* (VIS), which uses computer graphic displays to present the impact of evaluating alternative solutions to problems. It differs from regular graphics in that the user can manipulate the decision-making process and see the results of the interventions. Some learners respond better to graphic displays, especially when they are interactive. For example, VIS was used to examine the operations of a physician clinic environment within a physician network in an effort to provide high-quality medical care. The simulation system identified the most important input factors that significantly affected performance. These inputs, when properly managed, led to lower costs and a higher level of medical care.

VIS systems provide the following major potential benefits:

- Shorten learning time.
- Aid in teaching how to operate complex equipment.
- Enable self-paced learning, any place, anytime.
- Aid in memorization.
- Lower overall training costs.
- Record an individual's learning progress and improve on it.

Visual interactive simulation is closely related to virtual reality (Chapter 2).

E-Learning Management Systems

A **learning management system** (**LMS**) (also known as a course management system) consists of software applications for managing e-training and e-learning programs including content, scheduling, delivery tips, and so forth. Capterra Inc. Learning Management System Software (**capterra.com/learning-management-system-software**) and similar systems exhibit these capabilities:

- Provide effective student–instructor interactions.
- Centralize and automate program administration.
- Enable the use of self-service and self-guided e-learning services.
- Create and rapidly deliver learning content modules.
- Provide a single point of access to all e-learning online materials.
- Help manage compliance requirements.
- Consolidate training initiatives on a scalable Web-based platform.
- Support the portability of systems.
- Increase the efficiency and effectiveness of e-learning.
- Personalize content and enable knowledge reuse.

Many companies (e.g., Saba Software, Inc.; **saba.com/us/lms**, SumTotal Systems; **sumtotalsystems.com**) provide methodologies, software, hardware, and consultation about e-learning and its management. For more on LMS, see **en.wikipedia.org/wiki/Learning_management_system** and watch the video titled "What is a Learning Management System?" (2:51 min) at **proprofs.com/c/category/lms**.

Note that it is possible to control what the students are doing when they self-study. For example, according to Streitfeld (2013), teachers can find out when students are skipping pages, not bothering to take notes, or failing to highlight significant passages.

One of the most effective tools for learning management is Blackboard Inc. (**blackboard.com**; now combined with WebCT). A brief description follows.

Example 1: Blackboard

Blackboard Inc. (**blackboard.com**) is the world's largest supplier of course management system software for educational institutions. How do Blackboard products work? A textbook publisher places a book's content, teaching notes, quizzes, and other materials on a Blackboard in a standardized format. Instructors can access modules and transfer them on to their university's Blackboard sites, which can be accessed by their students.

A professor can easily incorporate a book's content into Blackboard's software. As of 2009, Blackboard also delivers corporate and government employee training programs worldwide which increases productivity and reduces costs. For details, see **blackboard.com** and **en.wikipedia.org/wiki/Blackboard_Inc.**

Example 2: Moodle

An alternative to Blackboard is a mostly free open source system called Moodle (see **moodle.org**).

Electronic Books (E-Books)

An **electronic book** (**e-book**) is a book in digital format that can be read on a computer screen, mobile device, or on a dedicated device known as an *e-reader*. A major event in electronic publishing occurred in 2000, when Stephen King's book *Riding the Bullet* was published exclusively online. For $2.50, readers were able to purchase the e-book on Amazon.com and other e-book providers. Several hundred thousand copies were sold in a few days. However, hackers broke the security protection, copied the book and distributed free copies of the book online. (See **bookbusinessmag.com/article/after-riding-bullet-12555/1#**.)

Publishers of e-books have since become more sophisticated, and online publishing has become more secure. Today there are several types of e-books that can be delivered and read in various ways:

- **Via a dedicated reader.** The book must be downloaded to an e-reader such as Amazon's Kindle.
- **Via Web access.** Readers can locate a book on the publisher's website and read it there. The book cannot be downloaded.
- **Via Web download and smart phones.** Readers can download the book to a PC.
- **Via a general-purpose reader.** The book can be downloaded to a mobile device such as an iPad or iPhone.
- **Via a Web server.** The contents of a book are stored on a Web server and downloaded for print-on-demand (which is discussed later in this book).

Most e-books require some type of payment. Readers either pay before they download a book from a website, such as buying a Kindle copy on Amazon.com, or they pay when they order the special CD-ROM edition of a book. Today, Amazon.com offers hundreds of thousands of e-books,

e-newspapers (including international ones), and other digital products. All are cheaper than the hard-copy version (e.g., new release books may cost $10 or less). There are many free e-books as well (e.g., **free-ebooks.net** and **onlinebooks.library.upenn.edu**).

Devices for Reading E-Books

The major device used to read an e-book is an e-reader. Most e-readers are lightweight (about 10 ounces) and are convenient to carry. The major e-readers and tablets are listed and compared at **the-ebook-reader.com**.

Several other aids are available to help readers who want to read a large amount of material online. For example, Microsoft ClearType (**microsoft.com/typography/ClearTypeInfo.mspx**) and CoolType from Adobe (**adobe.com**) can be used to improve screen display, colors, and font sizes. Glowing screens can help you read in the dark (e.g., Kindle Touch and the Kindle Fire have a built-in light).

Combining E-Readers and Tablets

The trend today is to combine e-readers with tablet computers as was initiated with Amazon's Kindle Fire. The 7-inch portable devices allow people to read books, magazines, and documents, and listen to audio books. Users can play games, listen to music, watch movies and TV shows, and much more. Kindle has Internet access via Wi-Fi, so social network access and e-mail is also available. Finally, with Amazon's Kindle Owner's Lending Library, Kindle owners who have Amazon Prime can choose from a selection of hundreds of thousands of books to borrow, for free with no due dates.

Note: Tablet manufacturers also offer a combination of e-readers and tablets. The difference is that e-reader-based products such as Kindle Fire have less computing capabilities, while tablets such as iPad have a less capable e-reader and are more expensive.

Advantages and Limitations of E-Books

For e-books to make an impact, they must offer advantages to both readers and publishers. Otherwise, there would be little incentive to change from traditional books. Indeed, e-book sales are exploding due to the following advantages:

- Ability to store hundreds of books on a small mobile device. (External storage can hold much more.)
- Lower cost to buyers. The simple e-reader model costs less than $75; the tablet-based less than $200.
- Searchable text—you can show links and connect easily to the Web.
- Instant delivery via downloads from anywhere. The tablet-based models provide you with many of the capabilities of other types of mobile computers.
- Portability—they go where you go.
- Easy integration of content from several sources.
- Durability—they are built stronger than a traditional book (but they can break if you are not careful). Also, readers tend not to lose them (again, you need to be careful).
- Ability to enlarge the font size for easy reading and to add light if needed.
- Media rich (audio, color, video, etc.).
- Minimal cost for printing out a hard copy.
- Good readability in bright sunlight (able to read books outdoors).
- Easy updating of content.
- Almost no wear and tear.
- Easy to find out-of-print books.

The primary advantage that e-books offer publishers is lower production, marketing, and distribution (shipment) costs, which have a significant impact on the price of books (e-textbooks are about 50% cheaper than print versions). Other advantages for publishers are lower updating and reproduction costs, the ability to reach many readers, and the ease of combining chapters from several books to create customized textbooks, so professors can use materials from different books (usually by the same publisher) in one course.

Finally, the light weight of the tablet can eliminate the back pain that people, especially school children, have from carrying backpacks full of heavy books.

Of course, e-books have some limitations: They require hardware and software that may be too expensive for some readers; some people have difficulty reading large amounts of material on a relatively small computer screen; batteries may run out; and there are multiple, competing software and hardware standards to choose from, confusing the buyers. Several of these obstacles may lessen in time.

A Final Note: Is This the End of Printed Books?

According to Amazon.com, in 2011, the sales of e-books on their site considerably exceeded the sales of hardcover and paperback books. (See **nytimes.com/2011/05/20/technology/20amazon.html**). By 2014, e-book sales surpassed the sales of paper-based books. (For all publishers.) However, according to Nuwer (2016), sales of e-books have plateaued.

Despite the limitations, e-books have become very popular, especially due to sophisticated e-readers. For example, even the Harry Potter books are now available in electronic format and they are not encrypted, so that readers can move the books between mobile devices and even to a PC. For

a comparison between e-books and printed books, see **thrall.org/docs/ebooksandbooks.pdf** and **en.wikipedia.org/wiki/E-book**.

The question is: Will most printed books be eliminated? The trend is very clear. Sales of printed books are on the decline, while e-books are up. With Amazon's free loan of Kindle books to their Prime members, we expect even more people reading e-books. Are paper books going to disappear? (See discussion by Vaughan-Nichols 2012.) For the advantages of e-books versus traditional books, see **online-bookstores-review.toptenreviews.com/the-advantages-of-ebooks-versus-traditional-books.html**.

SECTION 5.2 REVIEW QUESTIONS

1. Define e-learning and describe its drivers and benefits.
2. List some of the major drawbacks of e-learning and describe how they can be prevented.
3. Describe virtual universities and distance learning.
4. Define e-training and describe how it is done.
5. Describe the connection between e-learning and social networking.
6. List some e-learning tools, and describe Blackboard and visual interactive simulation (VIS).
7. Describe e-books.
8. What is an e-reader? What are its major capabilities?
9. List the major advantages and limitations of e-books to their users.

5.3 KNOWLEDGE MANAGEMENT, INTELLIGENT SYSTEMS, AND ROBOTS

The term *knowledge management* is frequently mentioned in discussions about e-learning. Why is this? To answer this question, you first need to understand what knowledge management is.

An Overview of Knowledge Management

Knowledge management and e-learning are both centered on knowledge. Whereas e-learning uses knowledge to enhance individual learning, knowledge management is essential for improving the operation of individuals' organizations, or teams. Knowledge is one of the most important assets in any organization, and thus it is important to capture, store, secure, and reuse (share) it. These are the major purposes of knowledge management. Thus, **knowledge management (KM)** refers to the process of capturing or creating knowledge, storing and protecting it, updating it constantly, disseminating it, and using it whenever necessary (see **en.wikipedia.org/wiki/Knowledge_management** and Milton and Lambe 2016).

Knowledge in organizations is collected from both external and internal sources. It is then examined, interpreted, refined, and stored in what is called an *organizational knowledge base,* the repository for the enterprise's knowledge. A major purpose of an organizational knowledge base is to allow for *knowledge sharing*.

Knowledge Management Types and Activities

Organizational knowledge is embedded in the following key resources: (1) human capital, which includes employee knowledge, competencies, intelligence, and creativity; (2) organizational capital, which includes stored organizational experiences (e.g., best practices, patents, manuals, teaching materials); and (3) customer and partner capital, which includes the experience of working with customers and business partners.

This organizational knowledge must be managed properly and leveraged through sharing and dissemination. This is the major purpose of KM, which has the following major tasks:

- **Create knowledge.** Knowledge is created as people gain more experience (e.g., trial-and-error) and education. Sometimes, external knowledge is brought in (e.g., provided by vendors and consultants).
- **Capture knowledge.** Existing knowledge must be identified and assembled. Remember that, a considerable amount of knowledge is not documented, and just dwells in people's memory.
- **Refine knowledge.** New knowledge must be placed in context so that it is actionable. This is why human insights (tacit qualities) must be captured along with explicit facts.
- **Store knowledge.** Useful knowledge must be stored into an easily retrievable format in a secured knowledge repository.
- **Update knowledge.** The knowledge must be kept current. It must be reviewed to verify that it is relevant and accurate; if not, it must be updated.
- **Disseminate knowledge.** Knowledge must be made available in a useful format to anyone in the organization who needs it, and who is authorized to access it.

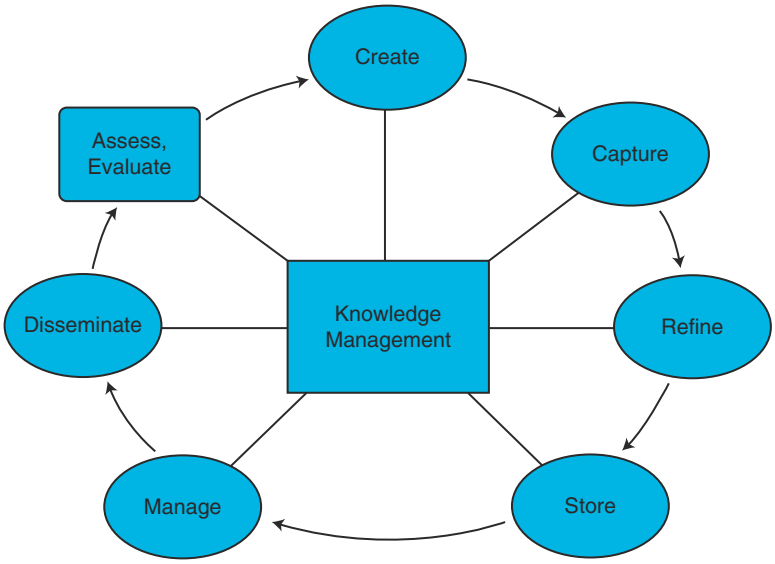

Figure 5.5 The knowledge management system cycle

These tasks can be viewed as a cyclical process, as shown in Figure 5.5. The objective of e-commerce is to automate KM activities as well as help in using the stored knowledge.

For a comprehensive list of KM activities and tools, see **en.wikipedia.org/wiki/Knowledge_management** and **kmworld.com**.

Knowledge Sharing

Knowledge is of limited value if not updated and shared. The ability to share and then distribute knowledge decreases its cost per user and increases its effectiveness. Shared knowledge can also decrease risk and uncertainty and facilitate problem-solving. An example of a knowledge-sharing system at Infosys Technologies is provided in Morin (2014).

Software Tools for Knowledge Sharing

There are many software knowledge-sharing tools. Some call these "knowledge-sharing technologies." In this chapter and the book, we cover the following:

- Expert and expertise location systems (Section 5.3)
- Knowledge management systems (Section 5.3)
- Social networks and Web 2.0 tools (Chapter 7)

How is Knowledge Management Related to E-Commerce?

Organizations need knowledge, which is provided by KM, in order to better perform their tasks.

In the past, KM and EC initiatives were dealt with independently; however, they can be used together for mutual benefit.

Examples

According to Britt (2013), "E-commerce retailers are using knowledge management solutions to pull together order, inventory, sales, and other transaction information, as well as to improve customer feedback and to enhance the overall e-commerce experience." Britt provides the following examples:

- Dog is Good Inc. (a merchant of "canine-themed apparel") is using KM to help in the integration of EC subsystems (ordering, inventory, order fulfillment, accounting, and EC stores) using the offerings from NetSuite.
- Ideeli, Inc., an online daily flash retailer, uses KM analytics (ForeSee Satisfaction Analytics) to learn about customer experiences from collected feedback.
- Ideeli, Inc. also uses KM analytics (ForeSee's mobile analytics solution) to identify the needs of frequent visitors (by segments on mobile devices). As a result, the company modified its e-commerce strategies.
- Retina-X Studios provides tracking and monitoring of activities on mobile phones, computing devices, etc. The KM system is used to improve the handling of EC chargebacks due to cancellation. The company turned to Avangate's e-commerce solution that cut costs and improved customer service.

Some managers believe that a major EC-related role of KM is linking EC and business processes. Specifically, knowledge generated in EC contributes to the enhancement of three core processes: CRM, SCM, and product develop-

ment management. For more on KM-enabling technologies and how they can be applied to business unit initiatives, see **kmworld.com** and **knowledgestorm.com**.

KM and Social Networks

A major place of knowledge creation is in online communities, including social networks. This is done by *crowdsourcing* and customer and employee discussions and feedback. This area has several variations. One variety is limited within a single company (see the Knowledge Network in the Caterpillar Online File W5.3). Knowledge can also be created by *user-generated content* (see Chapter 7) and in the "answer" function of some social networks.

Web 2.0 applications help aggregate corporate knowledge, facilitate communication and collaboration, and simplify the building of repositories of best practices, as demonstrated by the following example.

Example: IBM Jam Events

Since 2001, IBM has been using communities for online brainstorming sessions, idea generation, and problem-solving. These sessions are called "Jam Events." According to their Web page, "IBM's Jams and other Web 2.0 collaborative mediums are opening up tremendous possibilities for collaborative innovation…" (**collaborationjam.com**). Each Jam has a different topic. For example, a large IBM online brainstorming session held, called the *Innovation Jam*, brought a community of over 150,000 employees from 104 countries and 67 companies to launch new IBM businesses (see **collaborationjam.com**).

Virtual meetings where IBM employees can participate in Innovation Jam launches were conducted in Second Life (SL). IBM's former CEO even created an avatar to represent himself. Besides business, recent topics that have been explored by IBM Jams include social issues. See **collaborationjam.com/IBMJam**. Other topics that have been explored are new technologies for water filtration, 3-D Internet, and branchless banking. For the history of IBM Jams, see **collaborationjam.com/IBMJam**.

Finding Expertise and/or Experts Electronically and the Use of Expert Location Systems

Expert advice can be provided within an organization in a variety of ways. Human expertise is rare; therefore, companies attempt to preserve it electronically, *as expert systems*, in corporate knowledge bases. Users may look for human experts to answer their questions or they may search the knowledge bases for expertise.

People who need help may post their inquiries internally on corporate intranets (e.g., using special Q&A platforms, or discuss their issue in forums or blogs), or on public social networks such as Yahoo! Answers (**answers.yahoo.com**), that have a "search answers" feature. Similarly, companies may ask for advice on how to solve problems or exploit an opportunity and offer incentives to participate. Answers may generate hundreds of useful ideas within a few days. This is a kind of brainstorming. Companies also use crowdsourcing to solicit advice (see Chapter 8).

Answers Provided by People on Social Networks or Portals

Several social networks (e.g., **linkedin.com**), or Internet portals (e.g., **answers.yahoo.com**) offer free or "for fee" Q&A capabilities.

Example: Yahoo! Answers

Yahoo! Answers (**answers.yahoo.com**) allows you to post a question, for free.

One of the authors of this book posted the following question on Yahoo! Answers.

Question: "My Yahoo! e-mail has been hijacked. The spammer sends requests for money in my name to all the people on my contact list. What should I do?" Answer (Anonymous): (Best answer-chosen by voters): "The spammer could have obtained your password with phishing spam. Change your password. While you are in your account settings, check for tampering with your alternate e-mail contact address. That could be used to obtain new passwords. Also, abstain from clicking on links within your spam. That spammer's webpage can run a malicious script. This runs within your browser and can tell webmail currently logged in within that browser to send spam."

The answers provided by Yahoo! are usually generated manually by volunteers for free. Sometimes the answers are generated automatically, as described in the next section.

Automated Question–Answer Systems

In addition to advice provided by humans, an increasing number of applications attempt to provide automated answers to users' questions. The expert finding system described in the following section is an example of such a system. The user asks a question and the computer tries to find an answer that best matches the question. The goal of an **automated question–answer (Q&A) system** is to find answers that match questions asked in a natural language (e.g., English, Chinese).

Example: Search Engine Advice

Answers.com and Ask.com belong to a special category of search engines containing a massive collection of questions, each with pre-generated answers. A computer intelligent engine tries to match a question asked in a natural language with a standard question within its matched answer.

A *Q&A system* differs from *frequently asked questions (FAQ)* in that the content of an FAQ is fairly structured and limited in its size, concentrating on "frequently asked questions." In addition, an FAQ posts questions to choose from while in a Q&A forum, users ask unstructured questions in a natural language.

To begin, the computer needs to understand the questions (e.g., by using natural language understanding software); then, the computer can search for matching answers. There are several methods for computers to find the answers to such questions. One method is based on the use of Artificial Intelligence (AI) by using intelligent agents such as knowledge-based systems. Trying to reason automatically from historical cases is another popular approach.

Example: IBM PureSystems

IBM PureSystems are an Expert Integrated System family of intelligent computer systems designed to help companies solve IT challenges. They are based on Cloud Computing. For details, see **ibm.com/ibm/puresystems/us/en/index.html**.

Live Chat with Experts

Live chats with experts are becoming popular. For example, you can chat with physicians practicing different specialties. You can do the same with many other professionals. Many companies provide live chat (similar to Yahoo Messenger or Facebook's messenger). The waiting time for replies is usually short.

Chat with Avatars

You can chat with avatars that use a collection of preprogrammed Q&A. Such a service is very inexpensive (but may be not too accurate). The quality of the answers is increasing as the knowledge base increases and as the ability of the computer to understand natural language improves. For example, see Ted, the Virtual Investment Consultant at TD Ameritrade (**tdameritrade.com/virtualclient/about.html**).

Expert Location Systems

Expert/expertise location systems (ELS) are interactive computerized systems that help employees locate experts within their organization in order to get help in solving specific, critical business or technical problems, in a short time. Expertise location systems are designed to:

- Identify experts in specific domain areas inside organizations.
- Link people to information about such experts and enable contacts with them.
- Assist employees with advice on career development.
- Provide support for teamwork and groups in social networks.

Software for such systems is made by companies such as IBM and RightNow Technologies (an Oracle company). For benefits, features, and demonstrations, see Hivemine AskMe (**hivemine.com/products.php#whyaskme**) and AskMe's Product Data Sheet (**hivemine.com/download/Hivemine%20AskMe%20Datasheet.pdf**). Most expert location systems work in a similar manner, exploring knowledge bases for either an answer to the problem (if it exists there) or for locating qualified experts. The general process is shown in Figure 5.6.

The four steps of the process are:

1. An employee submits a question to the ELS.
2. The software searches its database to see if an answer to the question already exists. If it exists, the information (research reports, spreadsheets, etc.) is returned to the employee. If not, the software searches documents and archived communications for an expert in the domain area.
3. Once an expert candidate is located, the system asks if he or she is able to answer the question. If so, the expert submits a response. If the expert is unable to respond, he or she can elect to reroute the question to the next appropriate expert until one responds.
4. After an answer to the question is found, it is reviewed for accuracy by a corporate advisor and sent to the person who made the query. At the same time, the question and its response are added to the knowledge repository to be used in future similar situations.

Seeking Expertise in Social Networks

Seeking expertise (and experts) is becoming a very popular social activity. People post their queries on bulletin boards, forums, and blogs and wait for responses. One of the features of LinkedIn is the free "Help Forum," where users can post questions to get help from forum members or start a discussion.

Knowledge-Based and Intelligent Systems

There is an increasing trend to make e-commerce "smarter." As seen in Chapter 2, Web 3.0 presumes to enable systems to exhibit more intelligence. This means more automation in various e-commerce activities. For example, the area of machine translation of languages is already helping people to buy online products that are advertised in languages they do not speak. Similarly, machine translation can help people

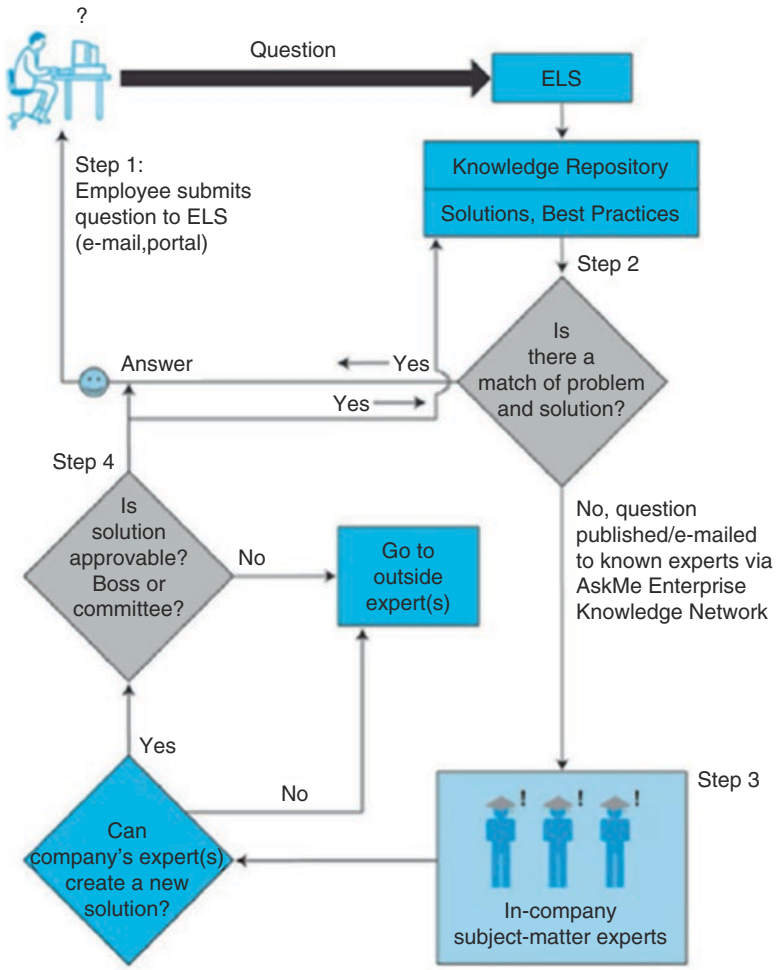

Figure 5.6 AskMe's expert location system

that know only their own language to converse, in real time, with people speaking other languages.

More complex applications are those that can help in answering customers' questions made in natural languages. Another area is that of *knowledge-based systems* (also known as *expert systems*). These systems can assist people in making decisions, and even make decisions on their own. For example, such systems can approve or reject companies' requests to purchase online (if they are not preapproved, or do not have a credit line). Other examples include the automation of generating online purchasing orders, and expediting fulfillments. Both Google and Facebook are experimenting with projects that attempt to teach machines how to learn (*machine learning*) and make decisions. Other companies doing the same (e.g., Toyota); see Markoff (2015). For applications in the enterprise, see Dodge (2016).

Knowledge-based systems are also important for *innovation* (see **spigit.com**) and they are related to the areas of analytics and big data processing. One of the most advanced projects in this area is IBM's Watson Analytics (e.g., see Taft 2016 and Niccolai 2015).

In January 2016, Mark Zuckerberg, the CEO of Facebook, announced that his goal is to build in 2016 an AI-based assistant to help in his personal and business activities and decisions. Zuckerberg is teaching a machine to understand his voice and follow his basic commands as well as to recognize faces of people. These are actually capabilities of smart robots.

Example: Pitney Bowes Is Getting Smarter with AI

Pitney Bowes Inc. is a U.S.-based global e-commerce solution provider in areas such as shipping and mailing products, location intelligence, customer engagement, and customer information management. The company powers billions of physical and digital transactions annually, across the connected and borderless world of commerce.

Today, prices are depending on the dimensions, weight, and packaging of each product. The prices' calculations create data that are fed into algorithms. The more data are collected, the more accurate are the calculations. The company estimates a 25% improvement in accuracy yield from their algorithms.

Robotics in E-Commerce

Robots play an increased role in e-commerce. Perhaps the most well known are Amazon.com's applications in their warehouses (see Chapter 11). Robots are also used extensively in make-to-order manufacturing, which enable *mass customization* (Chapter 11). For an application at Lowe's, see King (2014). Robots act as avatars providing guidance and information online, as well as in the physical worlds (e.g., in airports or other public places). In some cases, robots are autonomous; they can even drive cars. In other cases, robots work hand-in-hand with humans. For many 2015 applications, see Demaitre (2015).

SECTION 5.3 REVIEW QUESTIONS

1. Define knowledge management.
2. Discuss the relationship between KM and EC.
3. Describe online advisory services.
4. Describe expert location systems and their benefits.
5. Relate social networks to providing advice.

5.4 E-HEALTH

One of the major application areas of e-commerce is e-health.

Definition

The term has many definitions (Wikipedia reports about 51 of them). The *World Health Organization* (WHO) defines e-health as follows:

"**E-health** is the transfer of health resources and health care by electronic means. It encompasses three main areas:

- The delivery of health information, for health professionals and health consumers, through the Internet and telecommunications.
- Using the power of IT and e-commerce to improve public health services, (e.g., through the education and training of health workers).
- The use of e-commerce and e-business practices in health systems management."

The major concern of WHO (**who.int/trade/glossary/story021/en**) is the efficient use of health resources for providing better and safer health care worldwide. E-health is an extremely broad field (see **en.wikipedia.org/wiki/Ehealth**). E-health is completely changing health care (see Elton and O'Riordan 2016). For use of artificial intelligence in e-health, see Estopace (2016).

Here we cover only few representative areas that directly relate to e-commerce.

Electronic Medical Record Systems (EMR)

One of the earliest applications of e-health was the electronic medical record system. The objective was to enable accessibility to patient medical records from any location, even from other cities and countries. With the spread of the Web, this application is growing rapidly. For example, one of the authors can see the results of all his blood tests and certain medical records from any place at anytime, on the Web. In some progressive hospitals, a doctor can pull the medical records whenever he or she needs to see them. One problem is the protection of privacy and assuring the appropriate use of data. In addition, there is an issue of accessibility to the medical records of patients by researchers.

Doctors' System

Today doctors have immediate access to patient records. They can place orders directly to testing facilities (both internal and external). They can order medications directly from pharmacies, contact specialists, discharge patients in remote locations, and review results of tests from faraway locations. For many additional applications and for comprehensive coverage, see Wachter (2015).

Patients Services

Large numbers of patients' services are available today due to advances in electronic medical record applications. Scheduling appointments from home and reading results of tests from anywhere and anytime are common. Patients enjoy better care due to the availability of Wi-Fi networks (see closing case in this chapter) that enable fast access to information by providers. For use of robots, see Editors (2015). Patients can find a vast amount of information on hundreds of websites such as WebMD.com. They enjoy the advancements in medicine due to computerized systems. For comprehensive coverage, see Combs et al. (2016).

Social Media and Commerce

The health care industry was a lagger in adopting social media and social commerce. However, as reported by Lawson (2015) and Mayo Clinic Center for Social Media (2012), this situation is changing. The health care participants are becoming actively engaged with one another. Patients report their

experiences so others can learn. Doctors have their own professional social networks and other caregivers have similar networks. Medical portals, such as WebMD, disseminate information about many topics, inviting the public to comment. Many health care providers have a presence on Facebook, LinkedIn, and other social networks. Large numbers of bloggers provide their opinions on legal, medical, political, financial, and other related topics. One can find a lot of advice on what to eat, how to exercise, and what prescription medicine pills are good for you. Of course, there is extensive advertising all over the social media outlets. For a discussion, see *Forbes* (2014).

Medical Devices and Patients Surveillance

Large numbers of EC medical devices are used in the health industry. Some of the most well-known ones are robots that help in surgeries, sensors that monitor vital signs of patients and the location of handicapped patients. Considerable use of telecommunication is evidenced in medical facilities (see closing case in this chapter). Known as *telematics*, telemedicine information technologies are used to diagnose and treat diseases from the distance (e.g., in rural areas that has no doctors). A futuristic area is that of the *Internet of Things* (see Chapter 6), where many medical devices and sensors will be combined for new medical treatments. (See **healthitanalytics.com/news**.) A related area is patient monitoring (e.g., see Behr 2016).

Medical Research

Computer-assisted telecommunication provides access to medical knowledge and help in collaboration among researchers. Such collaboration may expedite new discoveries and save the lives of many patients. For an example of transmission of brain signals, see **enterpriseinnovation.net/article/ntu-develops-smart-chip-wireless-transmissions-brain-signals-1166441949**.

Administrative Purposes

Health care providers can save a lot of money by using e-commerce models such as e-procurement, group purchasing of supplies, advertising in social networks, recruitment with the help of LinkedIn and Facebook, and much more. For an example of medical schedules, see Zocdoc.com. Another example is the use of *predictive analysis* to predict which employees might get sick (Silverman 2016). Health care facilities can use B2B to make supply chain-related decision on medical supplies, saving a considerable amount of money (see Insitesoft 2015).

SECTION 5.4 REVIEW QUESTIONS

1. Define e-health.
2. Describe EMR. Why is it important?
3. Describe social media and commerce in e-health.
4. Describe the major e-health applications in brief.

5.5 CONSUMER-TO-CONSUMER ELECTRONIC COMMERCE

Consumer-to-consumer (C2C) EC, which is sometimes called *person-to-person* (P2P) e-commerce, refers to electronic transactions conducted between and among individuals. These transactions can also include intermediaries, such as eBay (**ebay.com**) or social network sites that organize, manage, and facilitate the C2C transactions. C2C activities may include transactions resulting from classified ads, music and file sharing, career and job matching (e.g., at **linkedin.com** and **careerone.com.au**), money lending **lendingclub.com**, and personal matchmaking services (e.g., **match.com**).

C2C EC has given online shopping and trading a new dimension. Although this sort of trading is prevalent in the off-line world (newspaper classified ads, garage sales, etc.), it was not expected to succeed online because of problems regarding trust due to the anonymity of the traders, especially those who are in different locations. This problem was solved by using a third-party payment provider (e.g., **paypal.com**) and escrow or insurance services provided by eBay and others. One advantage of C2C EC is that it reduces the administrative and commission costs for both buyers and sellers. It also gives many individuals and small business owners a low-cost way to sell their goods and services.

Social networks have become a popular place for C2C activities such as selling products and services via classified ads at **craigslist.org** or **facebook.com** and other social networks. People are sharing or selling music, bartering, selling virtual properties, and providing personal services.

E-Commerce: C2C Applications

Many websites facilitate C2C activities between individuals. We cover several representative applications next.

C2C Auctions

A very successful example of a C2C application is participation in auctions. In dozens of countries, selling and buying on auction sites is growing rapidly. Most auctions are managed by intermediaries (the most well-known intermediary is eBay). Consumers can visit auctions at general sites such as **ebay.com** or **auctionanything.com**, or they can use specialized sites. In addition, many individuals conduct their own auctions with the

use of special software. For example, ProcurePort.com (see **procureport.com/reverse-auction-services.html**) provides software to create C2C reverse auction communities online.

Selling and Buying in C2C

In addition to auctions, eBay enables individuals to sell goods to other individuals at fixed prices. Amazon.com and Etsy (Chapter 3) do the same. Hundreds of other sites facilitate C2C trading including those that use classified ads.

Person-to-Person Money Lending

People use the Internet for direct person-to-person money lending. A prime example is the Lending Club Corp. For an overview, see Martin and Amy (2016) and Cunningham (2015).

Classified Ads

Internet-based classified ads have several advantages over newspaper classified ads. They cover a national, rather than a local, audience, and can be updated quickly and easily. Most of them are free or charge very little. This greatly increases the supply of goods and services available and the number of potential buyers. One of the most successful sites of C2C classified ads is **craigslist.org** as seen in Chapter 2. Classified ads also include apartments for rent and corporate housing across the USA (powered by **forrent.com**). **Freeclassifieds.com** allows you to buy or sell anything for free. Many newspapers also offer their classified ads online. In some cases, placing an ad in the classified section of one website automatically directs it into the classified sections of numerous partners (known as cross-posting).

Classified ads appear on thousands of websites, including popular social networks such as **facebook.com/free.classified** and **linkedin.com**.

Personal Services

Numerous personal services are available on the Internet (lawyers, handy helpers, tax preparers, investment clubs, dating services). Some are located in the classified ad section, but others are listed on specialized websites (e.g., **hireahelper.com**) and directories. Some are offered free; others charge a fee.

Note: Be very careful before looking for any personal services online. Fraud or crime could be involved (e.g., a lawyer online may not be an expert in the area professed or may not even be a lawyer at all).

File-Sharing Utilities: Napster and Others

It all started in 1999. By logging onto services such as Napster, people were able to download files that others were willing to share for free. Such *P2P networks* enabled users to search other members' hard drives for a particular file, including data files created by users or copied from elsewhere. Digital music and games were the most popular files accessed. Movies, TV shows, and videos followed shortly thereafter. Napster had over 60 million members in 2002 before it was forced to stop its service due to copyright violations.

The Napster server, and others that followed, functioned as a directory that listed the files being shared by other users. Once logged onto the server, users could search the directory for specific songs and locate the file owner. They could then directly access the owner's computer and download the songs they had chosen. Napster also included chat rooms to connect its millions of users.

However, a U.S. federal court found Napster to be in violation of copyright laws because it enabled people to obtain music files without paying royalties to the creators of the music. Following this ruling, in March 2002, Napster was forced to shut down and filed for bankruptcy. In 2011, Napster was acquired by Rhapsody (**rhapsody.com**), a subscription-based music downloading site. For a history of Napster, see **theguardian.com/music/2013/feb/24/napster-music-free-file-sharing**.

A number of free file-sharing programs still exist (see Chapter 12). For example, an even purer version of P2P is BitTorrent (**bittorrent.com**), software that makes downloading files fast. To access games over P2P networks, try TrustyFiles (**trustyfiles.com**). Despite the temptation to get "something for nothing," remember that downloading copyrighted materials for free is usually against the law.

C2C Activities in Social Networks and Trading Virtual Properties

C2C activities in social networks include the sharing of photos, videos, music, and other files; trading of virtual properties; and conducting other activities. Trading virtual properties is very popular in virtual worlds.

SECTION 5.5 REVIEW QUESTIONS

1. Define C2C e-commerce.
2. Describe the benefits of C2C e-commerce.
3. Describe the major e-commerce applications.

4. Define file sharing.
5. Describe file sharing and the legal issues involved (see the Pirate Bay case in Chapter 12).

MANAGERIAL ISSUES

Some managerial issues related to this chapter are as follows.

1. **How do we design the most cost-efficient government e-procurement system?** Several issues are involved and questions may be raised in planning e-government: How much can the governmental e-procurement system save on procurement costs? How can the system be used for procuring small quantities? How do you deal with bidders from outside your country? How can illegal bribery be prevented? What criteria besides cost need to be considered? How should the online and off-line procurement systems be designed? How do you advertise RFQs online? How should the portfolio of auctions and desktop purchasing be constructed? Can the government use commercial B2B sites for procurement? Can businesses use the government procurement system for their own procurement? All these must be considered in an effective design.
2. **How do we design the portfolio of e-learning knowledge sources?** There are many sources of e-learning services. The e-learning management team needs to design the portfolio of the online and off-line training applications, and the internal and external knowledge sources (paid and nonpaid sources). The internal knowledge management system is an important source of training materials for large corporations, whereas external sources could be more cost-effective for small organizations. Obviously, justification of each item in the portfolio is needed, which is related to vendor selection. For illustrative case studies, see **brightwave.co.uk**.
3. **How do we incorporate social networking-based learning and services in our organization?** With the proliferation of social networking initiatives in the enterprise comes the issue of how to integrate these with the enterprise system, including CRM, KM, training, and other applications and business processes. One issue is how to balance the quality of knowledge with the scope of knowledge in e-learning and training programs.
4. **What will be the impact of the e-book platform?** If the e-book is widely adopted by readers, the distribution channel of online book sales may be disruptive. This new platform may cannibalize the off-line book retail business. Additionally, there is the need for the protection of intellectual property of digital contents since it is easy to copy and distribute electronic files (see Chapter 12). In general, more e-books will be published and read.

SUMMARY

In this chapter, you learned about the following EC issues as they relate to the chapter's learning objectives.

1. **E-government activities.** Governments, like any other organization, can use EC applications for great savings and increased effectiveness. Notable applications are e-procurement using reverse auctions, e-payments to and from citizens and businesses, auctioning of surplus goods, and electronic travel and expense management systems. Governments also conduct electronic business with other governments. As a result, governments can do a better job with less money.
2. **Implementing e-government to citizens, businesses, and its own operations.** Governments worldwide are providing a variety of services to citizens over the Internet. Such initiatives increase citizen satisfaction and decrease government expenses for providing citizens' service applications, including electronic voting. Governments also are active in electronic trading with businesses. Finally, EC can be conducted within and between governments. E-government's growth can be strengthened by the use of wireless systems in what is described as mobile or m-government. Also, e-government 2.0 is becoming increasingly popular with tools such as wikis, blogs, social networks, and Twitter.
3. **E-learning and training.** E-learning is the delivery of educational content through electronic media via the Internet and intranets. Degree programs, lifelong learning topics, and corporate training are delivered online by thousands of organizations worldwide. A growing area is distance learning via online university offerings, and virtual universities are becoming quite popular. Some are virtual; others are delivered as a combination of online and off-line offerings. Online corporate training is also increasing, and is sometimes conducted at formal corporate learning centers. Implementation is done in steps starting with just an online presence and ending with activities on social networks. New e-readers contain easy-to-read text, search capabilities, rich media, as well as other functions. Add to this the low cost of e-books and the capability of storing hundreds of books on a single e-reader, and you can understand the increased popularity of these devices.
4. **E-books and their readers.** There is an increased interest in e-books due to their many benefits (Amazon.com sells more e-books than hardcover ones). There is intense competition among e-readers and tablet manufacturers, and the products' capabilities are increasing while their prices are declining. E-books are used both for pleasure reading and for studying. E-books can be read on several portable devices, including tablets.

5. **Knowledge management and dissemination.** Knowledge has been recognized as an important organizational asset. It needs to be properly captured, stored, updated, and shared. Knowledge is critical for many e-commerce tasks. Knowledge can be shared in different ways; experts can provide knowledge to nonexperts (for a fee or free) via a knowledge portal, e-mail, or chatting and discussion tools, and through social networks (e.g., via user-generated videos or text).
6. **Online advisory systems.** Online advisory systems of all kinds are becoming popular. Some are free although most charge fees. Users must be careful about the quality of the advice they receive. Social networks and portals provide a variety of advisory services of different qualities.
7. **E-health.** E-commerce, m-commerce, and social commerce applications are increasingly penetrating the health care field. Practically, B2B, B2C, c-commerce, and even P2P services are practiced all over the world. The most well known is the electronic medical records area that helps in rapid care and accessibility in rural areas. Another well-known area is patient care applications ranging from monitoring patients 24/7 to improving medical testing, enabling the use of better medical equipment and increasing patients' satisfaction and comfort. Patients' education is greatly facilitated by using medical portals. Physicians have rapid access to all data they need and they can transmit orders electronically.

   Social media and networks assist patients and administrators in many ways and foster sharing and collaboration. Other areas that benefit from e-commerce are medical services acquisition, maintenance, and use. Many administrative processes and medical research are supported by EC. However, a major problem in e-health is the protection of patients' medical records and privacy.
8. **C2C activities.** C2C consists of individual consumers conducting e-commerce with other individual consumers, mainly in auctions (such as at eBay), classified ads, matching services, specialty webstores at Amazon.com, and file sharing.

KEY TERMS

Automated question–answer (QA) system
Consumer-to-consumer (C2C) EC
Distance learning
E-government
E-health
E-learning
Electronic book (e-book)
Expert/expertise location systems (ELS)
Government 2.0
Government-to-business (G2B)
Government-to-citizens (G2C)
Government-to-employees (G2E)
Government-to-government (G2G)
Knowledge management (KM)
Learning management system (LMS)
Mobile government (m-government)
M-learning (mobile learning)
Social learning (e-learning 2.0)
Virtual universities

DISCUSSION QUESTIONS

1. Discuss the advantages and disadvantages of e-government using social networking versus the traditional e-government portal.
2. Discuss the advantages and shortcomings of e-voting.
3. Discuss the advantages and disadvantages of e-books.
4. Discuss the advantages of e-learning in the corporate training environment.
5. In what ways does KM support e-commerce?
6. Some say that B2G is simply B2B. Explain.
7. Compare and contrast B2E with G2E.
8. Which e-government EC activities are intrabusiness activities? Explain why they are categorized as intrabusiness.
9. Identify the benefits of G2C to citizens and to governments.
10. Relate IBM's Jams to KM and social networks.
11. Relate KM to learning, to e-publishing, and to C2C.
12. Discuss the development of e-health.

TOPICS FOR CLASS DISCUSSION AND DEBATES

1. Discuss the advantages and disadvantages of e-learning for an undergraduate student and for an MBA student.
2. Discuss the advantages of expert/expertise location systems over corporate databases that contain experts' information and knowledge. What are the disadvantages? Can expert location systems and corporate databases be combined? How?
3. One of the major initiatives of many governments (e.g., European Commission) is Smart Cities (see Chapter 6 for the technology). Discuss the content of such initiatives and explain why they are a part of e-government.
4. Debate: E-books will replace traditional books.
5. Debate: Why aren't all firms embracing KM?
6. Debate: Analyze the pros and cons of electronic voting.
7. Enter **en.wikipedia.org/wiki/E-Government** and find the "controversies of e-government" section. Discuss the advantages and disadvantages. Write a report.
8. Debate the issue: Is e-learning really working?
9. Discuss the content and benefits of the UN E-Government Development Database (**unpan3.un.org/egovkb**).
10. Debate the issue of electronic vs. manual voting.

INTERNET EXERCISES

1. Enter **e-learningcentre.co.uk**, **elearnmag.acm.org**, and **elearningpost.com**. Identify current discussion issues and find two articles related to the effectiveness of e-training. Write a report. Also prepare a list of the resources available on these sites.
2. Enter **adobe.com** and find the tutorials and tools it offers for e-learning, knowledge management, and online publishing. Prepare and give a presentation on your findings.
3. Identify a difficult business problem in your or another organization. Post the problem on **elance.com**, **linkedin.com**, **answers.yahoo.com**, and **answers.com**. Summarize the information you received to solve the problem.
4. Enter **blackboard.com** and also view **en.wikipedia.org/wiki/Blackboard_Inc.**. Find the major services provided by the company, including its community system. Write a report.
5. Enter **fcw.com** and read the latest news on e-government. Identify initiatives not covered in this chapter. Then enter **gcn.com**. Finally, enter **egovstrategies.com**. Compare the information presented on the three websites.
6. Enter **procurement.org** and **govexec.com**. Identify recent e-government procurement initiatives and summarize their unique aspects.
7. Enter **hivemine.com** and look at their products, solutions, news, and blogs. Do you agree with the company's motto: "Socialize your knowledge and thrive?" Explain your answer.
8. Enter **amazon.com**, **barnesandnoble.com**, and **sony.com** and find the latest information about their e-readers. Compare their capabilities and write a report. (Consult the **ebook-reader.com**.)
9. Enter **mindjet.com**. Find out how collaboration is supported there. Summarize the benefits of the site to the participants.
10. Enter **chegg.com** and similar sites that do learning platforms. Explain what they do.
11. Enter **guru.com** and **elance.com** and compare their offerings. Which one would you prefer to post your skills on and why?
12. Find two companies that enable C2C (or P2P) e-commerce (such as **egrovesys.com**). Comment on their capabilities.
13. The U.S. government opened a virtual embassy in Iran. Find information about the service and the reaction of the Iranian government. Write a report.

TEAM ASSIGNMENTS AND PROJECTS

1. **Assignment for the Opening Case**
   Read the opening case and answer the following questions.
   (a) What were the primary and secondary problems that Compass Group faced with training its managers?
   (b) How did the company overcome the skeptics of e-training?
   (c) How did the company approach the complexity of systems training?
   (d) What were the outcomes of the new e-training?
   (e) In your opinion, what are the most important aspects in e-training implementation?
2. New York City is known for its extensive e-government initiatives that were sponsored by Mayor Bloomberg between 2002 and 2013. Find information about these initiatives, their benefits to the public, and their fate after Bloomberg completed his term. Each team will concentrate on one area. Write a report.
3. Create four teams, each representing one of the following: G2C, G2B, G2E, and G2G. Each team will prepare a description of the activities in the assigned area (e.g., G2C) in a small country, such as Holland, Denmark, Finland, or Singapore. A fifth team will deal with the coordination and collaboration of all e-government activities in each of the four countries chosen. Prepare a report.
4. Read Gartner's "10 Tech Trends for Smart Government" (2014) at **enterpriseinnovation.net/article/10-tech-trends-smart-government-759893589**. Find newer trends. Explore each of the trends and find examples of how government deals with these trends. Compare to findings of the UN E-Government survey of 2016. Prepare a class presentation.
5. View the video "E-Learning Debate 2010 - Highlights" (4:51 min) at **youtube.com/watch?v=Q42f1blFnck**. Debate the pros and cons regarding the value of e-learning.
   (a) List all the pro and con statements from the video.
   (b) For each statement, have two teams (or individuals) explain why each agrees or disagrees with the statement.
   (c) Add several pro and con statements from what you learned in class or discovered on the Web.
   (d) For each added statement, have two teams (or individuals) explain why each agrees or disagrees with the statement.
   (e) Jointly prepare a summary. The use of a wiki is advisable.
6. Have each team represent one of the following sites: **netlibrary.net** and **ebooks.com**. Each team will examine

the technology, legal issues, prices, and business alliances associated with its site. Each team will then prepare a report answering the question, "Will e-books succeed?" (Read Nuwer 2016).

7. Each team is assigned a question-and-answer company (e.g., **answers.com**, **ask.com**). Check the company's offerings, including social networking/games. Present your findings.

CLOSING CASE: HENRY FORD HEALTH SYSTEM PROVIDES SUPERIOR PATIENT EXPERIENCE USING IT AND E-COMMERCE

Henry Ford Health System (HFHS) is a comprehensive health system that provides care to 2.2 million patients annually in Metro Detroit and several other cities. The HFHS complex includes five medical centers and 24,000 employees.

The Challenges

The system's mission is to support the communication and collaboration of the mobile employees, patients, insurers, physicians, visitors and vendors, and to assure the operation of the many mobile biomedical devices. HFHS needed a massive electronic network. Furthermore, it was necessary to support the patient data flow, some of which is in real time (data accessibility at point of care). All this required continued availability with protection of privacy and security. The challenges include the support of a multitude of mobile devices that patients and visitors bring with them. In addition, the mobile and biomedical devices are from many manufacturers and are used for many applications (e.g., X-ray carts, IV pumps, mobile ultrasound, and EKG machines). Parts of the medical facilities are within six foot concrete walls which made radio frequency (RF) penetration difficult. The hospital needed a wall-to-wall coverage by wireless connection that would work without interferences and enable a large volume of wireless traffic.

The Solution

HFHS decided to install an advanced Wi-Fi system. This required experimentation with different software and hardware and with the locations and numbers of Wi-Fi access points.

The resultant solution enabled the integration of over 3500 biomedical devices into the Wi-Fi network. This required collaboration with those that are purchasing the devices. To support the wireless, it was necessary to bring access point antennas in over 90 elevators and many stairway corridors (a multiple year project). The solution also included penetration of information flow in lead walls and through six foot concrete shelters. In addition, the solution enabled connecting with the many brands of mobile devices belonging to patients and visitors. The system covers over 60 sites of HFHS in many locations. Overall, more than seven million square feet of facilities are covered. In 2016, there were over 3200 access points and 1200 security sensors. In addition to the Wi-Fi, the HFHS is using several e-commerce information systems such as Philips' CareSage predictive analytics and 3M 360 Encompass system.

The Results

The success of Wi-Fi was featured in a best practice article in the "Association for the Advancement of Medical Instrumentation." Patient satisfaction has increased drastically and so has the productivity and quality of the hospital's employees and the physicians. The networks also enable members of the community to access the educational material disseminated by the hospital. The Wi-Fi enables the biomedical devices to operate smoothly, to enable safe access to all needed information, and to facilitate communication, collaboration, and team work. All these were done while meeting all compliance requirements.

Sources: Based on Extreme Networks (2015) and Philips Electronics PHG Company (2016).

Questions

1. Why was Wi-Fi the only reasonable solution?
2. Why was this project so complex?
3. What are the major benefits? To whom?

ONLINE FILES

Available at **ecommerce-introduction-textbook.com**

W5.1 E-Government Social Media Activities in New Zealand
W5.2 The Stages of E-Government Transformation
W5.3 Application Case: Knowledge Sharing as a Strategic Asset at Caterpillar Inc.

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Part III

Emerging EC Platforms

Mobile Commerce and the Internet of Things

6

Contents

Learning Objectives

Upon completion of this chapter, you will be able to:

1. Discuss the value-added attributes, benefits, and fundamental drivers of m-commerce.
2. Describe the mobile computing infrastructure that supports m-commerce (devices, software, and services).
3. Discuss m-commerce applications in banking and financial services.
4. Describe enterprise mobility applications.
5. Describe consumer and personal applications of m-commerce, including entertainment.
6. Define and describe ubiquitous computing and sensory networks.
7. Describe the Internet of Things and its major smart applications.
8. Describe wearables, Google Glass, smartwatches, and fitness trackers.
9. Describe the major implementation issues from security and privacy to barriers of m-commerce.

OPENING CASE: HERTZ GOES MOBILE ALL THE WAY

The Problem

The car rental industry is very competitive, and Hertz Corporation (**hertz.com**), the world's largest car rental company, competes against hundreds of companies in approximately 10,400 locations in 150 countries. The strong competition negatively impacted profits. For Hertz Global Holdings, Inc. business profile and statistics, see **hoovers.com/company-information/cs/company-profile.Hertz_Global_Holdings_Inc.7b9c49d62787624c.html**. Hertz needs to constantly maintain a mobile presence. Customers can easily connect with the company through its mobile site. The Hertz mobile app is available for iPhone, iPad, Android, and Windows phone.

Electronic supplementary material: The online version of this chapter (doi:10.1007/978-3-319-50091-1_6) contains supplementary material, which is available to authorized users.

E. Turban et al., *Introduction to Electronic Commerce and Social Commerce*,
Springer Texts in Business and Economics, DOI 10.1007/978-3-319-50091-1_6

The Solution

Hertz pioneered several mobile commerce applications to increase its competitiveness. Mobile commerce is now embedded in the company's national wireless network. This information is needed to reserve a car, confirm or change reservations, and other customer-related services (e.g., review rental history, direct credit mileage to the proper loyalty program).

Here are some of Hertz's mobile services:

- **Easy and quick rentals.** Reservations can be made by phone, e-mail, and on the website (via smartphone, tablet, or desktop). Confirmations are e-mailed (or texted) within seconds of making the reservation. Upon arrival in a city, the renter receives a text message pinpointing the car's location in Hertz's parking area. In many rental locations, the cars are equipped with an RFID system. In such a case, the renter sweeps the Hertz keyfob/card over the RFID reader to unlock the doors. Alternatively, in some locations, Hertz's curbside attendant confirms the reservation on a handheld device, and transmits the arrival information wirelessly to the rental booth. This in return reveals the location of the car. All the renter needs to do is go to the slot where the car is parked and drive away. For interesting new features, see Elliott (2013).
- **Instant returns (eReturn).** There is no longer any need to wait in line in Hertz's office to return the car. An attendant with a handheld device connected to the wireless system enters the return time, and the system calculates the cost of the rental and prints a receipt. The checkout time takes about a minute, right in the parking lot.
- **NeverLost® GPS Navigation System.** Many Hertz cars are equipped with the Hertz NeverLost® GPS system (**neverlost.com**) that includes a display screen and voice prompts (e.g., when to make a turn). A map (either Google Maps or MapQuest) shows the routes and business information (e.g., public and consumer services, such as the location of the nearest hospitals, gas stations, and eateries displayed). Hertz also offers the MyExplore™ NeverLost® Mobile Companion app (see **neverlost.com/Products/ProductDetail?ProductName=hertzneverlostcompanion**). This app allows you to plan your trip on your smartphone and use the app to navigate selected cities such as Washington, DC and New York. Some of the app's features include augmented reality (turn your camera phone into a live map); social media integration (share your experiences on social networks such as Facebook and Twitter); and weather information (get live weather information and five day forecasts).

  Hertz also installed inward-facing video cameras in an attempt to upgrade its NeverLost® service.

  For more functionalities, see **finance.yahoo.com/news/navigation-solutions-hertz-neverlost-r-221503204.html**.
- **Additional customer services.** In addition to the location guide, the NeverLost® system provides driving directions, emergency telephone numbers, city maps, shopping guides, customer reviews of hotels, restaurants, and other consumer services. This content also is available to Hertz's club members at home, where they can print the information or load it into their mobile devices. For more on customer service at Hertz, see Gingiss (2015).
- **Car locations.** Hertz is experimenting with a GPS-based tracking system, which enables the company to find the location of a rental car at any given time. Furthermore, the system may be able to report in real time the *speed at which the* car is being driven. Although the company promises to keep the collected information secure, many view it as an *invasion of privacy*. However, some renters may feel safer knowing that they are being tracked at all times. Note: Currently (March 2016), Hertz is using the system only to track stolen cars and to find when cars are returned.
- **Hertz 24/7 (with on demand technology).** According to their website, Hertz 24/7 with on demand technology offers self-service access to a rental vehicle for a short period of time (by the hour, or a day), competing with car sharing company Zipcar Inc. (**zipcar.com**). The Hertz 24/7 mobile app is available for download at **hertz.com/rentacar/productservice/index.jsp?targetPage=hertzmobilesite.jsp** and can be used to find car rental locations. This application is available on PCs and mobile devices at the same site. The application includes ride sharing (e.g., rate comparisons of public transportation versus car rental).
- **Wi-Fi connection.** Free high-speed Internet access is available in Hertz's offices in all major Hertz locations in the United States, Canada, and some other countries.
- **Hertz mobile apps.** With the Hertz apps, which are available for iPhone, iPad, Windows, and Android, you can make reservations, search for store locations, enjoy special offers, and much more. See the Hertz Mobile page at **hertz.com/rentacar/productservice/index.jsp?targetage=hertzmobilesite.jsp**. For recent mobile apps, see *PR Newswire* (2014).
- **Social media.** Hertz is active in social network applications.

  For details on the above, see Barris (2014).

The Results

Despite the economic problems of 2008–2012, Hertz has retained the number one position in the car rental industry. Its earnings, which declined in 2008 and 2009, rebounded between 2010 and 2014. Hertz did better than most of its competitors. Its stock market share price, which bottomed out in 2009, more than tripled in 2010 and continued to climb from 2011 to 2014. The company is expanding its operations and maintaining an excellent reputation among customers, due in part to its mobile applications.

Sources: Based on Barris (2014), Gingiss (2015), and **hertz.com** (accessed April 2016).

LESSONS LEARNED FROM THE CASE

The Hertz case illustrates several mobile applications in the transportation industry that can help improve both customer service and the company's operations. The applications are run on mobile devices and supported by a wireless network. (Both topics are discussed in Section 6.2.) The mobile technology is based on a set of unique attributes (Section 6.1) that enable the use of many applications (Sections 6.3–6.7).

The Hertz case is only one example of the impact of emerging mobile and wireless technologies on business and electronic commerce (EC). In this chapter, we explore a number of these emerging mobile and wireless technologies as well as their potential applications in the commercial and societal arenas. The chapter also deals with the mobile enterprise, location-based services, and ubiquitous computing, which are cutting-edge technologies.

6.1 MOBILE COMMERCE: CONCEPTS, LANDSCAPE, ATTRIBUTES, DRIVERS, APPLICATIONS, AND BENEFITS

As described in Chapter 1, businesses are becoming digital. In addition, many enterprises are going multilocational and globally, and the need for mobile communication is increasing rapidly (see the closing case in Chapter 5). According to GSMA (2013), the mobile industry is already a major contributor to the global economy. More than half of the world's population already own mobile phones, many of which are smartphones. Obviously, all the above are drivers of mobile commerce.

For definitions, topics, key issues, and so forth, see **mobileinfo.com/mcommerce**.

Mobile commerce has its own framework, attributes landscape, concepts, and terminology. These provide many benefits. For an overview, see the 2:45 min video titled "What is M-Commerce" at **youtube.com/watch?v=QtpTTpgpELg**.

One of the clearest trends in computing and e-commerce is that mobile computing is increasing exponentially. Each year, Gartner Inc. compiles an annual list of the top ten strategic technology trends that have the potential to offer numerous benefits to individuals, businesses, and IT organizations during the following 3 years. Mobile computing topics are listed in the 2010–2016 reports.

Basic Concepts, Magnitude, and the Landscape

Mobile commerce (m-commerce), also known as *m-business*, refers to conducting e-commerce by using mobile devices and wireless networks. Activities include B2C, B2B, m-government, and m-learning transactions, as well as the transfer of information and money. Like regular EC applications, m-commerce is an electronic transaction conducted by using mobile devices via the Internet, corporate intranets, private communication lines, or over other wireless networks. For example, paying for an item in a vending machine or pay taxes with an iPhone is considered m-commerce. M-commerce provides an opportunity to deliver new services to existing customers and to attract new customers to EC anytime, anywhere. Initially, the small screen size and slow bandwidth limited the usefulness to consumers. However, this situation is changing rapidly due to the widespread use of smartphones and tablet computers. In addition, now consumers are more accepting of the handheld culture. Furthermore, the adoption of m-commerce is accelerating due to the spread of 3G and 4G networks, (and soon G5). Finally, free Wi-Fi Internet access in many locations helps.

Note that m-commerce is quite different from traditional e-commerce and frequently uses specialized business models (see **mobilinfo.com/Mcommerce/differences.htm**). This results in many new applications and a change in the relationship between buyers and sellers (see **ibm.com/software/genservers/commerce/mobile**).

The Magnitude of M-Commerce

According to a 2013 eMarketer study, by 2017, approximately 25% of all online retail transactions in the USA will take place on mobile devices (reported by **mashable.com/2013/04/24/mcommerce-sales-forecast**). Forrester Research forecasts that m-commerce will top $38 billion in 2014 (reported by Fiegerman 2014 at **mashable.com/2014/05/12/mobile-commerce-sales**). A 2014 InMobi report found that 83% of

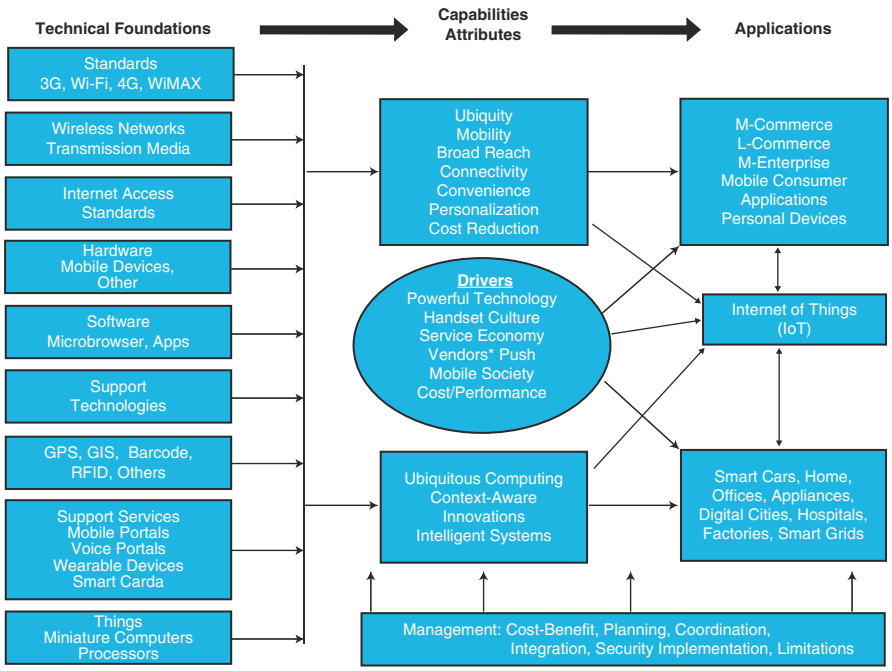

Figure 6.1 The landscape of mobile computing and m-commerce

customers plan to conduct mobile commerce in 2014, a 15% increase from the previous year. The full report can be downloaded from **inmobi.com/company/press/inmobi-report-finds-83-of-consumers-plan-to-conduct-mobile**.

For statistics on m-commerce, see **statista.com/topics/1185/mobile-commerce**. For more details, see **gartner.com/newsroom/id/3270418**.

In this chapter, we consider some of the distinguishing attributes and key drivers of m-commerce, some technical issues relevant to m-commerce, and some of the major m-commerce applications.

The Landscape of M-Commerce

The overall landscape of m-commerce is summarized in Figure 6.1.

Note that in the figure, the enabling technologies (e.g., devices, networks) are on the left side and the resulting capabilities and attributes are in the middle. These provide the foundation for the applications that are shown on the right side of the figure. In this section, we describe the attributes and provide an overview of the applications. In Section 6.2, we present the essentials of the major technologies.

Mobile and Social: A Powerful EC Combination

M-commerce is a very powerful platform, but it can be even more powerful when combined with social commerce, as we will describe in Chapters 7 and 8. This combination will shape the future of e-commerce and could be its major facilitator in the future.

The Attributes of M-Commerce

Many of the EC applications described in this book also apply to m-commerce. For example, online shopping, e-travel, e-learning, e-entertainment, and online gaming are all gaining popularity in mobile B2C. Auction sites use m-commerce to send messages to bidders during the auction process, governments encourage m-government (Chapter 5), and wireless collaborative commerce in B2B EC is on the rise. Some key attributes that enable new applications are possible only in the mobile environment. The major attributes include:

- **Ubiquity.** *Ubiquity* means being everywhere, especially at the same time. It is facilitated by wireless computing. Given that Wi-Fi access is available in more and more places, and that about half of all mobile phones are smartphones, we have easier ubiquity.
- **Convenience and capabilities.** Having a mobile device increases the convenience of communication. The functionality and usability of mobile devices is increasing while their physical size remains small and the cost is affordable. Unlike traditional computers, mobile devices connect to the Internet almost instantly.
- **Interactivity.** Mobile systems allow for fast and easy interactions (e.g., via Twitter, tablets, or smartphones).

- **Personalization.** Mobile devices are personal devices. While several people may share the same PC, a specific mobile device is usually used by one person.
- **Localization.** Knowing where a user is physically located in real time provides an opportunity to offer him or her relevant mobile advertisements, coupons, or other services. Such services are known as location-based m-commerce.

Mobile vendors differentiate themselves from wireline vendors by offering unique services based on the above attributes. The drivers of m-commerce are illustrated in Figure 6.2 and discussed in Online File W6.1.

An Overview of the Applications of M-Commerce

There are thousands of different m-commerce applications. Many of these are similar to those in a wireline environment, as described in Chapters 3 and 4. Others are available for mobile devices only.

To simplify our presentation, we divided the applications in this chapter into the following categories, adding consumer applications to the framework:

- Banking and financial services—Section 6.3.
- Mobile enterprise applications—Section 6.4.
- Consumer services (including shopping) and entertainment—Section 6.5.
- Ubiquitous computing—Section 6.6.
- Internet of Things (IoT) applications are covered in Section 6.7.
- Emerging applications: Wearables, Google Glass, smart grid, and driverless cars—Section 6.8.
- Mobile shopping is covered in Chapter 7.
- Mobile marketing and advertising are covered in Chapter 9.
- Mobile payment is introduced in Chapter 11.

We categorized the *enterprise-related applications* by the framework used by Motorola Corp. See **motorolasolutions.com/US-EN/enterprise+mobility** and the closing case in this chapter. Note: Zebra Tech. acquired Motorola Solutions Enterprise Business in April 2014.

According to this framework, *enterprise applications* are created to meet specific business needs. These needs have some generic aspects as well as industry-specific aspects (see Figure 6.3). The four needs are:

1. **Field mobility**—the support of the mobile workforce.
2. **Fleet mobility**—the support of vehicles in order to minimize downtime and increase effectiveness, efficiency, and utilization.

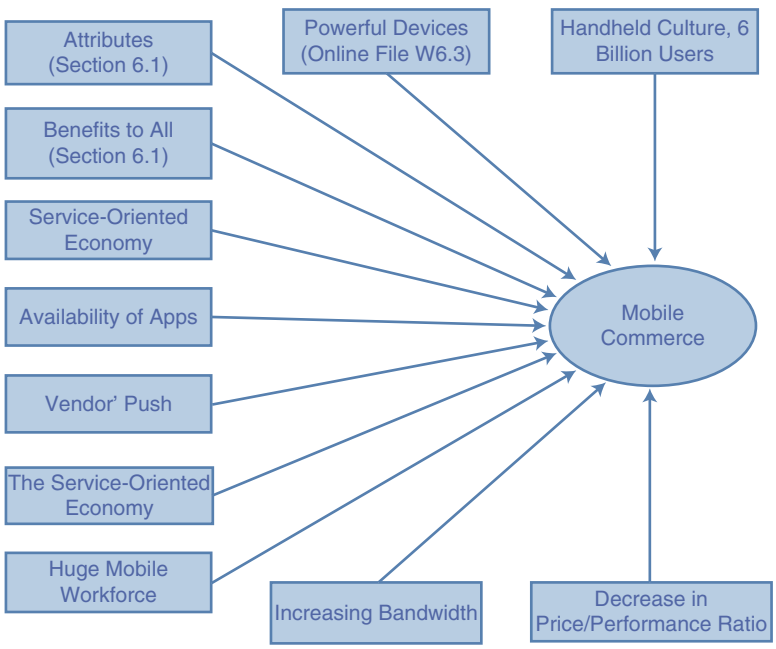

Figure 6.2 The drivers of m-commerce

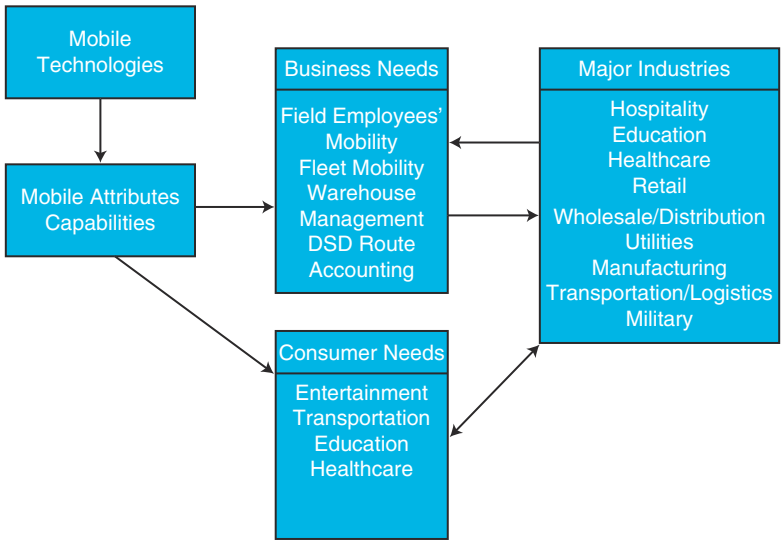

Figure 6.3 M-commerce applications and their classifications

3. **Warehouse management**—the improvement of the operations inside warehouses.
4. **Direct store delivery (DSD) route accounting**—the increased usefulness by conducting predelivery activities (e.g., by texting information about a new shipment from the shipper to the receiver).

This chapter discusses the techniques and applications in the m-commerce field from a managerial point of view. A related application, ubiquitous computing, will be discussed in Section 6.6.

Also of interest is the emerging field of *mobile intelligence* (see Saylor 2012).

The Benefits of M-Commerce

M-commerce has many benefits to organizations, individuals, and society. As a result, many believe that the future of EC is mobile applications (watch the 5:06 min video titled "The Future of E-Commerce Is: Mobile Applications" at **youtube.com/watch?v=kYSMP_RH67w**).

Benefits for Organizations

- Increases sales due to ease of ordering by customers from anywhere, anytime.
- Allows location-based commerce for more sales and revenue (Section 6.6).
- Provides an additional channel for advertising and distribution of coupons (wider reach).
- Increases customers' loyalty.
- Improves customer satisfaction through real-time apps.
- Increases collaboration, advertisement, customer service, and sales by using IoT (Section 6.7).
- Enables many enterprise applications (Section 6.4).
- Facilitates CRM and collaboration.
- Reduces employee training time and help desk resources.
- Improves time utilization and productivity of mobile employees.
- Expedites information flow to and from mobile employees.
- Delivers digitized products and services directly to mobile devices.
- Reduces order lead-time and fulfillment cycle.
- Allows for lower, competitive pricing.

Benefits for Individuals and Customers

- Allows e-commerce from any place, anytime.
- Assists in shopping by providing real-time information and other shopping aids.
- Helps organization of and communication while travelling.
- Expedites banking and financial services.
- Provides rich media entertainment anytime and anywhere.
- Facilitates the finding of new friends and whereabouts of existing ones.
- Provides a choice of mobile devices for transactions.

- Expedites communication (e.g., locate people; get fast answers to queries; compare prices while in physical stores or via shopping comparison sites/apps).
- Increases affordability over the cost of using desktop computing in some countries.
- Allows "smart" applications.

Benefits to Society

There are many benefits to society. For example, self-driving cars can reduce accidents; smart cities can benefit the dwellers and visitors. Contributions are in almost any field, from medical care and education to law enforcement. Significant reductions in energy expenses are achieved by using smart grids. Traffic jams can be reduced by using wireless sensors and much more.

There are some limitations to m-commerce, which are discussed in Section 6.9.

SECTION 6.1 REVIEW QUESTIONS

1. Define m-commerce.
2. Briefly describe the five value-added attributes of m-commerce.
3. List and briefly describe eight major drivers of m-commerce (see Online File W6.1 and Figure 6.2).
4. Describe the framework of m-commerce applications.
5. What are the major categories of m-commerce applications?
6. Describe the landscape of m-commerce.
7. What are the major benefits of m-commerce?
8. Describe the major online enterprise applications.

6.2 THE ENABLING INFRASTRUCTURE: COMPONENTS AND SERVICES OF MOBILE COMPUTING

The technology that supports m-commerce is very diversified. Here we concentrate on some major technology items.

Overview of Mobile Computing

In the traditional computing environment, users were confined to desktop computers in fixed locations. A solution to this situation is **wireless mobile computing** (**mobile computing**), where computing is done by using mobile devices at any place connected to a wireless network. According to TechTarget Bitpipe, wireless mobile computing, also known as nomadic computing, is the use of portable computing devices (such as laptops and handheld computers) in conjunction with mobile communications technologies to enable users access to the Internet and data on their home or work computers from anywhere in the world (see **bitpipe.com/tlist/Wireless-Computing.html**).

This section briefly discusses the major technologies and application areas of mobile computing systems. For an extensive list of related terms, see **mobileinfo.com/Glossary** and **en.wikipedia.org/wiki/Mobile_computing**. For the importance and magnitude of mobile computing, see Gannes (2013), who presents the relevant highlights from Meeker's 2013 Internet Trends. For the introduction and history of mobile computing, see Livingston's presentation at **slideshare.net/davidjlivi/introduction-history-of-mobile-computing**.

Mobile Devices

Mobile devices come in all shapes and sizes—laptops, thin-and-light notebooks, tablet computers, smartphones, ultra portables, and ultra-mobile PCs (UMPCs). What distinguishes one type of mobile computer from another are its different capabilities, such as physical dimensions, shape, and the executions of the capabilities. Most of the major computer manufacturers (HP, Apple, Dell, ASUS, Toshiba, ACER, and Lenovo) produce thin laptops and ultra portables.

A few years ago, portable computers, cell phones, and other mobile devices were different from each other and had unique features. Today, all of these devices are converging so that it is sometimes difficult to tell them apart (from a functional perspective).

Mobile devices can be large. Several manufacturers offer special handheld devices and 23″ laptops or mobile workstations are available (e.g., Dell, HP, and Lenovo). For an example, see Weiss (2015). Tablets are available in a 7″ or 13″ screen. Smartphones come in a variety of sizes.

Smartphones

A **smartphone** is a mobile phone with Internet access and PC-like functionality (such as iPhone).

There is a wide range and variety of smartphone manufacturers. Note that smartphones get "smarter" with time and add features and capabilities. There is also a wide variety of operating systems, including Symbian, Google Apps, Android, Palm OS, Windows Mobile, Apple OS/X, RIM BlackBerry, and Google's Chrome OS. Like PDAs, smartphones have small screens, keyboards, memory, and storage. Most smartphones have built-in cameras and some are GPS-enabled.

Tablets

A fast growing category of mobile devices is the *tablet computer*. Tablet computers received a major boost in 2010 with the introduction of the Apple iPad and its competitors, all with a virtual keyboard (but a portable physical keyboard can be attached). Since then, many companies are manufacturing tablets. Notable are Amazon.com, Samsung, HP, Dell, Microsoft, HTC, and Google. Like laptops, tablets can access the Web via Wi-Fi hotspots. The *iPad* weighs about 1 pound (in between a smartphone and a small laptop), and its screen measures 7.87″ (the iPad mini, which weighs .73 pounds) or 11″ or larger. Tablets are replacing PCs and laptops in enterprises and schools. Tablets are also replacing hardcover textbooks in many schools. Tablets can be used as e-readers and can be used to access the Internet. Note that the price of tablets is declining while their capabilities are increasing. In India, for instance, Aakash students can buy tablets for as little as $35.

Tablets are becoming popular in enterprises as well. For example, Waste Management Inc. (**wm.com**) provides 7″ tablets to their truckers for finding optimal routes. For a comprehensive description, see **informationweek.com/mobile.asp** and **apple.com/ipad**. A major use of a tablet is to facilitate communication and collaboration.

Wearable Devices

The smallest mobile devices are wearable. Notable are many devices used in the enterprise (e.g., mounted on the arm, head, or body and carried by employees). Samsung's Galaxy Gear SmartWatch, which was released in 2013, is one example. In April 2014, Samsung released its Gear Fit device, a "fitness tracker-smartwatch hybrid" (see **mashable.com/2014/04/08/samsung-gear-fit-review**). Fitbit Apple Watch is in production as of 2015. For more about wearable devices, see Section 6.8.

Other Mobile Devices

There are other kinds of mobile devices as well. For example, Microsoft offers a tablet with an attachable keyboard, and Dell offers a foldable tablet with a keyboard, combining the capabilities of a laptop and a tablet. A representative list of mobile devices is available in Online File W6.2.

Radio Frequency Identification (RFID)

Radio Frequency Identification (RFID) enables the transfer of data wirelessly, usually for the purpose of automatically identifying and tracking tags attached to objects. RFID does this by employing radio frequency electromagnetic fields (see Online Tutorial T2). Most of the enterprise applications relate to logistics and inventory control. For details, see Chapter 11. Also related to EC is the use of RFID to enable mobile payments. For images of RFID applications, conduct a Google Images search for "RFID applications." For a comprehensive guide to RFID (e.g., white papers, case studies, definition), see the RFID technology Primer at **impinj.com/guide-to-rfid/what-is-rfid.aspx**. Finally, for 100 uses of RFID, see **rfid.thingmagic.com/rfid-blog/bid/52243/100-Uses-of-RFID**.

Mobile Computing Software and Services

Mobile devices offer some capabilities that desktops do not. These capabilities provide a foundation for new applications.

Mobile Portals and Content Providers

A **mobile portal** is a gateway to the Internet from mobile devices. It combines content from several sources and can be personalized for mobile users. These portals offer services similar to those of desktop portals (see **gartner.com/it-glossary/mobile-portal** and **ehow.com/facts_7631652_definition-mobile-portal.html** for an additional discussion of mobile portals). An example of a pure mobile portal is Zed (**zed.com**; a wholly owned subsidiary of Finnish telecommunication company Sonera) headquartered in Spain. Japan's largest mobile provider, with over 60 million customers, is i-mode from NTT DOCOMO (see **nttdocomo.co.jp/english/service/imode** for the capabilities of i-mode).

The services provided by mobile portals are similar to those provided by desktop portals (e.g., news, health, sports, and downloading music). Mobile portals sometimes charge for their services.

Short Message Service

Short message service (SMS), frequently referred to as *text messaging*, or simply *texting*; the technology supports the transmittal of short text messages (up to 140 or 160 characters) between wireless devices. The cost of texting is very low compared to the charge per minute to talk on cell phones. The limited message length makes users use acronyms to convey standard messages. Examples of such acronyms include "how are you" becoming "HOW RU," or "HRU," and "in my opinion" becoming "IMO." Texting is popular worldwide due to the use of smartphones and microblogging (e.g., Twitter).

Multimedia Messaging Services (MMS)

Multimedia messaging service (MMS) is the new type of wireless messaging, delivering rich media content, such as

videos, images, and audio to mobile devices. MMS is an extension of SMS (no extra charge with an SMS "bundle"). It allows for longer messages than with SMS.

For the difference between SMS and MMS and their benefits for mobile marketing, see **mogreet.wordpress.com/2012/03/15/understanding-mobile-marketing-what-is-sms-mms-message-marketing**.

Location-Based Services

Retailers who use location-based services use the *global positioning system (GPS)* or other positioning techniques to find a customer's location and then deliver services, such as ads for products and services, and coupons in real time. GPS also is used in emergency services, traffic management, and other applications.

Voice Support Services

The most natural mode of human communication is voice. Voice recognition and voice synthesizing in m-commerce applications offer advantages such as hands- and eyes-free operation, better operation in dirty or moving environments, faster input (people talk about two-and-a-half times faster than they type), and ease-of-use for disabled people.

IVR Systems

Voice support applications such as **interactive voice response (IVR) systems** enable users to interact by telephones (of any kind) with a computerized system to request and receive information. These systems have been around since the 1980s but are now becoming more capable and widespread as artificial intelligence-based voice-recognition capabilities continue to improve.

Intelligent Personal Assistants

As described in Chapter 5, companies use AI to understand spoken natural languages. This application is used for **intelligent personal assistants**, which are offered today by major corporations. Well known are: Google Now, Microsoft's Cortana, Apple's Sire, and Amazon's Alexa. Other companies create competing products (e.g., SoundHound). Note that these products are integrated in smartwatches, smart TVs, and cars.

Of special interest is Amazon's Echo which is a screenless, voice-controlled device that operates with Amazon's Alexa and it excels in smart home applications. For details, see Rubin (2016), Manjoo (2016), and Mayo (2016).

Voice Portals

A **voice portal** is a website with an audio interface that can be accessed through a telephone call. A user requests information by speaking, and the voice portal finds the information on the Web, transforms it into a computer-generated voice reply, and provides the answer by voice. For example, Bing Tell voice assistant (**bing.com/dev/speech**; a Microsoft company) allows callers to request information ranging from weather to current traffic conditions. IVR and voice portals are likely to become important ways of delivering m-commerce services over audio. Popular applications are used for banking, hospitals, airlines, government services, and online entertainment. A similar service, called Siri, is available on iPhones where you can place commands by voice, including sending messages asking questions, and receiving answers.

Note: Some companies are trying to connect to the Internet by sending signals from high in the sky and even from outer space (e.g., watch the video titled "Beaming the Internet from Outer Space" (1:36 min) at **money.cnn.com/video/technology/2014/02/26/t-beaming-internet-from-space-outernet-cubesat.cnnmoney**). Also, note that there is an increase in mobile cloud computing (see **prezi.com/dpnifer-apgzh/examples-of-mobile-cloud-computing**).

Putting It All Together

The previously mentioned software, hardware, and telecommunications are connected by a management system to support wireless electronic trading, as shown in Figure 6.4. The figure, which is self-explanatory, shows the flow of information from the user (Step 1) to the conclusion of the transaction (Step 9).

SECTION 6.2 REVIEW QUESTIONS

1. Briefly describe some of the key differences and similarities among the major mobile devices.
2. Briefly describe the types of messaging services offered for mobile devices.
3. Define mobile portal and voice portal.
4. Distinguish between MMS and SMS.
5. Define IVR.

6.3 MOBILE FINANCIAL APPLICATIONS

Most mobile financial services are mobile versions of their wireline counterparts. However, they can be used anytime, anywhere. We divided these services into two broad categories:

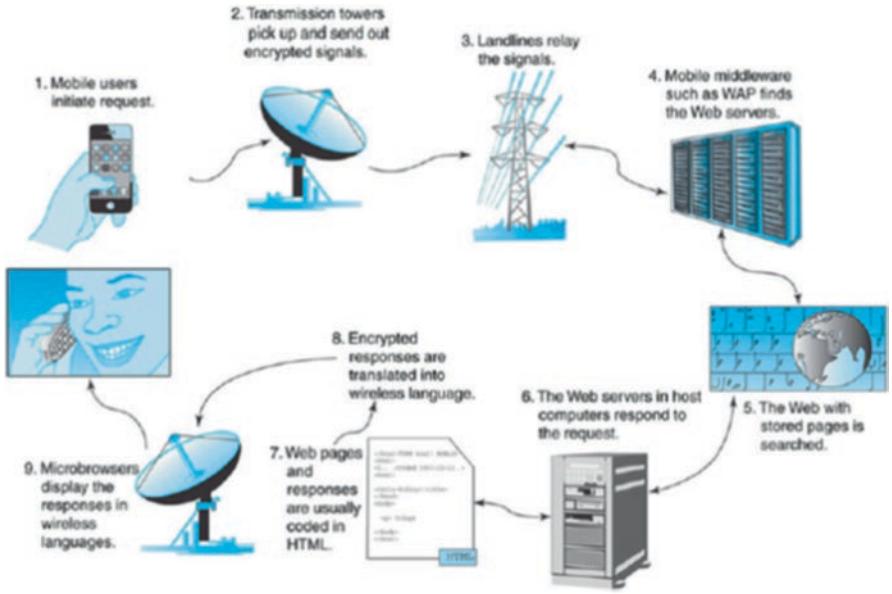

Figure 6.4 An m-commerce system at work

mobile banking and other mobile financial services. Mobile payments are described in Chapter 11. For an overview of mobile financial services, see **ericsson.com/m-commerce/node/11**.

Mobile Banking

Mobile banking (**m-banking**) describes the conducting of banking activities via a mobile device (mostly via smartphones, tablets, texting, or mobile website). The influx of smartphones and tablets, especially iPhones and iPads, has led to an increased utilization of mobile banking. For details, a conceptual model, and challenges for mobile banking solutions, see Krishnan (2014) and Nicoletti (2014). A popular service is a mobile deposit of checks. You sign the front and back of the check, snap pictures of both sides, including the endorsement on the back, and submit it.

Throughout the world, more and more banks are offering mobile-based financial and accounting information and transaction capabilities.

Examples

Most banks deploy mobile services through a variety of channels, although the Internet and SMS are the most widely used. A blog written by Brandon McGee (**bmcgee.com**) provides links to a number of banking websites throughout the world that provide comprehensive wireless financial services. The Chase Mobile app and other mobile banking services offered by J.P. Morgan Chase Bank at **chase.com** enable customers to access their accounts via smartphones and send text messages to request and receive account information.

In February 2014, mBank (**mbank.pl/en**) launched a mobile banking platform in Poland. The app allows access to the banking services, such as checking an account balance or a credit card limit (see **telecompaper.com/news/mbank-launches-new-mobile-banking-app-in-Poland**). American First Credit Union offers many mobile services, including location-based offers.

Banks and financial services' customers are utilizing their smartphones and cell phones to obtain current financial information and perform real-time transactions. For comprehensive coverage, see Paulsen (2013) and Knowledge@Wharton and Ernst and Young (2013).

Finally, *mobile payments*, including payments withdrawn from bank accounts via mobile devices, and depositing checks via smartphone photos have become very popular (see Chapter 11).

Other Mobile Finance Applications

There are several other mobile finance applications (search Google for "future of mobile finance"). Two applications follow.

Mobile Stock Trading

Several brokerage companies offer extensive mobile services and stock trading mobile tools.

Real Estate Mobile Transactions

The real estate market can be an ideal place for mobile commerce since real estate brokers and buyers and sellers are con-

stantly on the move. Most realtors offer a photo gallery for each property on your desktop or mobile device; but m-commerce can do more than that. Let us look at two examples.

Example: Using Augmented Realty

Using augmented reality (see Chapter 2), some companies in Europe and the USA allow you to point your smartphone at certain buildings in a city (e.g., Paris) and then see the property value superimposed on the image of the particular building. This technology is combined with a GPS to let the system know your location.

HomeScan is an iPhone and McIntosh application developed by California-based ZipRealty.com that allows prospective real estate customers to find, see, and download properties in a mobile environment. For more about the HomeScan app, see **ziprealty.com/iphone**. A more generic application is available from HomeSpotter.

Several other mobile real estate applications are available or being developed, combining Google Maps and Google Earth with mobile applications. Note that some people object to other people taking photos of their houses on the basis that it is an invasion of privacy.

Related to real estate, but used elsewhere, is electronic signature. A leading provider is DocuSign Inc.

SECTION 6.3 REVIEW QUESTIONS

1. Describe some of the services provided by mobile banking.
2. List some of the benefits derived from e-banking.
3. Describe mobile applications in real estate.

6.4 MOBILE ENTERPRISE SOLUTIONS: FROM SUPPORTING THE WORKFORCE TO IMPROVING INTERNAL OPERATIONS

Although B2C m-commerce gets considerable publicity in the media, for most organizations the greatest benefit from m-commerce is likely to come from applications within the enterprise. These applications mostly support the mobile workforce employees who spend a substantial part of their workday away from the corporate premises.

The majority of enterprise mobile applications are included in **enterprise mobility** or *mobile enterprise* (Fitton et al. 2012). Enterprise mobility includes the people and technology (e.g., devices and networks) that enable mobile computing applications within the enterprise. Enterprise mobility is one of the top ten items in Gartner's 2013 and 2014 strategic technology lists. Mobile enterprise apps are gaining momentum in 2016 (see Weiss 2015).

Defining Mobile Enterprise (Enterprise Mobility)

Mobile technology is rapidly proliferating in the enterprise. In the previous sections, we introduced several business-oriented examples, in what we survey "mobile enterprise applications" or in short, "mobile enterprise." This term refers to mobile applications in enterprises (to distinguish from consumer-oriented applications, such as mobile entertainment). Obviously, there are many mobile enterprise applications; examples are illustrated in Section 6.1, Figure 6.3.

A Working Definition of Mobile Enterprise

Mobile enterprise refers to mobile applications used by companies to improve the operations of the employees, facilities, and relevant supply chains within the enterprise and with its business partners. For a comprehensive description of mobile enterprise including guidelines for implementation, best practices, and case studies, see Fitton et al. (2012). The term is also known as *enterprise mobility*.

For details, see **searchconsumerization.techtarget.com/definition/Enterprise-mobility**. For a large collection of enterprise mobility and enterprise mobility applications, conduct a Google search. Finally, for a comprehensive guide to enterprise mobility, see Sathyan et al. (2013). Also do a Google Images search for "enterprise mobility." For Gartner's analysis (with figures) of enterprise mobility and the impact on IT, see **gartner.com/doc/1985016/enterprise-mobility-impact-it**.

Many companies and experts believe that mobility can transform businesses. For a comprehensive presentation, see Fonemine (2014).

The Framework and Content of Mobile Enterprise Applications

There are several proprietary frameworks for classifying mobile applications. For example, AT&T Enterprise Business provides categories such as vertical industry, healthcare, mobility, and mobile productivity. Also well known is Motorola's framework.

Mobile Workers

A **mobile worker** is usually defined as any employee who is away from his or her primary work space at least 10 h a week (or 25% of the time). According to a new forecast from International Data Corporation (IDC), the U.S. mobile worker population will grow at a steady rate over the next 5 years, increasing from 96.2 million in 2015 to 105.4 million mobile workers in 2020. By the end of the forecast period, IDC

expects mobile workers will account for nearly three-quarters (72.3%) of the total U.S. workforce. See **idc.com/getdoc.jsp?containerId=prUS25705415**.

Examples of mobile workers include members of sales teams, travelling professionals and managers, telecommuters, and repair people or installation employees who work off the company's premises. These individuals need access to the same office and work applications and data as those who work at the office. Online File W6.3 presents examples of mobile devices that support mobile workers in different areas, including salesforce automation, along with issues that arise in providing this support. The major categories covered are *salesforce automation* (SFA) and *field force automation* (FFA). In addition, Online File W6.3 describes fleet and transportation management and warehouse management. Also, see the closing case in Chapter 5.

Mobile CRM

This is a growing application area. For an overview, benefits, and a case study, see **powershow.com/view/1497bd-M2JiN/Mobile-CRM-a_Case_Study_powerpoint_ppt_presentation**. Also see the 2015 slideshow: **slideshare.net/Sage_software_solutions/mobile-crm-ppt-from-sage-software-solutions**.

Other Enterprise Mobile Applications

Hundreds of other mobile applications exist. For examples, see Motorola Solutions Enterprise Mobility (**motorolasolutions.com/US-EN/Enterprise+Mobility**; now Zebra).

An example of a popular mobile application in the field of medical care is the use of communication devices in clinics, physicians' offices, and hospitals. For an interesting case study on Maryland's Frederick Memorial Hospital and their use of Panasonic laptops, see **mobileenterprise.edgl.com/news/Panasonic-Laptops-A-Key-Player-in-Hospitals-Goals60630**.

Transportation Management

Another popular mobile application area is that of transportation management (e.g., trucks, forklifts, buses, vans). In this area, mobility is used in communication with drivers, use of control systems, surveillance, and dispatching. Examples of these applications can be seen in the Hertz Corp. opening case. Mobile devices are used extensively in airports and by airlines, traffic control systems, public bus systems, and more (see the NextBus case in Online File W6.4).

For an example of the importance of enterprise and cars' mobility, see Ford's new division called Smart Mobility. It covers both enterprise and the car's applications (Austin 2016).

Trends for 2015 and Beyond

It is clear that the number of applications and their benefits is increasing. The large global software company Infosys ("Building Tomorrow's Enterprise") provides a paper titled "Trends 2014: The Mobility Collection" (see **infosys.com/mobility**). The website describes the challenges and opportunities of enterprise mobility as well as providing a large collection of mobility-related resources (e.g., case studies, white papers).

SECTION 6.4 REVIEW QUESTIONS

1. Define mobile enterprise.
2. Describe the content of mobile enterprise applications.
3. Define mobile workers.
4. List the major segments of the mobile workforce.
5. What are some of the common benefits of mobile SFA, FFA, and CRM? (Consult Online File W6.3).

6.5 MOBILE ENTERTAINMENT, GAMING, CONSUMER SERVICES, AND MOBILE MARKETING

Mobile entertainment applications have been around for years, but only recently they have expanded rapidly due to developments in wireless devices and mobile technology. Consumer applications started in the 1990s, but really soared after 2000. This section mainly describes mobile entertainment and briefly discusses some other areas of consumer services and mobile shopping.

Overview of Mobile Entertainment

There is some debate about what actually constitutes mobile entertainment and which of its segments is really m-commerce. For example, assume you purchase a song from the Web and download it to your PC, and then download it to your MP3 player. Is this a form of mobile entertainment? What if you copy the song to a smartphone rather than to an MP3 player? What if you buy the song and download it directly from the Web to your smartphone? There are many similar "what ifs." A popular definition is: **mobile entertainment** refers to entertainment delivered on mobile devices over wireless networks or that interacts with mobile service providers.

This section discusses some of the major types of mobile entertainment, including mobile music and video, mobile gaming, mobile gambling, and mobility and sports. Mobile entertainment in social networks is covered in Chapter 8.

Mobile Streaming Music and Video Providers

Apple is the clear leader in the digital distribution of music and video. Since 2001, Apple has offered consumers the ability to download songs and videos from the Apple iTunes store. iTunes customers purchase billions of songs annually. Other major Internet music providers are **spotify.com**, **youtube.com**, and **pandora.com**. Note that cell phones today can display analog TV (popular in developing countries). Smartphones can display any programs offered on the Internet. Note that with their Dish Anywhere mobile app, Dish Network works anywhere customers can access the Internet through their smartphone or tablet, and with their Sling Technology, customers can watch live TV or DVR content on their iPhone, iPad, Android, and Kindle Fire (see **dish.com/technology/dish-anywhere**). Netflix has a free app for its subscribers to watch TV shows and movies streaming from Netflix on their mobile device (e.g., iPhone, iPad, Android). See **get.it/netflix**. Finally, Amazon.com provides free access to their Prime member to a large collection of videos.

Entertainment in Cars

Entertainment is coming to cars directly from the Internet. For example, in March 2014, Apple announced that it is teaming up with a major car maker for its *CarPlay* system. The system enables iPhones to plug into cars so drivers can request music with voice commands or with a touch on a vehicle dashboard screen. For details, see Liedtke (2014). JVC ("Experience Apps in a New Mobile Way") allows you to connect an iPod to a JVC receiver and "watch it come alive with your favorite apps." The JVC feature works with compatible car receivers and apps only. For more about JVC and its mobile features for cars, see **www3.jvckenwood.com/english/car/applink**. Future opportunities include car diagnosis, driver health monitoring, usage-based insurance, and even parental alerts. Some car brands already provide communication, telematics, social networking, and mobile commerce.

Mobile Games

A wide range of mobile games have been developed for different types of players. The vast majority of players use smartphones. Many computer games can be played on mobile devices. For example, trading card games like "Magic: The Gathering" are online or plan to be (see **accounts.onlinegaming.wizards.com**). Mobile games can be classified according to:

- **Technology.** Embedded, SMS/MMS, Web browsing, J2ME, BREW, native OS
- **Number of players.** Solo play or multiplay (from few to many players)
- **Social network-based.** Using smartphones, people can play games available in social networks, such as FarmVille on Facebook.

Several blogs provide information and discussions about the current state of the mobile gaming market, including various game offerings, as well as the technologies and platforms used to develop the games. One of the best is **pocketgamer.biz**.

The drivers of the popularity of mobile games are:

- Increasing spread of mobile devices. The more people use smartphones, the more people will play e-games.
- The inclusion of games in social networks, and particularly on Facebook.
- The streaming of quality videos is improving. The quantity is also increasing.
- The support for the gamification movement.
- The ability of vendors to generate money from ads attached to games.
- Technological improvements for downloading complex games.
- The availability of free games online.

The potential size and growth of the overall online gaming market is enormous. This explains the large number of companies involved in creating, distributing, and running mobile games.

Hurdles for Growth

Although the market is growing rapidly, game publishers (especially in China and India) are facing some major hurdles. For example, there is a lack of standards, lack of different types of software and hardware, and increasing costs. The newest generation of games requires advanced capabilities available only in higher-end mobile devices and with at least 3G networks. The ad spending in mobile games has remained low, but it is growing.

To address these hurdles, game publishers are focusing their attention on Apple's iPhone and iPad and on similar popular devices.

Mobile Gambling

Unlike some of the other forms of mobile entertainment, the mobile gambling market has a high demand but also some unique hurdles. First, mobile gambling requires two-way financial transactions. Second, online gambling sites face

major trust issues. Gamblers and bettors have to believe that the site is trustworthy and fair. Finally, while the legislative and regulatory picture is very restrictive, it is also unclear and keeps changing.

Online gambling is booming despite the fact that it is illegal in almost all U.S. states. In 2013, Delaware and Nevada were the first U.S. states to allow some online gambling, followed by New Jersey (in October 2013, Delaware became the first state to allow a "full suite" of Internet gambling). In February 2014, both Delaware and Nevada signed a deal to allow interstate online gambling. Note that Federal Law limits online gambling to players while they are physically present within each state. (This can be verified by using geolocation software.) Therefore, if one state allows online gambling, you can play only when you are in that state. As of February 2014, ten states were considering legalizing or expanding online gambling (**washingtonpost.com/blogs/govbeat/wp/2014/02/05/at-least-10-states-expected-to-consider-allowing-online-gambling-this-year**). However, in March of 2014, a bill was introduced in Congress to outlaw any Internet gambling, including in the states where it is already legal (**review-journal.com/news/new-bill-would-prohibit-internet-gambling-including-where-already-legal**).

Mobility and Sports

There are many sports mobile applications (e.g., see the closing case about the NFL in Chapter 1).

Here are some representative examples of unique sports mobile applications:

- Nike and Apple introduced an iPod shoe called Nano (a best seller), which can calculate how many calories are burned during workouts. This is done via wireless sensors. In addition to calories burned, users can get information about the distance they run. The data collected by the sensors are transmitted to the runner's iPod and headphones. In addition, the Nike+iPod system delivers music and voice entertainment, including podcasts on different sports topics. For details, see Frakes (2010).
- Personalized live sport events can be viewed on mobile devices. The user can select the event to watch. In the future, systems will be able even to predict users' preferred events during several simultaneous live sports competitions. Streaming live sports to mobile devices is becoming very popular. Unfortunately, there may be a fee to enjoy this.
- ESPN's SportsCenter offers WatchESPN, is a system where subscribers can watch ESPN on a desktop or on a mobile device. For details, see **espn.go.com/watchespn/index**.
- Eventbrite **eventbrite.com** is a company that provides several applications for event management online (e.g., creating tickets, promoting events, managing event entry).

Service Industry Consumer Applications

A large number of mobile applications are used in different service industries. Here are two examples.

Healthcare

Mobile devices are everywhere in the field of healthcare, as illustrated next:

- Using a handheld device, a physician can submit a prescription directly to participating pharmacies from her office or patient bedside. In addition, your physician can order tests, access medical information, scan billable items, and check costs and fees for services.
- Remote devices not only monitor patient vital signs while he/she is at home, but also can adjust operating medical equipment. This is done by using sensors.
- To reduce errors, mobile devices can validate the managing, tracking, and verifying of blood collected for transfusions. Promises Treatment Centers (alcohol and drug rehabilitation) uses a free mobile app (iPromises for iPhone; **ipromises.org**) that works as a virtual recovery tool (e.g., list of AA meetings in the USA and Canada, add friends, track progress). While the iPromises Recovery Companion does not generate revenue for the company, "it is aimed at bolstering Promises' reputation among patients and doctors."

For more applications, see **motorolasolutions.com/US-EN/Business+Solutions/Industry+Solutions/Healthcare** (now Zebra).

Hospitality Management

Many applications exist from travel reservations to ensuring safety in hotel rooms. Examples are: two-way radio communication, wireless hotspot solutions, food safety checks, parking lot management, asset location and management, guest services, safety and security on the premises, entertainment, inventory management, and much more. For details, see **motorolasolutions.com/en_us/solutions/hospitality.html**. One area in hospitality that benefits from a wireless system is restaurant operations.

Example: Dolphin Fast Food

Dolphin Fast Food Inc. operates 19 Burger King franchises in Minnesota. The company uses a wireless system to streamline operations, control costs, increase staff and customer satisfaction, and comply with regulations. The system includes free Wi-Fi access both in the restaurants and in a corporate management wireless network. The company realized that customers can use their mobile devices while waiting and during dining. Managers use mobile devices to

increase effectiveness. The wireless system is also used to improve security on the premises (e.g., video surveillance). The secure Internet access is protected by a VPN and it can block inappropriate content. The wireless system also operates the payment gateways and the POS terminals. For more recent material, see **dolphinfastfood.com**.

Note: In many full-service restaurants, there are several additional applications such as customers placing orders on handheld devices, where the orders go directly to the kitchen and to the cashiers, and mobile devices for advising waiting customers to come in when their tables are ready. A vendor that provides mobile programs for tablets for menus, food ordering, entertainment, and payments is Ziosk.

Tablets and Other Mobile Devices in Restaurants

Several restaurants worldwide are introducing tablets or smartphones as a substitute to paper menus. For example, Au Bon Pain is using iPads in several of their locations. One option is to provide the customers with iPads with a built-in menu. This way they can submit the order directly to the kitchen. Using the tablets, customers can order food by themselves and provide their credit card information. It seems that the use of tablets also facilitates customer relationships since self-ordering expedites the service and reduces errors in ordering.

Example: Genki Sushi

This Japan-based company has restaurants in several Asian countries, as well as in California and Hawaii. If you love sushi, you should try Genki Sushi in any of their locations. When you sit at the counter, you are provided with a wireless tablet. Using the tablet, you can find the foods and drinks you like to order (listed by categories, photos are provided). Once you complete your selection on the tablet, a summary list is returned to you for final approval. Once you approve the list on the tablet, the order is delivered to you on a train-like tray. You pick up the food, push a button to send the tray back to the kitchen, and enjoy the meal! It is fast, clean, and error free. Several videos are available at **genkisushiusa.com**. For example, watch the 6:54 min video: "Bullet Train Sushi" at **youtube.com/watch?v=PkzBGjjNzPU** or **youtube.com/watch?v=C6ISPgtrqOo**.

Other Industries

Mobile systems and applications can be found in almost all industries. For example, extensive applications can be found in m-government and m-learning (see Chapter 5). Two interesting applications are provided in the Motorola closing case to this chapter (hospitals and manufacturing). The Department of Homeland Security applies many devices, as do the transportation industry and the military. In agriculture, wireless devices can even guide tractors to work at night.

Mobile Marketing: Shopping and Advertising

Mobile marketing refers to all marketing communication activities conducted with wireless devices. Generally speaking, the use of mobile marketing is increasing exponentially. For statistics of the growth, see Strout (2015).

Mobile Shopping

Online shopping can be easier when done from your smartphone or tablet. For shopping, one needs a mobile shopping platform such as the one provided by ADCentricity Corporation (**omni-channeltechnologies.com**; acquired by Omni-channel Technologies), or by adMobile Corp. (**admobile.com**). Many apps for iPhones facilitate advertising and shopping. For example, you can download the Costco Mobile App for easy coupon redemption (see **costco.com/costco-app.html**). For a list of smartphone applications for business, see the iPhone apps. Wishpond Technologies Ltd. (2014) shows how smartphone shoppers use their devices for different shopping-related activities (e.g., checking prices, searching for reviews).

A popular app in Facebook is its "stores." There are tens of thousands of stores on Facebook. In 2015, Facebook introduced a shopping section for retail (see **wired.com/2015/10/facebook-testing-shopping-section-app**).

For examples of mobile advertising and shopping, see CSS Author (2014).

Example: Delta Airlines

Delta offers in-flight Wi-Fi connection on many of its flights (called *Delta Connect*). With Delta Connect, there is free access to many shopping and entertainment sites, including eBay. For a nominal fee, you can purchase a Wi-Fi Mobile Pass and be able to connect to the Internet via your smartphone, and send and receive mobile messages, check your e-mail, and browse the Web. For more about Delta Connect and Wi-Fi Mobile Pass, see **delta.com/content/www/en_US/traveling-with-us/onboard-experience/entertainment.html#wifi**. Other airlines offer similar capabilities.

In addition, consumers use mobile devices to locate stores, compare prices, and place orders. For example, Chinese consumers can make purchases from inside WeChat (Millward 2014). China's largest e-tailers, Taobao and T.mall offered special discounts in 2014, in order to encourage shoppers to buy from their smartphones. Finally, using text messages greatly facilitates recommendations and advice for shoppers, especially in social networks (see Chapter 7 and Butcher 2011). To see how mobile shopping is done, visit Amazon.com, JCPenney, Target, REI, and Crate & Barrel to download their shopping apps.

Example: METRO Group (AG)

METRO Group (AG) is offering an application for high-capacity mobile phones to use in its Future Store in Rheinberg, Germany. According to their site, the Mobile Shopping Assistant (MSA) "is a software package which allows customers to scan items independently, receive current pricing information and a quick overview of the value of their goods." An MSA provides online access to product descriptions and pictures, pricing information, and store maps. It also enables scanning items before they are placed in the cart, calculating the total cost of the items. At checkout, the MSA allows a shopper to "pay in passing" by using the MSA to pass scanned data to a payment terminal. For more about METRO's Future Store Initiative and functionalities of the MSA, see **future-store.org/internet/site/ts_fsi/node/25216/Len/index.html**. METRO has measured the reactions and satisfaction of the Future Store shoppers. The results indicate that customers are more satisfied and visit the store more often than before. For the 2016 mobile marketing guide, see **ebooks.localytics.com/2016-app-marketing-guide#new-page**.

Mobile Advertising

Mobile advertising is growing even faster than mobile shopping. This topic is covered in detail in Chapter 9.

SECTION 6.5 REVIEW QUESTIONS

1. Briefly describe the growth patterns of the various segments of mobile entertainment.
2. Discuss the basic components of the mobile music market.
3. What are some of the key barriers to the growth of the mobile games market?
4. Discuss some of the key legal issues impeding the growth of mobile gambling.
5. Describe the use of mobility in sports and in restaurants.
6. Describe some hospitality management mobile applications.
7. Describe mobile shopping and advertising.

6.6 UBIQUITOUS (PERVASIVE) COMPUTING

Many experts believe that the next major step in the evolution of computing will be *ubiquitous computing (ubicom)*. In a ubiquitous computing environment, almost every object in the system has a processing power (i.e., microprocessor) and a wireless or wireline connection to a network (usually the Internet or intranets). This way the objects can both communicate and process information. This section provides an overview of ubiquitous computing and briefly examines a number of related applications. (Note: The words *ubiquitous* and *pervasive* mean "existing everywhere.")

Overview of Ubiquitous Computing

Ubiquitous computing is a comprehensive field that includes many topics (e.g., see **en.wikipedia.org/wiki/Ubiquitous_computing**). Here we present only the essentials that are related to EC.

Definitions and Basic Concepts

Ubiquitous computing (ubicom) has computing capabilities embedded into a relevant system, usually not visible, which may be mobile or stationary. It is a form of human–computer interaction. In contrast, mobile computing is usually represented by visible devices (e.g., smartphones) possessed by users. Ubiquitous computing is also called *embedded computing*, *augmented computing*, or *pervasive computing*. The distinction revolves around the notion of mobility. **Pervasive computing** is embedded in the environment but typically is not mobile. In contrast, ubiquitous computing possesses a high degree of mobility. Therefore, for example, most smart appliances in a smart home represent wired, *pervasive computing*, while mobile objects with embedded computing, such as in clothes, cars, and personal communication systems, represent *ubiquitous computing*. In this chapter, however, we treat pervasive and ubiquitous as equivalent terms, and we use them interchangeably.

Context-Aware Computing

Context-aware computing is a technology that is capable in predicting people's needs and providing fulfillment options (sometimes even before a request by the end user is made). The system is fed with data about the person, such as location and preferences. Regardless of the types of the end user, the system can sense the nature of personalized data needed for different environments. In its 2014 predictions, cited earlier, Gartner, Inc. cited context-awareness as one of the top ten futuristic technologies, see **gartner.com/technology/research/top-10-technology-trends**.

In general, the technology is expected to increase productivity and result in many new applications. Carnegie Mellon University is a leader in the research of business applications in this technology.

For more on the IoT (e.g., definition, history), see **whatis.techtarget.com/definition/Internet-of-Things**.

The IoT will include many everyday things, ranging from smart grids to smart homes, clothes, cities and many others, all being networked.

From Theory to Practice

Ubiquitous computing is the basis for the Internet of Things, which is described in Section 6.7. Here we describe one topic: Smart Grids. In Section 6.7, we will describe more applications. Pervasive computing technology is the key to many smart applications. Some examples are presented next.

Smart Meters and Grids

An example of a simple application of pervasive computing is the use of smart meters for measuring electricity use. With smart meters there is no need to go from house to house to read the meter. Also, electricity consumption can be optimized.

According to the U.S. Department of Energy, a **smart grid** (**smartgrid.gov**) is an electricity network managed by utilizing digital technology. Like the Internet, the smart grid consists of controls, computers, automation, and new technologies and equipment working together, but in this case, these technologies work with the electrical grid to improve usage by responding to the quickly changing electric demand.

The benefits associated with the smart grid include:

- More efficient transmission of electricity
- Quicker restoration of electricity after power disturbances
- Reduced operations and management costs for utilities, and ultimately lower power costs for consumers
- Reduced peak demand, which will also help lower electric rates
- Increased integration of large-scale renewable energy systems
- Better integration of customer-owner power generation systems, including improved security of renewable energy systems
- Goal of zero carbon emissions

The U.S. Department of Energy (DOE) Office of Electricity Delivery and Energy Reliability provides substantial information about the smart grid (see **energy.gov/oe/technology-development/smart-grid**). According to the DOE, the smart grid devices have sensors to gather data and two-way digital communication between the device in the field and the network operations' center. The essentials of the grid are shown in Figure 6.5 and in the "Smart Grid Basics"infographicat**edf.org/energy/infographic-smart-grid-basics**.

For more information, see **en.wikipedia.org/wiki/Smart_grid**. Smart grids enable the use of smart homes and appliances. For more, see **edf.org/climate/smart-grid-overview** and **smartgrid.gov**.

CASE 6.1: EC APPLICATION BIG DATA ANALYSIS AT INRIX HELP PEOPLE AVOID TRAFFIC JAMS

INRIX (**inrix.com**) enables drivers to get real-time traffic information. Drivers can download INRIX-XD Traffic app for iOS and Android. A predictive analysis of massive data is based on a large amount of data obtained from consumers, the environment (e.g., road construction, accidents), and government sources. Such sources include:

- Real-time traffic flow and accident information collected in real time by driver services (e.g., radar)
- Flow of traffic collected by participating delivery companies and by over 100 million anonymous volunteer drivers that have GPS-enabled smartphones, reporting in real time
- Road weather conditions and forecasts
- Traffic congestion (e.g., road maintenance)

INRIX processes the collected information with proprietary analytical tools and formulas. The processed information is used to make traffic predictions. For example, it creates a picture of anticipated traffic flows and delays for the next 15–20 min, the next few hours, and the next few days. This enables drivers to plan their optimal routes. As of 2016, INRIX offers global coverage in 41 countries and in major cities, and they analyze traffic information from over 100 sources. This service is combined with digital maps. In Seattle, traffic information is disseminated via smartphones and color codes on the freeways. Smartphones also display estimated times for the roads to be either clear or become jammed. By 2016, the company covered about 5,000,000 miles of highways worldwide, delivering the best recommended routes to drivers in real time.

The INRIX system provides recommendations for decisions such as:

- Optional route for delivery vehicles
- Best time to go to work or other places
- How to reroute a trip to avoid an incident that just occurred
- Fees to be paid on highways, which are based on traffic conditions.

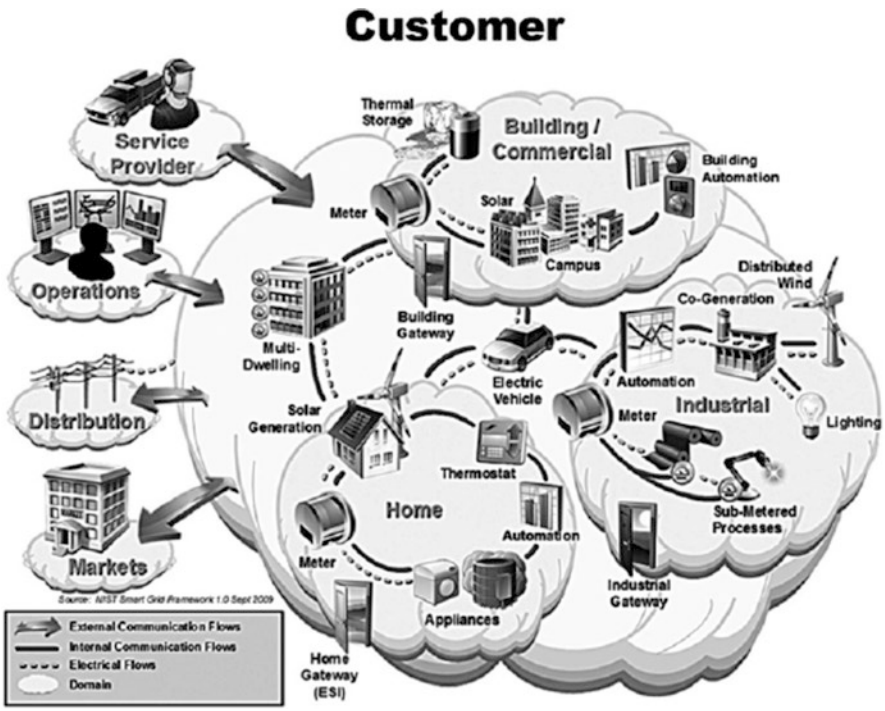

Figure 6.5 Smart grid environment (Source: National Institute of Standards and Technology, U.S. Department of Commerce, **nist.gov/smartgrid/upload/FinalSGDoc2010019-corr010411-2.pdf** accessed April 2016)

The technologies used are:

- Magnetic sensing detectors embedded under the road surface
- Closed-circuit TV cameras and radar monitoring traffic conditions
- Public safety and traffic information
- Information about free access and departure flows
- Toll collection queues.

According to their website, INRIX has partnered with Clear Channel Radio to broadcast real-time traffic data directly to vehicles via in-car or portable navigation systems, broadcast media, and wireless and Internet-based services. Clear Channel's Total Traffic Network is available in more than 125 metropolitan areas in four countries. See **inrix.com/partners.asp** for more about INRIX's partners and their services.

The INRIX Traffic app (available for download at **inrix-traffic.com**) is available for all smartphones and supports ten languages, including English, French, Spanish, and Hungarian. For the INRIX Traffic free features, see **inrixtraffic.com/features**.

Sources: Based on **inrix.com**, **inrix.com/inrix-traffic-app**, and **inrix.com/why-inrix/customers-partners** (all accessed April 2016).

Questions

1. Why is this service considered m-commerce?
2. What role do sensors play in the systems?
3. What is the revenue model of the company?
4. Enter the company's website and find additional services provided.

Implementation Issues in Ubiquitous Computing

For ubiquitous systems to be widely deployed, it is necessary to overcome many of the technical, ethical, and legal barriers associated with mobile computing (Section 6.9), as well as a few barriers unique to ubiquitous, invisible computing.

Among the nontechnical issues, the possible loss of individual privacy seems to be at the forefront. There is a concern about "Big Brother" watching. In some cases, privacy groups have expressed a concern that the tags and sensors embedded in items, especially retail items, make it possible to track the owners or buyers of those items. A larger problem is that the information processed by tags, sensors, and other devices may be misused or mishandled.

SECTION 6.6 REVIEW QUESTIONS

1. Define ubiquitous computing.
2. Describe the smart grid and the role of sensors there.
3. Describe a smart home.
4. In what ways can pervasive computing impinge on an individual's right to privacy?

6.7 THE INTERNET OF THINGS AND M-COMMERCE

The topic of the Internet of Things (IoT) has been receiving significant attention since 2014. While its applications are still emerging, it has a tremendous potential for creating value and innovations in many fields, including e-commerce (e.g., see Manyika et al. 2015). In this section, we present the essentials of IoT and its potential applications that are related to e-commerce. Most of these are in the area of m-commerce. For the impact of IoT on e-commerce, see Constantinou and Sellebraten (2015) and Mehra (2015).

The Essentials of IoT

The **Internet of Things (IoT)** is an evolving term with several definitions. In general, The IoT refers to a situation where many objects (people, animals, items) with embedded microprocessors are connected mostly wirelessly to the Internet. That is, it uses ubiquitous computing. Analysts predict that by the year 2020, there will be more than 50 billion devices connected to the Internet, creating the backbone of the IoT. The challenges and opportunities of this disruptive technology are discussed in an interview with Peter Utzschneider, vice president of product management for Java at Oracle (see Kvita 2014).

Embedding mobile devices into items everywhere and connecting all devices to the Internet permits extensive communication between users and items. This kind of interaction opens the door for many applications. For business applications of the Internet of Things, see Jamthe (2015). In addition, check the "Internet of Things Consortium" (**iofthings.org**) and their annual conferences. For the technology, see Holler et al. (2014).

Definitions

There are many definitions of IoT. Wikipedia provides this definition:

"*The Internet of Things* (IoT) is the network of physical objects-devices, vehicles, buildings and other items embedded with electronics, software, sensors, and network connectivity—that enables these objects to collect and exchange data. The Internet of Things allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy, and economic benefit; when IoT is augmented with sensors and actuators, the technology becomes an instance of the more general class of cyber-physical systems, which also encompasses technologies such as smart grids, smart homes, intelligent transportation, and smart cities. Each thing is uniquely identifiable through its embedded computing system but is able to interoperate within the existing Internet infrastructure."

According to Miller (2015), these are the characteristics of the Internet: IoT is a connected ecosystem in which:

- Large numbers of objects (things) can be connected
- Each thing has a unique definition (IP address)
- Ability to receive, send and store data, automatically
- Delivered over the wireless Internet
- Built upon machine-to-machine (M2M) communication

The Structure of IoT Applications

Things in IoT refer to a variety of objects and devices from cars and home appliances to medical devices, computers, fitness tracers, hardware, software, data, sensors, and much more. Connecting "things" and allowing them to communicate is a necessary portion of an IoT application; but for more sophisticated applications, we need other parts: A control system and a business model. The IoT enables the "things" to sense or be sensed wirelessly across the network. A non-Internet example will be a temperature control system in a room. Another non-Internet example is a traffic light at intersections of roads where cameras photograph the number of cars coming from each direction and a control system adjusts the time for changing the lights according to programmed rules. Later on, we will introduce some Internet-based applications. The major objective of IoT systems is to improve productivity, quality, speed, and quality of life.

The Major Benefits of IoT

According to Basu and Didyala (2014) and Miller (2015), the major benefits of IoT are:

- Create new revenue stream
- Optimize asset utilization
- Improve sustainability
- Improve workers' productivity
- The Internet of Things is changing and improving everything (McCafferty 2015)
- Systems will anticipate our needs
- People will make smarter decisions/purchases
- Greater accuracy
- Identify problems quickly (even before they occur)
- Reduce cost by automating processes
- Instant information availability
- Quick and inexpensive tracking
- Expedite problem resolution and recovery
- Support facility integration

The Drivers of IoT

The following are the major drivers of IoT:

- 50–75 billion "things"- may be connected (by 2020–2025)
- Connected autonomous "things"/systems (e.g., cars)
- Broadband Internet is more widely available
- Cost of connecting devices is decreasing
- More devices are created (via innovation) and they are connected (e.g., see Fenwick 2016)
- More sensors are built into devices
- Smartphones' penetration is sky-rocketing
- Wearable devices are all over
- Speed of moving data is increasing; 60 HTz
- Protocols are developing for IoT (e.g., WiGig)
- Customer expectations are on the rise

How the IoT Works

The following is a comprehensive process for IoT. In many cases, IoT follows only portions of this process.

The process is explained in Figure 6.6. The Internet ecosystem (top of the figure) includes a large number of things. Sensors and other devices collect information from the ecosystem. This information can be stored and/or processed (including data mining). This analysis converts the information into knowledge and/or intelligence. Machine learning may help in turning the knowledge into decision support (made by people and/or machines).

The decisions help in creating innovative applications, new business models, and improvements in business processes. These result in "actions," which may impact the original or other things.

Note that most of existing applications are in the upper part of the figure, which is called "sensor-to-insight," meaning opt to the creation of knowledge. However, now, the focus is moving to the entire cycle, i.e., sensor-to-action (see Ricktun 2016).

Illustrative Examples of Applications

We start with a well-known example. Your refrigerator can sense the levels of food and text you when inventory is low (sensor-to-insight). One day the fridge will be able to place an order, pay for it, and arrange delivery (sensor-to-action).

The following are a few examples of existing applications.

Existing Application of IoT

The following examples are related to e-commerce, based on Koufopoulos (2015):

- **Hilton Hotel**. Guests can check-in directly to their rooms with their smartphones (no check-in lobby is needed, no keys are needed). Other hotels will follow.

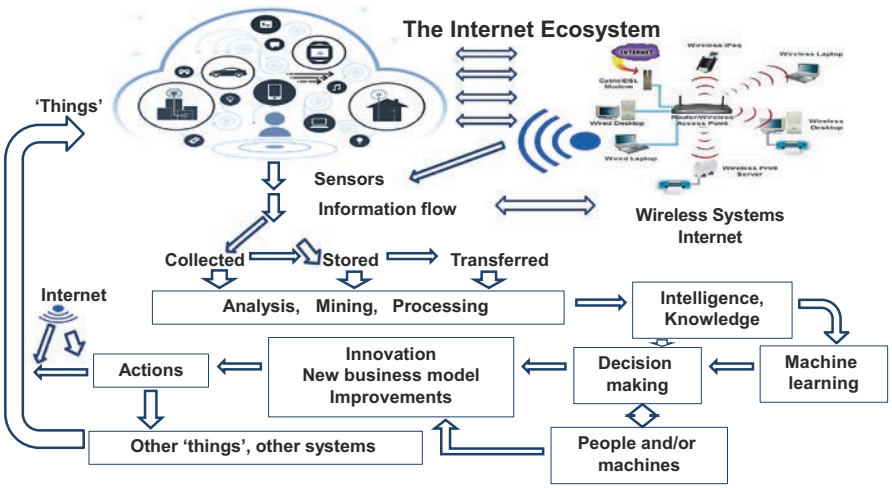

Figure 6.6 How the IoT works

- **Ford**. Users can connect to apps by voice. Coming up: autopay for gas and preorder at Starbucks.
- **Tesla**. Tesla's software autonomously schedules a valet to pick up a car and drives it to Tesla's facility when a need for repair arises.
- **Johnnie Walker**. The Whiskey company connected 100,000 whiskey bottles to the Internet for Brazil's Father's day. Using smart labeling, buyers can create a personalized video. Fathers can share the videos on social networks. Fathers get promotions to buy the whiskey if they like it.
- **Apple**. Enable users of iPhone, Apple watch, and Homekit with Apple Pay to streamline shopping.
- **Starbucks Clover Net in the Cloud**. This system connects coffee brewers to customers' preferences. The system also monitors employee's performance, improves recipes, tracks consumption patterns, and more.

A large number of consumer applications of IoT is reported by Jamthe (2015) and Miller (2015). Here are more applications:

Example: Nest-a Google Company

A leading manufacturer of IoT applications is Google's Nest. The company is a producer of programmable self-learning, sensor-driven, Wi-Fi-enabled products. In spring 2016, the company had three products:

- **The learning thermostat.** The device learns what temperature and humidity level people like and controls the air conditioner/heater accordingly. The company claims it has an average savings of 13% of energy, which is good enough to pay for the device in 2 years; see **nest.com/thermostat/meet-nest-thermostat/?alt=3**.
- **Smoke detector and alarm.** This device tests itself automatically and lasts for about a decade. It is controlled from a smartphone. For details, see **nest.com/smoke-co-alarm/meet-nest-protect**.
- **Nest.com.** It is a Webcam-based system that enables you to see what is going on in your home when you are away, from your smartphone or desktop computer. The system turns itself on automatically when nobody is at home. You can monitor your pets, babies, etc. There is a recorder that allows you to go back in time. For details, see **nest.com/camera/meet-nest-cam**.

Many companies are experimenting with IoT products for retailing (B2C), for B2B operations, for transportation, logistics, factory warehousing, and more. For details, see Miller (2015) and Jamthe (2015).

Of all the consumer-related products, three are of utmost importance: smart homes, smart cars, and smart cities.

Smart Homes and Appliances

In a smart home, the home appliances such as computers, refrigerators, washers, dryers, televisions, and security systems are interconnected and can be controlled remotely by smartphone or via the Internet. For an overview, see **smarthomeenergy.co.uk/what-smart-home** and Miller (2015).

In the United States, thousands of homes are connected already to such systems and other countries are warming to the idea. Currently, smart home systems support a number of different tasks:

- **Lighting.** Users can manage their home lighting from wherever they are.
- **Energy management.** A remote home heating and cooling system can be controlled via remote to adjust the thermostat in the house (e.g., Nest-a).
- **Water control.** WaterCop (**watercop.com**) is a system that reduces water damage by monitoring leaking water via a sensor, which sends a signal to the valve, causing the valve to close.
- **Home and senior communities security and safety.** Home security and safety systems can be programmed to alert you to a security-related event on your property. Home security can also be supported by cameras, so you can remotely view your property in real time. Sensors can be used at home to detect intruders, keep an eye on working appliances, and much more.

  Security measures are common in assisted living facilities and in senior communities, and for seniors who live independently. For example, the iHealthHome Touchscreen system collects data and communicates with the company's software. According to their website, it is a comprehensive monitoring and communication system for professional caregivers and independent living communities. Family caregivers and physicians are given remote access to the patient's health data. Using this technology, the iHealthHome program reminds seniors of their daily appointments, makes the Internet useful, keeps their mind occupied, and much more. iHealthHome also reminds seniors to take their medicine, monitor their blood pressure, and stay in touch with their caregiver.
- **Home entertainment.** Audio and video equipment can be programmed to respond to a remote control device. For instance, the remote control for a stereo system located in the family room can command the system to play on speakers installed anywhere else in the house. Home automation performs for the user all from one remote and all from one button.
- **Smart appliances.** According to **smartgrid.gov**, a smart appliance is "an appliance that includes the intelligence

and communications to be automatic or remote-controlled based on user preferences or external signals from a utility or third party energy service provider. A *smart appliance* may utilize a *Home Area Network* to communicate with other devices in the customer's premise, or other channels to communicate with utility systems."

For more about home automation, see **smarthome.com/sh-learning-center-what-can-i-control.html**. To see the various apps used for home control, see **smarthome.com/android_apps.html**.

Smart Cities

The idea of smart cities took off around 2007 when IBM launched their Smart Planet project and Cisco began its Smart Cities and Communities program. The idea is that in smart cities, digital technologies (mostly mobile-based) facilitate better public services for citizens, better utilization of resources, and less negative environmental impact. For resources, see **ec.europa.eu/digital-agenda/en/about-smart-cities**. Townsend (2013) provides a broad historical look and current coverage of the technologies. In an overview of his book, he provides the following examples: "In Zaragosa, Spain, a 'citizen card' can get you on the free city-wide Wi-Fi network, unlock a bike share, check a book out of the library, and pay for your bus ride home. In New York, a guerrilla group of citizen-scientists installed sensors in local sewers to alert you when storm water runoff overwhelms the system, dumping waste into local waterways." According to Editors (2015), smart cities will use 1.6 billion connected things in 2016 (Editors 2015).

In many countries, governments and others (e.g., Google) are developing smart city applications. For example, India is planning to develop 100 smart cities (see **enterpriseinnovation.net/article/india-eyes-development-100-smart-cities-1301232910**).

Note: For many case studies and examples of IoT, see **ptc.com/internet-of-things/customer-success**, **divante.co/blog/internet-e-commerce**, Greengard (2016), and Kuntz and Becker (2015).

Related to smart cities are smart factories (Libelium 2015). In smart cities, one will be able to find connected and self-driven cars (see Hamblen 2016 and our next section).

Smart Cars

Smart cars, also known as driverless cars, robot-driven cars, and autonomous cars are already on the roads in several places. The concept was initiated by Google (named Google Chauffeur), and it is becoming a reality, with several states in the USA getting ready to allow it on the road. These cars are electric, and they can create a revolution by their ability to reduce emissions, accidents, and traffic jams (e.g., see Neckermann 2015). Greenough (2015) estimated 10 million such cars to be on the road in the USA by 2020. Thus far these cars are being tested in several cities worldwide.

The cars possess sensor systems that may prevent collision and they can be completely autonomous. (Today, they still include a human safety driver.) Among the many implementation issues are legal issues, cost, privacy invasion, and more.

Despite these issues, several car manufacturers are ready to sell such cars soon (e.g., BMW, Mercedes, GM, Tesla, and of course—Google). For more information, see Bridges (2015).

SECTION 6.7 REVIEW QUESTIONS

1. Define Internet of Things.
2. Explain its major components.
3. What are its major benefits?
4. List the major drivers of IoT.
5. Explain how IoT works (see Figure 6.6).
6. Provide some consumer-related applications.
7. Describe smart homes and appliances.
8. Describe smart cities.
9. What is a self-driving car?

6.8 WEARABLE COMPUTING AND SMART GADGETS: WATCHES, FITNESS TRACKERS, AND GLASSES

In this section, we will briefly describe several emerging topics related to wireless computing.

Wearable Computing Applications and Devices

Wearable computing and devices received a major boost in 2015/2016 due to the expansion of the Internet of Things. For a comprehensive slide presentation, see Chamberlin (2014). Wearable computing devices have been used in industry since the mid-1990s. Typical devices were wireless computers tied to people's wrists, digital cameras mounted on the head, mobile devices attached to a belt, and much

more. These became popular in the consumer market when Samsung came out with a computer mounted on a watch (smartwatch), and Apple released its Apple Watch in April 2015. Google has released a Nexus-like platform for wearables, called Android Wear.

Wearables are getting popular. For example, medical tracking of patients with chronic diseases is on the increase, and for $130 you can place a device on your dog's collar to track its movements.

Vijayan (2014) stated, "Wearable computers, like fitness bands, digital glasses, medical devices, and smartphones promise to radically transform the manner in which information is collected, delivered, and used by, and about, people. Many of the emerging technologies promise significant, and potentially revolutionary, user benefits. But as with most Internet-connected devices, the growing proliferation of wearables has spawned both privacy and security concerns." Vijayan presents seven devices and their hidden dangers. These devices are: digital glasses (e.g., eyewear like Google Glass), wearable/embedded medical devices, police cameras (wearable "cop cams"), smartwatches, smart clothing, and fitness bands/activity monitors. We describe some later in this section.

Dale (2014) describes a wearable headband that can read the brain's activity. The Canadian company Interaxon developed the device, called Muse (see **interaxon.ca/muse**). In 2014, Amazon opened a special store for wearable devices.

Enterprise Wearables

The wearables described earlier are mostly used as consumer products. Some companies are using enterprise applications. There are a large number of wearables, which already have been used for a long time in enterprises. For a report on products, manufacturers case studies and applications, see the 2016 white paper titled: "Enterprise Wearable Technology Case Studies/Tractica." It includes 40 different applications. See **tractica.com/resources/white-paper/enterprise-wearable-technology-case-studies**.

According to the PWC report, **pwc.com/us/en/advisory/business-digital-technology-trends-wearables.html**: "Wearables hold so much promise because they provide a hands-free way for employees to engage in real time with context-specific business information, customers, or one another. For example, companies across industries can provide tailored, in-the-moment job training to workers equipped with smart badges or wearable displays. In industrial settings, goggles, lanyards, or sensor-embedded clothing could help workers who are performing repetitive or dangerous tasks increase productivity and reduce injuries."

Note: Wearable devices are subject to serious privacy and security problems. For a discussion, see Maddox (2016).

State of the Art

Japan is one of the leaders in developing wearable devices. For example, Patrizio (2014) reports the following: "A Japanese university has shown off a tiny personal computer that is worn on the ear and isn't much larger than many Bluetooth headsets, but it can be controlled with the blink of an eye or the click of a tongue."

For the state of the art in 2016, see McDowell (2016). For a slide show of wearable devices and their applications, see Khillare and Bobade (2016).

Three representative devices, smartwatch, fitness trackers, and smart glasses are presented next.

Smartwatches

A **smartwatch** is a computerized wrist watch with functionality that is enhanced beyond timekeeping. Today, smartwatches are wearable computers. Many run mobile apps, using a mobile operating system.

They can function as portable media players; others also feature full smartphone capabilities.

Like other computers, a smartwatch may collect information from internal or external sensors. It may control, or retrieve data from other instrument or computers. It may support wireless technologies like Bluetooth, Wi-Fi, GPS, and communication technologies.

For specific features, see the websites of smartwatches' manufacturers, such as Apple, Google, Pebble, Sony, Samsung, and several more. For a 2016 review, see Lamkin (2016a). For an overview, see **en.wikipedia.org/wiki/smartwatch**. For the capability to shop, see Arthur (2015). A special category of smartwatches is fitness (or activity) trackers. Some watches can be used as medical devices (e.g., Apple's Kardia, see Broussard 2016).

Fitness (Activity) Trackers

An activity tracker is a device or application for monitoring and tracking health and fitness-related metrics such as distance walked or run, calorie consumption, heartbeats, and even the quality of sleep. Today, many of these devices are wearable, which may be connected to a computer. For an overview, see **en.wikipedia.org/wiki/activity_tracker**. For the 2016 major manufacturers (e.g., Fitbit, Jawbone, Misfit, and Garmin), see Stables (2016).

Note that some trackers and regular smartwatches look very fashionable (e.g., Fibit Blaze). These are becoming more stylish with time. For the best fitness trackers for 2016, see **pcmag.com/article2/0, 2817,2404445,00.asp**. For how fitness trackers work, see Nield (2016).

Digital (Smart) Glasses

A digital glasses is an optical, head-mounted device that looks like regular eyeglasses. It was pioneered by Google (see **en.wikipedia.org/wiki/Google_Glass**). The device displays Internet information and it responds to voice commands. Smart glasses are closely related to virtual reality and augmented reality (see Chapter 2). The most well-known glasses are Google glass. For the best smart glasses for 2016, see Lamkin (2016b).

Google Glass

According to Petroff (2013), Google Glass (and other "smart glasses") may save companies $1 billion a year by 2017 due to increased productivity of employees, especially those who need to use both hands to perform complex tasks (e.g., by surgeons, technicians). Also the devices can be used, for example, by insurance agents to video damaged property while simultaneously checking on the costs of replacement. Several of the benefits of smart glasses are the same as those of all wearable devices.

Some people love the glasses; others hate them. A 2014 poll, conducted by the research firm Toluna, found that 72% of Americans did not want to wear Google Glass due to privacy and security issues (see **mashable.com/2014/04/07/google-glass-privacy**). Google is trying to counter what they call "the 10 myths about Google glass."

Google's Smart Glasses

In 2012, Google introduced its *Project Glass*, which takes the major functionalities of a smartphone and embeds them into a wearable device that looks like virtual reality glasses. Google Glass has a smartphone-like display, allowing you to take basic smartphone features (messaging, e-mail) and making them hands free. For more on the features of Google Glass, see **gizmag.com/google-glass-review/30300**. The Google Glass Field Trip app can now be activated by voice commands (**mashable.com/2014/04/29/field-trip-google-glass-update**.

Other companies in the USA, Japan, and Korea have smart glasses (e.g., Sony). Note that Google Glass is getting more stylish by adopting the look of Ray-Ban and Oakley eye glasses' top brands.

SECTION 6.8 REVIEW QUESTIONS

1. Describe wearable computing devices.
2. What are the benefits of wearable devices?
3. What are smart glasses? Why do some people have issues with them?
4. Describe smartwatches.
5. Define fitness trackers.

6.9 IMPLEMENTATION ISSUES IN MOBILE COMMERCE: FROM SECURITY AND PRIVACY TO BARRIERS TO M-COMMERCE

Several issues need to be considered before applying mobile applications. Here, we discuss only a few of them.

Despite the vast potential benefits for mobile commerce to change the way many companies do business, several barriers are slowing down the deployment of m-commerce applications. The major barriers to m-commerce are security, performance, availability, cost-benefit, lack of clear strategy, difficulty in integrating with wireline IT, and difficulty in customizing applications. In this section, we examine only some of these barriers, starting with the issue of security. For more on implementation issues, see the three-part video series on Mobile Commerce. Part 1 is titled "Mobile Commerce: Part 1: Where Are We Now?" (8:03 min), available at **youtube.com/watch?v=aO--a5yhJCg**. Part 2 is titled "Mobile Commerce: Part 2, The Evolution" (8:51 min), available at **youtube.com/watch?v=fBlLxVeCouo**. Part 3 is titled "Mobile Commerce: Part 3, How to Make mCommerce Work" (8:23 min), available at **youtube.com/watch?v=DsDGNLjYPxQ**.

M-Commerce Security and Privacy Issues

In 2004, Cabir became the first known wireless worm that infects mobile phones. It spreads through Bluetooth devices. Since then, attacks on phones, including smartphones, have increased rapidly. For more on the Cabir worm, see **f-secure.com/v-descs/cabir.shtml**.

Most Internet-enabled cell phones in operation today have basic software embedded in the hardware. This makes programming malware difficult. However, as the capabilities of smartphones and tablets improve, the threat of malware attacks increases. The widespread use of smartphones opens up the possibility of viruses coming from Internet downloads. Although m-commerce shares some of the same security issues as general e-commerce (see Chapter 10), there are some differences between the two.

The basic security goals of confidentiality, authentication, authorization, and integrity (Chapter 10) are just as important for m-commerce as they are for e-commerce, but they are more difficult to ensure. Specifically, m-commerce transactions usually pass through several networks, both wireless and wired. An appropriate level of security must be maintained on each network, despite the fact that interoperability among the various networks is difficult.

In general, many of the defense mechanisms used in IT and e-commerce security are also used in m-commerce. However, given the unique nature of mobile security, additional defense methods may be needed. For example, there are many anti-

theft apps that can help you find your phone and keep your personal data safe from identity theft. For securing the IoT, see Hu (2016).

Privacy

Invasion of privacy is one of the major issues related to the use of mobile computing technologies, especially LBS, tracking, RFID, and context aware applications (see Chapter 10 for a discussion of privacy issues).

Related to this is the issue of security and especially combating fraud, see presentation in Chapter 10.

Technological Barriers to M-Commerce

The navigation systems for mobile applications have to be fast in order to enable rapid and easy search and shopping. Similarly, the information content needs to meet the user's needs. Other technical barriers related to mobile computing technology include limited battery life and transmission interference with home appliances. These barriers and others are listed in Table 6.1. Note that with the passage of time the technological barriers are decreasing.

Failures in Mobile Computing and M-Commerce

As with many new technologies, there have been many failures of m-commerce initiatives as there are entire m-commerce companies that collapse. It is important to anticipate and plan for possible failures and to learn from those failures.

Ethical, Legal, Privacy, and Health Issues in M-Commerce

The increasing use of mobile devices in business and society raises new ethical, legal, and health issues that individuals, organizations, and society will have to resolve.

One workplace issue is the isolation that mobile devices can impose on a workforce. Some workers have had difficulty adjusting to the m-commerce environment since there is less need for face-to-face interactions that some people prefer.

The personal nature of mobile devices also raises ethical and legal issues. Most employees have desktop computers both at home and at work, and they can easily separate business and personal work accordingly. However, it is not so easy to separate work and personal life on a cell phone, unless one carries two phones. The concept of "bring your own device" (BYOD) is spreading rapidly, introducing issues of management, monitoring, and security. For example, if an organization has the right to monitor e-mail communications on its own network, does it also have the right to monitor voice communications on a company-owned or on a BYOD smartphone?

A widely publicized but unproven potential risk is the potential health problems (e.g., cancer) from cellular radio frequency emissions. Cell phone addiction also is a problem.

Other ethical, legal, and health issues include the ethics of monitoring staff movements. Finally, there is the issue of privacy infringement and protection while implementing some m-commerce applications.

Table 6.1 Technical limitations of mobile computing

Limitation	Description
Insufficient bandwidth	Sufficient bandwidth is necessary for widespread mobile computing, and it must be inexpensive. It will take a few years until 4G and LTE are the norm in many places. Wi-Fi solves some of the problems for short-range connections
Security standards	Universal standards are still under development. It may take few more years for sufficient standards to be in place
Power consumption	The longer the life of a battery, the better the devices are (constantly improving)
Transmission interferences	Weather and terrain, including tall buildings, can limit reception. 2.4 GHz range may interfere with Bluetooth and Wi-Fi 802.11b transmissions
GPS accuracy	Tall buildings may limit the use of location-based m-commerce
Potential health hazards	Potential health damages (e.g., cancer) from cellular radio frequency emission are under investigation. Known health hazards include cell phone addiction, thumb-overuse syndrome, and accidents caused by people using cell phones (e.g., texting) while driving
Human–computer interface	Some people, especially the elderly or those with vision problems, may have difficulty using a small monitor and keypad in cell phones
Complexity	Many add-ons and features may make the device difficult to use

Enterprise Mobility Management

According to TechTarget, *enterprise mobility management* (EMM) is "an all-encompassing approach to securing and enabling business workers' use of smartphones and tablets." It includes data and access security, physical device tracking and configuration, and application management (see **i.zdnet.com/whitepapers/SAP_Enterprise_Mobility_for_Dummies_Guide.pdf**). Since more workers are bringing smartphones and tablets and using them in the enterprise, it is necessary to support these devices. This is where enterprise mobility management enters the picture. With an increasing number of people using mobile devices for many applications, mobility management has become a significant and challenging task.

Mobility management can be divided into the following areas:

- **Mobile Device Management (MDM)**. Some companies allow their IT department to have full control over all mobile devices. Others allow users to maintain their devices mostly on their own (see a discussion on BYOD later in this section). Special software can help companies with their MDM.
- **Mobile Application Management (MAM)**. Similar to MDM, MAM attempts to control all applications in a company.
- **Mobile Information Management (MIM)**. This is a newer area that deals with cloud computing.

Related to these are two specific areas: Bring your own device ("BYOD") and mobile apps. These are briefly described next.

The BYOD Issue

The proliferation of mobile devices in the enterprise raises the issue of "Bring Your Own Device" (BYOD). Many employees like to use their personal devices for work-related activities (e.g., their iPhones for corporate mail, travel reservations). They bring their devices to their workplace and use those devices to access the company's network. BYOD may save the company money. On the other hand, there are many implementation issues ranging from security to reimbursement policy to technical support.

There are many suggestions regarding the management and control of BYOD. Major consulting companies such as Gartner, Inc. (**gartner.com**) and Forrester Research, Inc. (**forrester.com**) provide free white papers, webinars, and reports on BYOD.

Mobile Apps and Their Management

According to WhatIs.com, a **mobile app** "is a software application developed specifically for use on small, wireless computing devices, such as smartphones and tablets, rather than desktop or laptop computers. Mobile apps are designed with consideration for the demands and constraints of the devices and also to take advantage of any specialized capabilities they have. A gaming app, for example, might take advantage of the iPhone's accelerometer" (**whatis.techtarget.com/definition/mobile-app**).

Mobile applications are very popular for both consumers and use inside the enterprise. For example, as of spring 2016, Apple had about 1.2 million approved applications in its app store. McKendrick (2014) proposes six ways to bring more mobile apps into the enterprise.

Build (or Bring) Your Own App (BYOA)

BYOA is an increasing trend toward the creation of applications by users rather than by software developers. Unfortunately, BYOA creates security challenges. For a practical guide to affordable mobile app development, see Salz and Moranz (2013).

Other Managerial Issues

Several other issues are related to mobility management. Examples are: the issues of ROI measurement, determining the mobility platform, training, budget and cost control, and justification. Another issue is integration, collaboration, and communication. An interesting issue is the increased flow of data and how to handle it (see Knight 2015).

Conclusion

Despite the many obstacles, mobile commerce is growing rapidly, faster than EC in general. Wearables and IoT are growing the fastest. For mobile commerce trends for 2016, see Moovweb (2016).

SECTION 6.9 REVIEW QUESTIONS

1. How is m-commerce security similar to e-commerce security? How is it different?
2. Discuss a few of the technical limitations of m-commerce.
3. Describe the potential impact of mobile devices on organizational, health, and privacy issues.
4. Describe mobility management.
5. Define BYOD and its challenges.
6. Describe mobile apps. Why are they so popular?

MANAGERIAL ISSUES

Some managerial issues related to this chapter are as follows.

1. **What is your m-commerce strategy?** M-commerce is composed of these elements: support for internal business processes; an extension of existing e-business customer services,

availability of suppliers and other business partners; and an extension of Web-based services to smartphone and tablet users. The key to success in the m-commerce world is to define your overall e-commerce and m-commerce business strategy, determine which segments are critical to the strategy and the order in which they need to be addressed, and which of the available mobile technologies will support the strategy and the critical segments.

2. **Are there any clear technical winners?** Among mobile devices, the answer is yes. Many like the all-in-one devices, such as smartphones or tablets. There still is a confusing multiplicity of standards, devices, and supporting hardware. The key is to select a suitable platform and infrastructure that can support the existing needs of most users. While m-commerce is becoming very popular in marketing, payments, manufacturing, and services, l-commerce applications are still in their infancy.
3. **How should BYOD be managed?** Device management becomes a complex issue since employees started to bring and use their mobile devices at work. Mobile devices are made by different manufacturers and use different operating systems. Add to this the thousands of apps and you need a good system and policies to manage BYOD. For a comprehensive strategy for managing BYOD, see **cisco.com/c/en/us/solutions/byod-smart-solution/overview.html** and Reisinger (2013).
4. **How to prepare for IoT?** It depends on the application. There will be several organizational and technological issues (e.g., see Deichmann et al. 2015 for suggestions). The transition to the new technology can be complex. Also, justification may be difficult.
5. **Which applications should be implemented first?** Although there is little interest associated with various m-commerce applications, especially location-based services, mobile applications must be judged like any other business technology—by ROI, cost-benefit analysis, potential cost reductions, and improved efficiency. Enterprise applications such as supporting the mobile workforce, fleets, and warehouses have resulted in the highest returns. Implementers need to remember that the m-commerce platform is the platform most preferred by younger generations. It is also important to understand why Japan and Korea have a much higher penetration rate in m-commerce while other countries with the same level of mobile telecommunication infrastructure do not have a similar level of penetration. Implementation includes the topic of mobile device management (see Oliver 2008).

SUMMARY

In this chapter, you learned about the following EC issues as they relate to the chapter's learning objectives.

1. **What is m-commerce, its value-added attributes, and fundamental drivers?** M-commerce is any e-commerce activity conducted with mobile devices over a wireless telecommunications network. M-commerce complements e-commerce. M-commerce can help a business improve its value proposition to customers by utilizing its unique attributes: ubiquity, convenience, interactivity, personalization, and localization. Currently, m-commerce is driven by the large number of users of mobile devices; a developing "smartphone culture" among youth; demands from service-oriented customers; vendor marketing; declining prices; an increase in size of the mobile workforce; improved ratio of performance to price; and the increasing bandwidth.
2. **What is the mobile computing environment that supports m-commerce?** The mobile computing environment consists of three key elements: mobile devices, wireless networks, and services. Although mobile computing devices vary in size and functionality, they are rapidly moving toward an all-in-one device that is overcoming some of the limitations associated with poor usability, such as small screen size, limited bandwidth, and restricted input capabilities. Even with their limitations, mobile devices offer a series of support services, principally SMS, voice, and location-based services, which differentiate m-commerce from e-commerce.
3. **Financial and banking applications.** Many EC applications in the financial services industries (such as e-banking) can be conducted with wireless devices. Most mobile financial applications are simply wireless versions of their wireline counterparts, and they are conducted via SMS or the mobile Web system. Mobile banking and mobile payments are examples of this activity. More and more, banks throughout the world are enabling their customers to use mobile devices to make payments, view paid checks, compare bank services, transfer funds, and locate branches.
4. **Enterprise mobility applications.** The major application is that of supporting the various types of workforce (e.g., salespeople, repair people, and field force). Other areas are mobile CRM, inventory management, and wireless job dispatch. These applications offer high return on investment, even in the short run. Additional areas are fleet and transportation management and applications in warehouses.
5. **Consumer and personal applications and mobile entertainment.** One of the fastest growing markets in m-commerce is mobile entertainment. Mobile entertainment encompasses mobile music, games, gambling, adult entertainment, and specialized user-generated content. Among these, mobile music is the largest segment, but mobile video is the fastest growing. Mobile gambling is also growing rapidly despite the legal restrictions by various government bodies. Also growing are mobile sports applications.

Service industries using mobile applications include healthcare, hospitality, public safety, crime prevention, and homeland security.

6. **Ubiquitous computing.** The *Internet of Things (IoT)* is upon us, and so are cutting-edge and futuristic systems that involve many embedded and invisible processors. These systems appear in several formats, notably those that are context aware, and they enable intelligent and useful applications. They are interrelated with sensory systems and provide for smart applications such as smart electric grids, smart homes, smart buildings, smart cars, and much more.
7. **The Internet of Things.** It is an application of ubiquitous computing that may change the way we live and work. Basically, it is a system composed of sensors that collects information from devices attached to things in the cloud (e.g., cars, people, computers). The collected information is processed and results are communicated to people or to computers. In advanced systems, the processed information is translated automatically to actions. Implementation ranges from smart homes and appliances to smart cars, autonomous B2C and B2B, and much more. Being in its infancy, the technology has technical, legal, and organizational issues.
8. **Google Glass, smartwatches, and fitness trackers.** Wearables are getting more important as they relate to the Internet of Things and to improved productivity in the enterprise. Wearables improve business processes and communication. They free people's hands, so business processes can be improved. They can be controlled by voice and even by the brain. Most benefits are derived when the wearables are connected to the Internet. A wearable device that gets lots of publicity is Google Glass (and similar smart glasses). On one hand these can increase productivity, but on the other hand many fear the potential of invasion of privacy. Wearables and other mobile devices are important components in smart cities. Designers of smart cities aim to improve both government services to citizens and the dwellers quality of life.
9. **Security and other implementation issues.** Even though the potential benefits of m-commerce applications may be substantial, their implementation faces a number of challenges, including technical interruptions and gaps in network coverage; performance problems created by slow mobile networks and applications; managing and securing mobile devices; and managing mobile network bandwidth. The mobile computing environment offers special challenges for security, including the need to secure transmission over the open air and through multiple connecting networks. The biggest technological challenges relate to the usability and technological changes of mobile devices. Finally, privacy concerns, such as legal, ethical, and health issues, that can arise from the use of m-commerce, especially in the workplace, need to be considered.

KEY TERMS

Context-aware computing
Enterprise mobility
Intelligent personal assistants
Interactive voice response (IVR) system
Internet of Things (IoT)
Mobile app
Mobile banking (m-banking)
Mobile commerce (m-commerce; m-business)
Mobile enterprises
Mobile entertainment
Mobile portal
Mobile worker
Multimedia messaging service (MMS)
Pervasive computing
Radio frequency identification (RFID)
Short message service (SMS)
Smartphone
Smart grid
Smartwatch
Ubiquitous computing (ubicom)
Voice portal
Wireless mobile computing (mobile computing)

DISCUSSION QUESTIONS

1. Discuss how m-commerce can expand the reach of EC.
2. Which of the m-commerce limitations listed in this chapter do you think will have the biggest near-term negative impact on the growth of m-commence? Which ones will be minimized within 5 years? Which ones will not?
3. Discuss the advantages and limitations of self-driven cars.
4. Discuss the factors that are critical to the overall growth of mobile banking.
5. Why are many of the more popular mobile gambling sites located in small island countries?
6. Discuss how the IoT can facilitate marketing.
7. Discuss the advantages of m-commerce over wired EC.
8. Discuss how to sell products on Facebook (e.g., view **shopify.com/facebook**).

TOPICS FOR CLASS DISCUSSION AND DEBATES

1. Discuss the potential benefits and drawbacks of conducting m-commerce on social networks.
2. Discuss the strategic advantage of m-commerce.
3. Google acquired AdMob (**google.com/ads/admob**) partly to compete with Apple's iAd. Discuss the strategic implications of AdMob versus iAd.
4. Debate the issue of tracking the whereabouts of employees. Related to this is the privacy issue of tracking people and cars. Discuss the pros and cons.
5. Debate the issue of a company's right to check all employee's e-mail and voice communications, done either on their own or on the company's devices during work hours.
6. Examine the use of mobile devices in restaurants and debate the possibility of the elimination of paper menus.
7. Search the issue of m-commerce usability. Start with **baymard.com/mcommerce_usability**.
8. Research the evolvement of Google Glass. Write a report. Start with the evolution of Google Glass at **redmondpie.com/the-evolution-of-google-glass-in-two-years-since-its-inception-image**. What will be the benefits of the device to users? (See **golocalworcester.com/business/smart-benefits-vision-coverage-for-google-glass-is-clear**.) Compare to competitors' products.
9. Find information on IBM's "smarter cities." What are the benefits of the initiative to the residents of such cities? (See **ibm.com/smarterplanet/us/en/smarter_cities/overview**.)
10. Find information about Cisco's "BYOD smart solution." Examine the benefits and discuss the possibility of using this solution in medium or small companies. (See **cisco.com/web/solutions/trends/byod_smart_solution/index.html**.)
11. Find the latest applications of the "Internet of Things" and discuss their usability.
12. In-store mobile tracking of shoppers in brick-and-mortar retailers is increasing. Examine the benefits and the necessary protection of the customers (e.g., choice to opt-out). Under what circumstances would you allow customer tracking?
13. Join the discussion at **iotcommunity.net**. Write a report.

INTERNET EXERCISES

1. Research the status of 4G and 5G. You can find information by conducting a Google search and by going to Verizon Wireless (see **verizonwireless.com/wcms/consumer/4g-lte.html**). Prepare a report on the status of 4G and 5G based on your findings.
2. You have been asked to assemble a directory of Wi-Fi hotspots in your local area. There are a number of sites, such as **hotspot-locations.com** that offer search capabilities for finding hotpots in a specific area. Make a list of locations that offer this feature.
3. Juniper Research has created a variety of white papers dealing with different segments of the mobile entertainment market (e.g., mobile games). Go to Juniper Research (**juniperresearch.com**) and download a white paper regarding one of these market segments. Use the white paper as a guide to write a summary of the market segment you selected—the size of the market, the major vendors, the factors encouraging and impeding its growth, and the future of the market segment.
4. Enter **meetup.com** and review their mobile apps. Write a summary.
5. Find information about Google Maps for mobile devices. Also review the capabilities of Google SMS and other related Google applications. Write a report on your findings.
6. Enter **mobile.fandango.com** and find the services they offer to mobile customers. Write a report.
7. Enter IBM's Smarter Cities Challenge (**smartercities-challenge.org**). Find the recent activities related to IBM's initiatives about smarter cities. Then check MIT Media Lab Initiative City Science (**cities.media.mit.edu**) and find their latest smart cities projects. Finally, enter European Smart Cities (**smart-cities.eu**). Write a report on the major current projects related to smart cities.
8. Enter Facebook and find all their features that facilitate mobile shopping. Also see **shopify.com/facebook**. Write a report.
9. Conduct a Google search for comparisons on tablets versus PCs. Write a report.

TEAM ASSIGNMENTS AND PROJECTS

1. **Assignment for the Opening Case**
   Read the opening case and answer the following questions.
   (a) Do you really need the NeverLost GPS (fee of $13.99/day) when you can get almost the same information with a smartphone like the iPhone (or iPad) and a portable GPS? Why or why not?
   (b) Which one of Hertz's mobile applications can be considered a mobile enterprise and which one can be considered a mobile customer service?
   (c) Identify finance and marketing-oriented applications in this case.

(d) What are the benefits of offering mobile apps to Hertz?
(e) As a customer, how do you feel about Hertz knowing where you are at all times?
(f) Enter **neverlost.com** and identify recent services. View their companion. Write a report.

2. Each team should examine a major vendor of enterprise-oriented mobile devices (Nokia, Kyocera, Motorola; a Google company, BlackBerry, etc.). Each team will research the capabilities of the devices offered by each company and then present the findings to the class. The objective of the presentation is to convince the rest of the class to buy that company's products.
3. Each team should explore the commercial applications of m-commerce in one of the following areas: financial services (including banking); stocks; insurance; marketing and advertising; travel and transportation; human resources management; public services; restaurants; and healthcare. Each team will present a report to the class based on their findings.
4. Each team should choose one of the following areas—homes, cars, appliances, or other consumer goods, such as clothing—and investigate how embedded microprocessors are currently being used. How will they be used in the future to support consumer-centric services? Each team will present a report to the class based on its findings.
5. Each team investigates a major intelligent personal assistant and presents its capabilities and advantages to the class. Prepare a comparative analysis. Relate it to Echo from Amazon.
6. Indiana University, with 8 campuses, has over 110,000 students and over 18,000 employees, including faculty and support staff. The information systems include the use of many BYOD mobile devices. Enter **citrix.com/products/enterprise-mobility.html** and read the story about Indiana University. Watch the 2:28 min video titled "Indiana University Customer Story" and conduct an additional search regarding how the university controls mobile device security. Write a report. (Start with the university's IT services at **uits.iu.edu/page/bcnh**.)
7. Wireless cities and communities can improve people's lives and even reduce the digital divide. Find information on the research and applications of wireless (or smart) cities. Check what is done in several countries (such as India where hundreds of cities are becoming "smart"). Also, see IBM's global activities (Taft 2014). Use this as a class project where different teams cover different topics and countries.
8. Watch the video titled "Technology Advances Fuelling M-Commerce Today" (7:43 min) at **youtube.com/watch?v=398EztRwPiY** and answer the following questions:
(a) What EC services are provided by m-commerce?
(b) Discuss the role of m-commerce in retailing.
(c) Discuss the lack of m-commerce strategy vs. its wide acceptance.
(d) Why is m-commerce such a fragmented market?
(e) Why do retailers spend much of their IT budget on m-commerce?
(f) Discuss the impact of m-commerce on competition among retailers.
(g) What are the difficulties in managing mobile technology?
(h) What are the advantages of mobile payments?
(i) Research the major methods and vendors of m-payments.

CLOSING CASE: MOTOROLA ENTERPRISE: WIRELESS SOLUTIONS FOR A HOSPITAL AND A MANUFACTURER

Motorola (**motorola.com**) is one of the world's largest enterprise mobility companies. The company's diverse operations are classified next.

Products and Services

A large number of products and services are available. We present only some here.

The Major Enterprise Products

In 2015, Motorola's major enterprise products included: barcode scanners, interactive kiosks, mobile computers, tablets, RFID products, original equipment manufacturer (OEM) products, two-way radios and pagers, enterprise voice and data services, and wireless LAN (described next).

For details, benefits, and case studies, see Motorola Solutions Enterprise (**motorolasolutions.com/US-EN/Enterprise+Mobility**; Note: Motorola Enterprise was acquired by Zebra.com).

The Major Wireless Solutions

In 2014, the major wireless solutions offered by Motorola were: indoor location, remote access, voice over wireless, mobile application services, BYOD, cloud wireless, video over wireless, and mobile data offload.

The wireless LAN products are: access, management, and security.

For details, benefits, and case studies, see Motorola Solutions Wireless LAN Zebra Technologies, Inc. (**zebra.com/us/en/products/networks/wireless-lan.html**).

The Industries Services

Motorola serves many major industries, including: manufacturing, retail, hospitality, healthcare, education, utilities, petrochemical, transportation and logistics, and wholesale distribution.

This hospital, which is affiliated with the University of Toronto, is a three-site community teaching hospital with 5000 staff, physicians, and volunteers. To improve quality of care (e.g., ensuring that patients receive the correct medication), the hospital introduced an electronic health system which includes significant wireless subsystems.

The system, known as eCare, is based on wireless network and advanced electronic mobile points of care. For example, it includes a computerized provider of order entries, a high-speed electronic medication administration system, communication, and secured network access features. All these have increased patient safety and quality of care. The system facilitated teamwork of the staff in the hospital. To read the case study, see **motorola-latinamerica.hosted.jivesoftware.com/servlet/JiveServlet/download/2452-1-6216/MOT_North_York_General_Hospital_CaseStudy_EN_073012.pdf**. See also Motorola Solutions for healthcare (**motorolasolutions.com/US-EN/Business+Solutions/Industry+Solutions/Healthcare**).

A Supply Chain Example: Yodobashi Camera of Japan

The company is one of Japan's largest retailers of electronic goods. It has 19 stores with more than 850,000 items and new products arriving almost every day. The products are supplied by hundreds of manufacturers and distributors. Inventory levels must be sufficient to meet customer demands and avoid lost sales. The effective management of the supply chain, the warehouse, and the inventory is a critical success factor.

The company is using Motorola's RFID-based warehouse management solution, which operates in real time. RFID tags are pasted on all product boxes arriving from the suppliers. They are detected at the entry gate by the RFID readers and the information is transmitted automatically to the warehouse management system. The result is reduced cost of warehousing operation, flow of real-time information, minimization of inventory-related problems, and increased customer satisfaction and sales.

Sources: Extracted from Motorola's website. The cases are condensed versions of:

"Electronic TLC: Toronto Hospital Increases Patient Safety with eCare Project" and "Yodobashi Camera Deploys RFID Warehouse Management." (All materials accessed March 2016.)

Questions

1. Enter **motorolasolutions.com** and **zebra.com** and find case studies similar to the above that are related to restaurants, cruise ships, salesforce automation, and education. Relate the wireless system to the benefits for each case.
2. Yodobashi Camera uses tags attached to boxes and containers. Conduct a Google search to find other companies that tag individual items.
3. In what ways has patient safety increased in Toronto's North York General Hospital?
4. Find any enterprise applications that are provided by Motorola's competitors. Write a report.

ONLINE FILES

Available at **ecommerce-introduction-textbook.com**

W6.1 Drivers of M-Commerce
W6.2 Representative List of Mobile Devices
W6.3 Mobile Workforce and M-Commerce Support
W6.4 Application Case: NextBus—Superb Customer Service

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Social Commerce: Foundations, Social Marketing, and Advertising

7

Contents

Learning Objectives

Upon completion of this chapter, you will be able to:

1. Define social commerce and describe its roots and evolution.
2. Describe the scope, drivers, and content of the social commerce field.
3. Summarize the benefits and limitations of social commerce.
4. Describe the major models of social shopping.
5. Explain how advertising and promotions are conducted in social networking environments.
6. Describe how social networking can facilitate customer service, customer support, and CRM.

OPENING CASE: HOW SONY USES SOCIAL MEDIA FOR IMPROVING CRM

Sony, the giant consumer electronics producer, has been struggling during the last few years.

Now, by using social media, improvement is being realized.

The Problem

Sony Corporation (**sony.com**) faces fierce competition from Samsung (**samsung.com/us**), Sharp Electronics (**sharpusa.com**), LG Electronics (**lg.com/us**), and other large, global companies. This competition has intensified during the economic slowdown in recent years. As a result, total revenues for Sony have declined every year from 2008 until 2012. The company suffered heavy losses in 2009 and 2012, causing its share price to drop from $35/share in 2010 and 2011 to $9.57 in late 2012. In 2013, the stock rose mostly due to the recovery in Tokyo's stock exchange. Consumer electronic products are fairly mature, so the differences in quality and prices are not substantial. Therefore, the competitors in the field are promoting their customer service as a strategic differentiator.

Electronic supplementary material: The online version of this chapter (doi:10.1007/978-3-319-50091-1_7) contains supplementary material, which is available to authorized users.

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Springer Texts in Business and Economics, DOI 10.1007/978-3-319-50091-1_7

Sony is trying to do this with the help of their social media communities and initiatives.

The Solution: Social Media Projects

Sony Corporation embarked on social CRM as a vehicle for improving customer service. According to Jack (2013), Sony combined a customer support and direct marketing program, mostly using social channels. The various initiatives are managed by Sony's Customer Experience Management Team. The team organized *Sony's Community Site* (**community.sony.com**), which is a central hub for customer information and support. It includes *idea boards, discussion groups, blogs, Twitter feeds*, and other content-generating channels. The site is used also for marketing campaigns.

The following are representative activities, many of which are done at Sony Europe (see Taylor 2013).

- Active social communities; some are for specific products, others are general for the entire Sony brand. The company's staff members and consumers are involved in these communities. Members of these communities are helping each other and providing feedback. Customer service employees are "listening" to the feedback and using the information to improve service.
- YouTube videos provide training for customers on the use of Sony's products.
- Using Lithium Social Web software (a SAP company), relevant sites are monitored for reviews and comments (positive and negative). This allows Sony to improve operations, resolve problems, and capitalize on opportunities.
- There is a special "Customer Relations" tab located on Sony's Community site, the company's central social network, for easy communication.
- The company created a "Facebook Support Community" within their Facebook page (**facebook.com/sony**), Twitter "Sony Support USA" (**twitter.com/sonysupportusa**), Tumblr Support (**sony.tumblr.com**), and a YouTube Sony Support Channel "Sony Listens" (**youtube.com/user/SonyListens**).
- In the communities, the company's staff demonstrates how problems are resolved quickly and efficiently. For example, there is an "Experts" tab for "How To" videos and technical support, etc. See **community.sony.com/t5/Meet-Our-Experts/bg-p/experts**.
- Sony is using all its social media channels, including LinkedIn, to proactively engage users and provide customer service in a timely fashion (see Sony 2016).
- Sony Electronic integrates Pinterest (**pinterest.com/sonyprousa**) to send information about its products to community members (see details at Eckerle 2013 and **blog.tailwindapp.com/lessons-from-sony-on-pinterest**).

Sony monitors social media conversations and conducts sentiment analysis (Brand24 2015) to improve customer service and product improvement and design. Note that Sony is using social media campaigns for customer engagement. For an overview of how Sony is using social networks, see Moth (2013). Finally, software from Reevoo.com helps Sony to automatically translate reviews from one language to another.

The Results

Significant results were realized in 2014/2015 after the deployment of most SC initiatives. However, some improvements have materialized in 2013. For example, according to Jack (2013), the improved communication resulted in a 22% increase in "clicks" (over 100% in some cases). Other results are:

- Customer trust in Sony increased (Jack 2013).
- Page views, conversation rates, and engagement activities (e.g., posting) increased by 100% (Jack 2013).
- Follower growth increased 200% with a charitable Pinterest board (Eckerle 2013).
- Customer service was combined with marketing promotions, which resulted in new sources of revenue for Sony.
- In March 2014, PlayStation had about 2.5 million followers on Twitter and 35 million fans on Facebook. For a case study about Plastation and social media, see Brand24 (2015).

Sony's share price recovered in 2015 and 2016.

Sources: Based on Jack (2013), Taylor (2013), Eckerle (2013), Reevoo (2014), Brand24 (2015), and Sony (2016).

LESSONS LEARNED FROM THE CASE

The Sony case illustrates that a company can use social media not only to advertise and sell, but also to provide outstanding customer service. Operating in a highly competitive market, customer service can be an important strategic tool. Sony has supplemented their traditional customer service with social networks, blogs (e.g., Twitter, and a Facebook fan page). They have concentrated on improving communication and interactions with customers. The customer service provided by social media tools and platforms is more interactive, timely, and direct. Furthermore, the system fosters a truly conversation-based communication. This kind of service is important to customers, and contributes to the company's success. In this chapter, we introduce social commerce fundamentals and describe its content and benefits. We also describe three major areas: social shopping, social advertising, and social CRM.

7.1 SOCIAL COMMERCE: DEFINITIONS AND EVOLUTION

The term *social commerce* was defined in Chapter 1. **Social commerce (SC)**, also known as *social business,* refers to e-commerce transactions delivered via social media.

Definitions

As it is a new field that involves several academic and professional disciplines, there is no agreed-upon definition or description of the content and boundaries of the social commerce field. Regardless of its definition, the field is growing rapidly both in the USA and elsewhere. For statics and trends for 2015 and 2016, see Bennett (2014). For the impact of the technology, see ShopSocially (2013). The magnitude of the field can be seen in Bennett's infographic (2014).

For additional discussion, see **bazaarvoice.com/research-and-insight/social-commerce-statistics**.

The Evolution of Social Commerce

Social commerce emerged from the integration of several fields, which are shown in Figure 7.1. For example, Marsden and Chaney (2009) show how social media contributes to sales, making it a social commerce application.

A major origin of social commerce (SC) was the development of Web 2.0 technologies, as previously mentioned. With these came commercial applications, which included activities in social networks and the use of social software such as blogs and wikis. A major driver of SC is the globalization of business. This prompted the need for collaboration of employees, partners, and customers, sometimes worldwide. Web 2.0 applications created an efficient and effective platforms for such collaboration. Web 2.0 is a major contributor to social media, which is the major driver of social commerce. For details, see Turban et al. (2016).

The development and rapid growth of mobile computing and smartphones have also facilitated social commerce. Mobile commerce is the basis for SC models such as location-based applications, social networks, and consumer/company networking.

A major emphasis of SC is its marketing orientation. Traditional marketing activities were applied to Internet marketing in the mid-1990s, when companies began building websites and using e-mail to advertise their products for sale off-line. As the Web developed, marketers applied the Internet to facilitate e-commerce *transactions*. Until that point, marketers controlled brand messages and continued their advertising and other communication monologs to customers and potential buyers (prospects). With the emergence of social media, marketing communication changed to a dialog with Internet users, and many marketing strategies evolved or completely transformed to support social commerce.

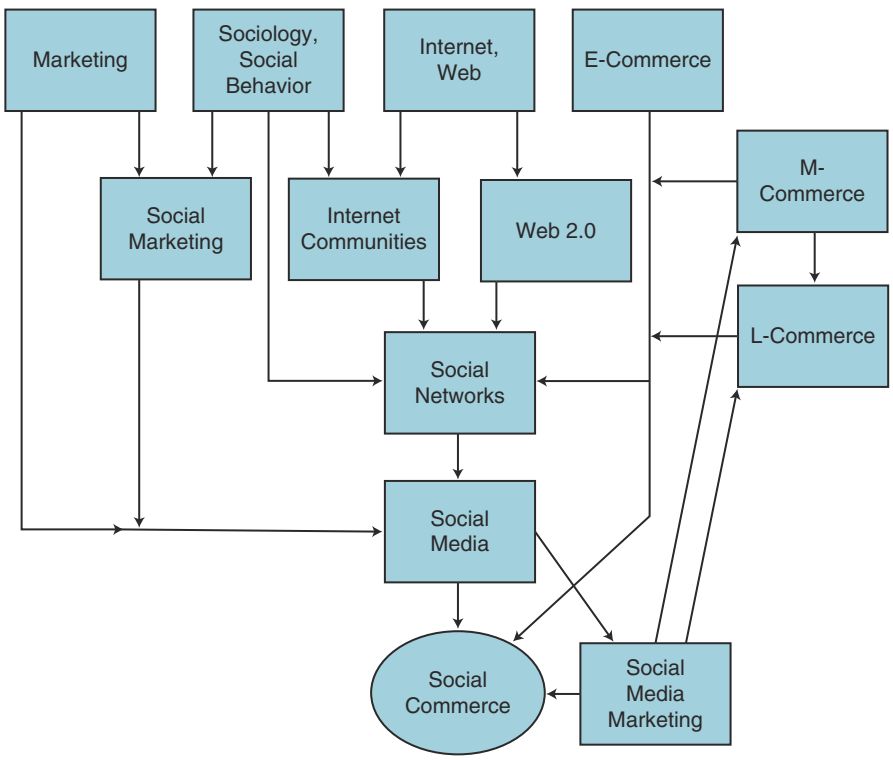

Figure 7.1 The major roots of social commerce

Table 7.1 The major differences between e-commerce and social commerce

Property	E-commerce	Social commerce
Major objective	Transactions	Social interactions
Major activity	Publishing	Engagement
Content	Company generated	User generated
Problem-solving	Company experts, consultants	Crowdsourcing
Collaboration	Traditional, unified communications	Web 2.0 tools
Product information	Product descriptions on websites	Peer product reviews
Marketplaces	E-tailers (e.g., Amazon.com) and direct from manufacturers' stores (Dell)	Social networks (f-commerce), collaborative markets
Targeting	Mass marketing, segmentation	Behavioral targeting, micro segmentation
CRM	Seller/manufacturer support	Social support by peers and by vendors and employees
Online marketing strategy	Website selling	Multichannel, direct at social network sites
Integration	System integration	Mashups and system integration
Data management	Reports and analytics	Analytics

For a complete guide to social commerce (free), see **pixlee.com/download/the-complete-guide-to-social-commerce**. The major differences between social commerce and e-commerce are illustrated in Table 7.1.

For a chronicle presentation and an infographic of historical milestones in the development of social commerce, see **socialtimes.com/social-commerce-infographic-2_b84120**.

SECTION 7.1 REVIEW QUESTIONS

1. Define social commerce and list its major characteristics.
2. Trace the evolution of social commerce.
3. Describe the major differences between e-commerce and social commerce.

7.2 THE CONTENT OF THE SOCIAL COMMERCE FIELD

The content of the SC field is very diversified. For example, Indvik (2013) provides seven species of the field.

The Landscape and Major Components of the Field

The landscape of social commerce is multidisciplinary (see slide presentation by Marsden 2010 and Liang and Turban 2011/2012). Most of the activities center around e-marketing conducted with social media, particularly marketing communication, techniques of advertising, sales promotions, and public relations usually expressed as *social media marketing* activities. However, several other areas are emerging in the field, especially activities within organizations that are referred to as *social enterprise or Enterprise 2.0*. Liang and Turban (2011/2012) illustrate the social commerce landscape in Figure 7.2 and an infographic describes only some of the areas here. Discussions of the other activities of the figure are provided throughout the book.

For a detailed discussion, see Marsden's slide presentation "Social Commerce Opportunities for Brands" at **slideshare.net/paulsmarsden/social-commerce-the-opportunity-for-brands**. For statistics about social commerce and its use, see "Social Commerce Statistics" at **bazaarvoice.com/research-and-insight/social-commerce-statistics**. For a specialized textbook, see Turban et al. (2016). The two major elements in social commerce, social media marketing and Enterprise 2.0, are described next.

Social Media Marketing

Social media marketing (SMM) is the application of marketing communication and other marketing tools using social media. Social media marketing facilitates social commerce, builds brands, repairs brand reputation damage in social media, and fosters long-term customer relationships, among other things. For a free toolkit, see **act-on.com/resources/social-media-marketing-toolkit**.

For the industries that benefit most from social media, see Carranza (2015). For predictions of 50 experts on the development of social media and social media marketing for 2016, see Gil (2015). The various topics of social media marketing are described in Chapters 4, 5, 6, and 7. For an infographic, see Wood (2014).

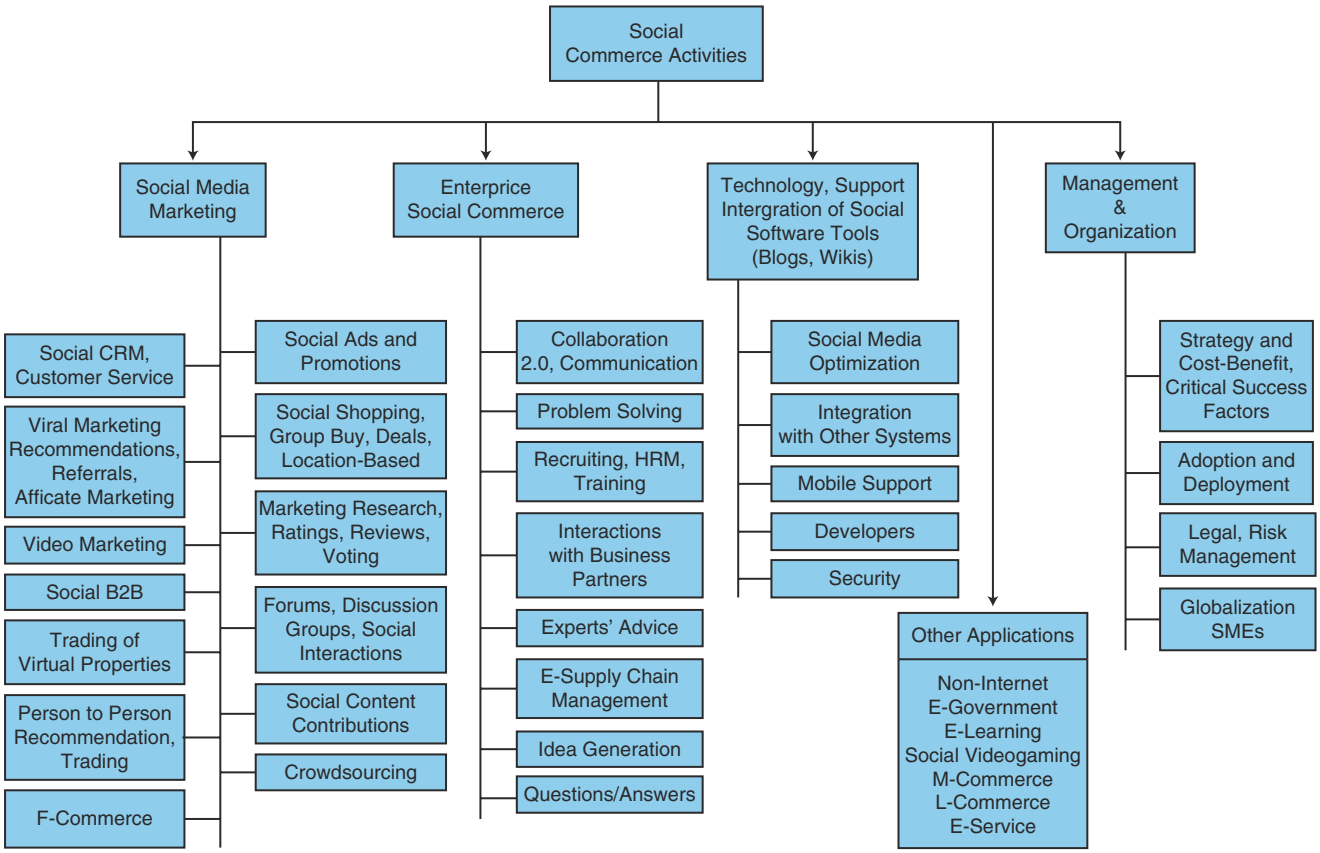

Figure 7.2 The major dimensions of social commerce

Enterprise 2.0

The second major type of social commerce is *Enterprise 2.0*, also known as *Social Media-based Enterprise*, which is used by an increasing number of companies to conduct several social media and social commerce activities inside the enterprises (e.g., idea generation, problem-solving, joint design, and recruiting).

There are several definitions of **Enterprise 2.0**. The initial definition connected the term to Web 2.0 and to collaboration. A refined definition is "…the use of social software platforms within companies, or between companies and their partners or customers" (per McAfee 2009).

Note: For more definitions and concepts of Enterprise 2.0 technology, see the slide presentation "What is Enterprise 2.0?" at **slideshare.net/norwiz/what-is-enterprise-20**. The following are the major characteristics of Enterprise 2.0: ease of information flow, agility, flexibility, user-driven content, bottom-up communication, global teams, fuzzy boundaries, transparency, folksonomies (rather than taxonomies), open standards, and on-demand (rather than scheduled) activities. Also important are flat organizations (rather than hierarchical) and short time-to-market cycles.

For a comprehensive article on the social enterprise, see **hbr.org/topic/social-enterprise**.

For more on Enterprise 2.0, see Chapter 8, and Chui et al. (2013).

Examples of Social Enterprise Applications

Some examples of social enterprise applications include the following:

- Dell, Sony, IBM, and many other companies solicit ideas from large groups of employees, customers, and business partners on how to improve their business operations (e.g., Dell's IdeaStorm site).
- More than 50% of medium and large corporations use LinkedIn and Facebook to announce available positions and to find potential employees.
- Best Buy provided state-of-the-art customer service via a Twitter-based system where thousands of employees were used to answer customers' questions, sometimes within minutes.

SECTION 7.2 REVIEW QUESTIONS

1. Describe the major components of social commerce.
2. What is social media marketing?
3. Describe Enterprise 2.0.

7.3 THE BENEFITS AND LIMITATIONS OF SOCIAL COMMERCE

According to many practitioners and researchers, social commerce is making significant impacts on organizations and industries. A major impact has been seen in the fashion industry.

Several surveys (e.g., Leggatt 2010) have confirmed that social commerce results in significant monetary and strategic benefits to businesses. SC benefits fall, in general, into three categories: benefits to customers, benefits to retailers, and benefits to other types of enterprises. Some are described in the following section.

Benefits to Customers

The success of social commerce depends on its benefits to customers. The major benefits appear in the following list:

- It is easy to get recommendations from friends and other customers (e.g., via Twitter, in social networks discussion groups, and on product review sites). Recommendations result in more confidence and trust helping customers decide about purchasing products and services.
- Customers are exposed to special deals (e.g., via Groupon) for large savings.
- Purchases are better matched with specific needs, wants, tastes, and wishes of customers; this increases satisfaction and reduces product choice decision time.
- It is easy for customers to use the SC technology.
- Social commerce fits the mobile device lifestyle well.
- Increased trust in vendors is developed (via closer relationships).
- Social commerce allows customers to help other customers (social support).
- Customers can get better customer service from vendors.
- Customers can meet new friends (e.g., for travel) and socialize online.
- Customers can get rich social context and relevancy during their purchase decisions.
- Customers can connect with individuals and businesses who otherwise are inaccessible to them.

Benefits to Retailers

Retailers are major benefactors of social commerce. For example, about 50% of businesses globally find new customers via social networks. In addition, about 30% of companies invest in social networking in order to acquire and retain customers.

Retailers may benefit from social commerce in the following ways:

- Consumers can provide feedback on market communication strategy and on product (service) design.
- Vendors get free word-of-mouth marketing (see Chapters 3 and 4).
- Increased website traffic (recall the Sony opening case), which increases revenue and sales.
- Increased sales as collaborative filtering and other social influence methods are used (see Chapters 3 and 4 and **trendwatching.com/trends/TWINSUMER.htm**).

For more on benefits to retailers, see the video titled "Social Media a Powerful Tool for Online Retailers" (4:08 min) at **youtube.com/watch?v=1ByDmQICXs4**. Also see Spencer et al. (2014).

Example: Beratta Inc.
Beretta Inc. increased its revenue in 2013 by 15% by introducing social commerce into its e-commerce store using ShopSocially's SC platform. For details, see the December 23, 2013 press release "Popular Firearms Manufacturer Beretta Hits the Bullseye on Social Commerce with a 15% Revenue Uplift" at **digitaljournal.com/pr/1655392**.

Benefits to Other Types of Enterprises

In addition to increased sales and revenue, enterprises can benefit from social commerce in several ways (see Chapter 8):

- Conduct faster and less costly recruitment with a larger reach to large number of candidates.
- Reduce costs via innovative methods such as using the collective intelligence of employees and business partners (see Crowdsourcing in Chapter 8).
- Foster better external relationships; for example, with partners and channel distribution members.
- Increase collaboration and improve communication within the enterprise and with business partners (e.g., by using blogs, microblogs, and wikis).

- Foster better internal relationships (e.g., by increasing employee productivity and satisfaction).
- Provide free advice to small enterprises by other enterprises and experts (e.g., via LinkedIn groups).
- Understand that it is usually not expensive to install and operate SC systems.
- Locate experts quickly, both internally and externally, whenever needed (e.g., see **guru.com**).
- Conduct market research quickly and inexpensively and get feedback from customers, employees, and business partners.
- Increase market share and margins.
- Build brands through conversations and social media promotions.
- Micro segment for reaching very small markets with brand offerings at a low cost.
- Manage company and brand reputations online.
- Build brand communities for positive word of mouth online.
- Enhance customer service and support.
- Increase traffic and sales at the company website and at physical retailers.
- Facilitate market research by monitoring conversations online.
- Increase company and brand rankings on search engine results pages.

The potential benefits in the previous list may increase productivity and value and could provide a *strategic advantage* and they encourage companies to at least experiment with social commerce. Successful applications are introduced in Chapters 4, 5, 6, 7, and 8.

The Social Business: An IBM Approach

The previously noted benefits to enterprises make it desirable for enterprises to transform to what IBM calls a *social business*. A **social business** is "a business that embraces networks of people to create business value" (IBM 2011). Many consider this term equivalent to social commerce and use the two interchangeably. However, IBM is more concerned with the structure and operations of enterprises.

IBM strategically integrates social media into various business processes (e.g., procurement) and is developing an organizational culture to support the integration process for delivering rapid and impressive outcomes. For details, see **ibm.com/social-business/us/en**.

New or Improved Business Models

Social commerce provides innovative e-commerce business models. Some are new while others are improvements of regular EC models (e.g., group buying). A large number of SC models are in the area of social shopping as described in Section 7.4. Several other new models are in the area of enterprise commerce (Chapter 8). Here are some brief examples:

- Shopping business models include widgets on social media sites to "buy now."
- Online software agents that put buyers and sellers together, such as when TripAdvisor refers users to online travel sites to purchase hotel rooms.
- Content sponsorship–selling advertising on a site that supports content development (YouTube).
- Crowdsourcing models that allow companies to design their products or logos by involving their customers.
- Sales promotions conducted in social networks that drive traffic to the company's site, such as contests, discounts, and downloading free music and software.
- Recruiting in social networks, as exemplified by LinkedIn.
- Collaboration models that are facilitated by blogs, wikis, and crowdsourcing (see examples in Chapter 8).

Many start-ups have invented these and other business models. For example, Webkinz (**webkinz.com**) created a huge business around virtual pets world for kids, and IZEA Inc. (**izea.com**; a pioneer of social sponsorship) created a marketplace for connecting advertisers with social media creators of content (e.g., bloggers).

For the opportunities for business created by social commerce, see Moontoast (2013). For new models in the fashion industry, see Knopf (2012) and **businessoffashion.com**.

Concerns and Limitations of Conducting Social Commerce

Although social commerce presents many opportunities for organizations, its implementation may involve some potential risks and possibly complex issues such as integration of new and existing information systems. Representative risk factors are difficulties in justification of SC initiatives to upper management, security and privacy issues, possibilities of fraud, legal concerns, quality of UGC, and time wasting

by employees during work hours. Companies also risk loss of control over their brand images and reputations in social media conversations and product review sites, which can affect product sales. The major barriers to adoption of Enterprise 2.0 are resistance to change, difficulty in measuring ROI, and difficulties of integration with existing IT systems and security.

SECTION 7.3 REVIEW QUESTIONS

1. List the major benefits to customers.
2. List the major benefits to retailers.
3. List the major benefits to companies other than retailers.
4. Describe new or improved social commerce business models.
5. Describe some concerns and limitations of social commerce.

7.4 SOCIAL SHOPPING: CONCEPTS, BENEFITS, AND MODELS

Involvement in shopping is a natural area for social networks. Although shopping in social networks is only beginning to grow, it has enormous potential. Leading the movement of social shopping are Facebook and Google (Knight 2016). In this section, we cover the essentials of social shopping.

Definitions and Drivers of Social Shopping

Shopping is, by nature, a social activity. **Social shopping** (also known as *sales 2.0*) is online shopping with social media tools and platforms including five social networks. It is about sharing shopping experiences with friends. Social shopping blends e-commerce and social media. Thus, social commerce takes the key features of social media (e.g., discussion groups, blogs, recommendations, reviews) and uses them before, during, and after shopping.

An overview of social shopping is provided by Turban et al. (2016).

The Drivers of Social Commerce

The following are the major drivers of social shopping:

- A large number of people visiting social networks attracts advertisers
- The increasing number of recommendations/suggestions made by friends and the ease and speed of accessing them
- The need to compete (e.g., by differentiation) and to satisfy the social customer
- The emergence of social customers with knowledge and competence in using the Internet (e.g., in finding reviews and comparing prices)
- The need to collaborate with business partners
- The huge discounts provided by some of the new business models (e.g., flash sales)
- The socially oriented shopping models (e.g., group buying)
- The ease of shopping while you are inside some social networks (e.g., from Facebook's "Buy" button)
- The ease of communicating with friends in real time using Twitter and smartphones

For more on social shopping, do a Google search for social shopping. Also see Kimball (2013) for an infographic and **webtrends.about.com/od/web20/a/social-shopping.htm**.

Concepts and Content of Social Shopping

Social shopping is done in social networks (e.g., Polyvore, Wanelo), in vendors' socially oriented stores, in stores of special intermediaries (such as Groupon.com), and on social networks. The buyers are *social customers* that trust and/or enjoy social shopping. As will be seen later in this section, there is a wide range of social shopping models that utilize many of the Web 2.0 tools as well as social communities. The nature of shopping is changing, especially for brand name clothes and related items. For example, popular brands are sold by e-tailers such as Gap (**gap.com**), Shopbop (**shopbop.com**), and InStyle (**instyle.com**). In addition, fashion communities such as Stylehive (**stylehive.com**) and Polyvore (**polyvore.com**) help promote the season's latest fashion collections. Social shoppers are logging on to sites like Net-A-Porter (**net-a-porter.com**) to buy designer clothes online. They can also log on to sites such as ThisNext (**thisnext.com**), create profiles, and blog about their favorite brands. For practical issues of social commerce, see **digitalintelligencetoday.com/social-shopping-101-a-practitioners-prime**.

There are two basic practices for deployment of social shopping:

1. Add social software, apps, and features (e.g., polling) to existing e-commerce sites.

2. Add e-commerce functionalities (e.g., e-catalogs, payment gateways, shopping carts) to social media and network sites, where many vendors offer their stores.

Why Shoppers Go Social

Many shoppers like to hear from others prior to purchasing. Therefore, they ask for recommendations from friends or use the concept of communal shopping.

Communal shopping (also known as *collaborative shopping*) is a method of shopping where shoppers enlist friends and other people they trust to advise them on what products to shop for. This results in more confidence in decisions made to buy or not to buy (a phenomenon known as the "bandwagon effect"). For examples, watch the video "New Frontiers in the Communal Shopping Experience" (2:58 min) at **bloomberg.com/video/eden-s-communal-shopping-experience-ExvmRAIhTE2AZapKKd5aVA.html**.

The Roles in Social Commerce

The following roles people play in social media and e-commerce:

- **Connectors.** These are the people with contacts that introduce people to each other. Connectors try to influence people to buy. Consultants and connected people play this role.
- **Salespeople.** Like their off-line counterparts, salespeople's major effort is to influence shoppers to buy. They are well connected, so they can impress buyers.
- **Seekers.** These consumers seek advice and information about shopping and services from experts, friends, and mavens.
- **Mavens.** Mavens are recognized, but are unofficial experts in certain domains that can provide positive or negative recommendations to advice seekers.
- **Self-sufficients.** These people work on their own and do not like to be influenced.
- **Unclassifieds.** Most people do not belong to any one of the above categories.

The major influencers are friends, other consumers, salespeople, connectors, and mavens (experts).

Benefits of Social Shopping

Many of the benefits of social commerce (Section 7.3) apply to social shopping. Additional benefits are:

- You can socialize while shopping.
- You can discover products/services you never knew existed (e.g., see **thisnext.com**).
- You can interact with vendor (brand) representatives easily and quickly (e.g., feature available at the blog on **stylehive.com**).
- Your confidence and trust in online shopping may increase due to engagement and interactions with friends.
- You can get super deals via group buying, daily specials, and more. Join Groupon just to see the super daily deals.
- You can exchange shopping tips with your friends, fans, and others. Thus, you can learn from experiences of others.
- You can build and share wish lists.
- You can shop together with people like you.

Therefore, before you go shopping, consult social shopping sources. For more benefits, including for sellers, see Turban et al. (2016).

Note that social shopping sites may generate additional revenue from advertising, commissions on actual sales, sharing customer information with retailers, and affiliate marketing.

The use of social media marketing is justified financially in many cases. For a free e-book of examples, see Petersen (2014).

Note: Both Pinterest and Twitter are providing activities with some or all of these models directly and indirectly. For Twitter, see **business.twitter.com/twitter-101**.

What Elements to Expect in a Social Shopping Site

Depending on the social shopping model, on the products offered and related information, and on the supporting information systems, one may find a diversity of elements in a site. The following are the major elements that help shoppers in making purchasing decisions:

- **Visual sharing.** Photos, videos, and other images enable shoppers to visually share their product experiences.
- **Online discussions.** Ratings, reviews, interactions, recommendations, blogging, and comments facilitate discussions regarding features and benefits of products.

- **Journals of products and their use.** These demonstrate how to use products via videos, blogs, and step-by-step instructions.
- **Guides.** Guides are created by users who can be experienced consumers, experts, or employees. The guides are supported by case studies, testimonials, videos, and information.

Traditional E-Commerce Sites with Social Media Additions

In addition to pure social shopping sites, there are many traditional e-commerce sites that add social media tools. A prominent example is Amazon.com, which adds recommendations, reviews, ratings, and more. Another example from Germany is presented next.

Example: Nestlé Interactive Social Commerce Site

The global food and beverage manufacturer launched an interactive online social commerce platform in Germany in September 2011 to engage with consumers while providing greater access to its products (see **nestle.com/media/newsandfeatures/nestle-marks-largest-ever-investment-germany**). The *Nestle Marketplace* ("Marktplatz") website, according to **fdbusiness.com/tag/germany**, was the first social commerce platform of its kind in Germany from a food and beverage manufacturer of Nestlé's size and range. Consumers can purchase products online (including foreign Nestlé's products that are not available in most of Nestlé's physical stores, or the stores of retailers who sell their products) and also review, rate, recommend, and ask questions about each product. The site supports two-way communication. According to **nestle.com/Media/NewsAndFeatures/Nestle-pilots-social-commerce-with-new-interactive-site-for-German-consumers**, people can leave ratings and comments about the products. Shoppers can submit suggestions for new products on the site. With more than 2000 products (February 2016) and 78 different brands available online, Nestlé Germany experiences about 2.2 million visits to the site each year.

The company wants to enable its customers to engage and to help Nestlé Marketplace to prosper.

Visitors to the Nestlé Marketplace can search for products using a variety of detailed criteria including taste, packaging, color, specific occasions, or diet preferences. Nutritional information can also be found for each product. The Nestlé Marketplace website is supported by a Facebook page, which provides space for discussion about the company's brands, foods, and cooking. For details, see **nestle.com/Media/NewsAndFeatures/Pages/Nestle-pilots-social-commerce-with-new-interactive-site-for-German-consumers.aspx**. To learn about the company's strategies, expectations, and experiences, see **e-commercefacts.com/background/5166-nestle-marketplace**.

The Major Types and Models of Social Shopping

A large number of social shopping models and strategies have appeared in recent years, many created by start-ups such as Groupon.com. Some are extensions of EC generic models; others are unique to social shopping. These models can be stand alone, combined, or used within social networks. We have grouped them into the following categories:

For these, there are several shopping aids, which we describe after we elaborate on some of these categories.

- Group buying
- Deal purchases (flash sales), such as daily special offers
- Shopping together in real time
- Communities and clubs
- Marketplaces
- Innovative models
- Shopping for virtual products and services
- Location-based shopping (presented in Section 7.5)
- Shopping presentation sites (e.g., on YouTube) and gaming sites
- Peer-to-peer models (e.g., money lending)
- Private online clubs
- B2B shopping

Group Buying

The group buying B2C model that was introduced in Chapter 1 was unpopular and seldom used in many countries, including the United States. However, in other countries (e.g., China), group buying has had good success. The problem with this model was the difficulty in organizing the groups, even with an intermediary. Furthermore, even if a group was organized, the negotiations about discounts could have been difficult, unless a very large volume was negotiated. In order to rally shoppers, group-shopping sites like LivingSocial and BuyWithMe offer major discounts or special deals during a short time frame. These start-up companies act as intermediaries to negotiate the deals with vendors. Group buying is closely associated with daily deals (flash sales). The social commerce approach revived the not so successful original e-commerce model, and frequently is combined with flash sales.

Note: The model is not so popular today (2016) in the USA, but is very popular in China.

Group Buying in China

Group buying is very popular in China ("tuangou" in Chinese). In December 2013, about 1000 companies were active all over China with an estimated 140 million shoppers. For example, Lashou.com (**lashou.com**) operates in more than 100 cities. Major companies are Wowo Ltd. and Meituan.

The Process

For several years, according to Madden (2010), Chinese buyers were organizing groups to buy a product (e.g., a car). Then, the group leader bargained with potential sellers. Sometimes the leader brought the entire buying group to a face-to-face collective negotiation (e.g., see a video [1:59 min] "Group Shopping Tuangou" at **vimeo.com/8619105**).

By 2014, all major Chinese Internet companies have launched, or plan to launch, group buying and flash deals. These include **ir.baidu.com**, **sina.com**, **tencent.com**, and **alibaba.com**.

Deal Purchases (Flash Sales)

Short period deals are practiced off-line usually to attract people who are already in a store; or vendors advertise a sale for a day, or for several days (in a newspaper, radio, and TV), or for "doorbuster" sales between certain hours on a certain day. There are several variations of this model when done online, and it is frequently offered together with other models.

A common strategy of flash sale sites is to focus on an industry. For example, **gilt.com** focuses on designer apparel, jewelry, bags, and upscale home furnishings.

Woot.com (an Amazon.com company) offers community information related to its deals. For example, there is a "discussion about today's deal," a Woot blog, top past deals, deal news, and what percentage of community members bought which product and what quantities of the products. Testimonials by members are also available. Woot is known as a favorite place for gadget geeks. Thus, Woot is not only a brand, but also a culture. Other interesting flash sale companies are Jetsetter (a TripAdvisor company) and Rue La La. Flash sales may offer discounts up to 80%.

Shopping Together Online in Real Time

Shoppers on social networks can invite their friends to shop online at the same time, while in different locations. Using Facebook e-mail (or other networks) or Twitter, they interact to discuss shopping-related subjects and provide opinions.

Shopping Together Sites

Dozens of sites facilitate shopping together models. For example, Select2gether allows you to join a conversation in a chat room; create a wish list; shop online in real time with your friends; find inspirations, ideas, and advice; start a live showroom with your friends; and get access to the latest fashion-related products in which the site specializes. For details and explanations, see **select2gether.com/about/help**.

Coshopping

Coshopping is an IBM software tool that enables two online shoppers to browse a store, view products, chat together, all in real time. It also enables employees in customer care centers to conduct live interactions with customers.

Online Social Shopping Communities

According to Lee (2014), "*shopping communities* bring like-minded people together to discuss, share, and shop." The community platforms and forums connect people with each other, with businesses and with other communities. To date, fashion communities are the most popular (e.g., Polyvore, Stylefeeder, and ShopStyle). However, other shopping communities are organized around food, pets, toys, and so forth. For example, Listia (**listia.com**) is an online community for buying and selling used or new items, along with fashion, in online auctions using virtual currency. DJdoodleVILLE (**djdoodleville.com**) is an online shopping community specializing in arts and crafts.

For a summary about social shopping communities, see **digitalinnovationtoday.com/speed-summary-ijec-social-commerce-special-edition-social-shopping-communities**.

Examples of Shopping Communities

There are many sites that can be classified as pure shopping communities. A prime example is **polyvore.com**, which is presented in Case 7.1.

CASE 7.1: EC APPLICATION POLYVORE: A TRENDSETTER IN SOCIAL SHOPPING

According to Polyvore's website and Crunchbase (**crunchbase.com**), **polyvore.com** is a community site for online fashion and style where users are empowered to discover and develop their style and possibly set fashion trends. Users do this by creating "sets" that are shared across the Web. The company collaborates with prominent brands such as Calvin

Klein (**calvinklein.com**), Lancome (**lancome-usa.com**), and Coach (**coach.com**) and retailers such as Net-a-Porter, to drive product engagement; the user-generated fashion products on its site are then judged by community members and by celebrities such as Lady Gaga and Katy Perry. Today, the company is also using mobile technologies. For example, it has an app for iPad with many capabilities (see **blog.polyvore.com/2014/02/new-ipad-and-iphone-updates-clip-to.html**). Note: Some celebrities, such as Lady Gaga, post their own products for sale on the site.

The story of the now-profitable Polyvore is described in detail by Jacobs (2010) as well as by Grant (2013; an Infographic). Users create "sets," of their wardrobe designs, using a special editor provided free on the site. These "sets" can then be posted and shared on Polyvore's site, Facebook, and Twitter. Merchants (e.g., designers) can use the site for free by (a) creating a profile, (b) uploading existing products, and (c) creating sets.

Once merchants create a profile and upload products, Polyvore encourages the merchants to engage with other community members by reviewing and evaluating the sets. Polyvore believes that the merchants' activity will be reciprocated. To facilitate actual shopping, the sets link to the creators' sites.

Polyvore can be viewed as a crowdsourcing fashion operation that reflects the creativity and opinion of many; thus, it can be viewed as expressing current fashion trends (they now do the same with interior design). In 2015, Remix created an app to help those who want to browse or buy, and not to create outfits (see Perez 2015b).

According to TrueShip (2016) Polyvore has over 20 million users importing 2.2 million items to the site each month, creating about 2.5 million fashion sets per month, and viewing sets 1 billion times a month. Users spend hours browsing, following favorite taste streams, asking questions, and sharing ideas. Polyvore is considered by many to be the best place to discover or evaluate fashion trends, which are facilitated by contests managed by the company. Polyvore was acquired by Yahoo in 2015.

Polyvore can be used together with Pinterest to increase traffic to the site.

Sources: Based on Jacobs (2010), Perez (2015b), **polyvore.com/cgi/about**, and **crunchbase.com/organization/polyvore** (both accessed March 2016).

Questions

1. How can one use the Polyvore Editor to create designs (see the short video [2:02 min] by Polyvore titled "How to Create a Set in the Polyvore Editor" at **vimeo.com/7800846**).
2. The company added supermodel Tyra Banks as an investor in 2013. Comment on the logic of such an addition.
3. Comment on the logic of creating Remix.
4. Read Jacobs (2010) and explain what and how people create at Polyvore. Also identify the critical success factors of this site.
5. Explain the statement made by Polyvore's vice president of product management: "Our mission is to democratize fashion."
6. Identify all the features of a shopping community in this case.

Private Online Shopping Clubs

Vente-Price of France (**us.venteprivee.com**) was the first private online shopping club. The club concentrates on designer products. In general, clubs run flash sale events featuring luxury brands at huge discounts (up to 80%). Luxury brands use the clubs to liquidate out of style items, overstock, or special samples. Consumers like the clubs due to the largest discounts.

The key to this business model's success is that in contrast with the Groupon model, *not* everyone is allowed to shop. The members-only model serves a myriad of purposes. Partially, it is a marketing device that makes members feel like VIPs; but it also helps the clubs manage a healthy growth.

Examples of Private Clubs

Some private (or "members only") clubs are: Beyond the Rack (**beyondtherack.com**; in the USA and Canada posts flash deals), Gilt Groupe (**gilt.com**), Rue La La (**ruelala.com**), Amazon's Buy VIP (**buyvip.com**; in Europe), Ideeli (**ideeli.com**), and BestSecret (**bestsecret.com**). Note that, to minimize conflict with department stores, luxury brands now offer select items at Internet prices in stores such as Target Inc. (**target.com**).

Other Innovative Models

There are hundreds of start-ups in social commerce. Here are some representative examples:

- **Wanelo.** This popular social shopping marketplace (especially with young shoppers) combines bookmarking and product sharing. Members can follow others to find trendy shopping. Wanelo (**wanelo.com**) "is an online community-based e-commerce site that brings together products from a vast array of stores into one pinboard-style platform. It also has an app on iTunes and Google Play as well as a Facebook Fan page. For more information about Wanelo, see **mashable.com/2013/11/05/wanelo-social-shopping**.
- **RealGifts.** Facebook had a service called "RealGifts" that allowed people to send real-life presents to their

friends. People were getting together on Facebook to buy each other gifts. (Wrapp enables you to send giftcards from your smartphone.)

- **Virtual gifts.** There is a rapidly increasing market on social networks for virtual gifts. Facebook sells virtual gifts in its marketplace.
- **Getting help from friends.** To get help from friends, you may go to sites such as **shopsocially.com**. You can post a question, share a purchase, and much more.
- **Shopping without leaving Facebook.** There are several ways to use Facebook Fan pages for shopping, so fans do not have to leave Facebook. Payment is one implementation issue, security is another (see **facebook.com/auctionitems**).
- **Social auctions.** Facebook now has a Store App for eBay sellers, called Auction Items (previously "eBay items"), where members can send private invitations to their friends to invite them to their store. The Auction Items app is available in several languages. For more details, see **facebook.com/AuctionItems**. Facebook also offers an app for Etsy stores.
- **Crowdsourcing shopping advice.** You can get advice from many people (the crowd), as is done by CloudShopper. CloudShopper allows users to organize the advice given by their friends. Users select products and start a conversation on Facebook about their items of interest. The company also provides price comparisons and price alerts about the selected items; see **cloudshopper.com.au** for details.
- **Helping sellers and bloggers sell products.** Etsy is socially oriented marketplace which helps bloggers and sellers (mostly artists) monetize their businesses by making it easy for them to sell products directly to consumer.
- **Event shopping.** There are many sites that will help you shop for a special event (e.g., a wedding) with the assistance of your friends. Many variations of this model exist.

Social Shopping Aids: From Recommendations to Reviews, Ratings, and Marketplaces

In addition to the typical e-commerce shopping aids such as comparison engines and recommendations in the Amazon.com style (see Chapter 3), there are special aids for social commerce.

Recommendations in Social Commerce

Online customers use shopping aids (e.g., price comparison sites like **nextag.com**), looking at product review sites such as **epinions.com**, and researching other sources. Examining and participating in social networking forums is another way to compare prices and read product and service reviews. A variety of SC models and tools is available for this purpose. We present two major categories here.

Ratings and Reviews

Ratings and reviews by friends, even by people that you do not know (e.g., experts or independent third-party evaluators), are usually available for social shoppers. In addition, any user has the opportunity to contribute reviews and participate in relevant discussions. Some tools for conducting rating and reviews can be found at **bazaarvoice.com/solutions/conversations**. Examples are:

- **Customer ratings and reviews.** Customer ratings are popular. They can be found on vendors' product (or service) sites such as Buzzillions, or on independent reviews sites (e.g., TripAdvisor), and/or in customer news feeds (e.g., Amazon.com, Epinions). Customer ratings can be summarized by votes or polls.
- **Customer testimonials.** Customer experiences are typically published on vendors' sites, and third-party sites such as **tripadvisor.com**. Many sites encourage discussion (e.g., **bazaarvoice.com/solutions/conversations**).
- **Expert ratings and reviews.** Ratings or reviews can also be generated by domain experts and appear in different online publications.
- **Sponsored reviews.** These are written by paid bloggers or domain experts. Advertisers and bloggers find each other by searching through websites such as **sponsoredreviews.com**, which connects bloggers with marketers and advertisers.
- **Conversational marketing.** People communicate via e-mail, blog, live chat, discussion groups, and tweets. Monitoring conversations may yield rich data for market research and customer service (e.g., as practiced by Dell; see their social media command center).
- **Video product review.** Reviews can be generated by using videos. YouTube offers reviews that are uploaded, viewed, commented on, and shared.
- **Bloggers reviews.** This is a questionable method since some bloggers are paid and may use a biased approach. However, many bloggers have the reputation to be unbiased.

Example: Maui Jim

Maui Jim (**mauijim.com**) is a designer of high quality polarized sunglasses. The company is using Bazaarvoice Ratings & Reviews to enable customers to rate the company's sunglasses and accessories.

The company is relying on word-of-mouth marketing to advertise its products and help shoppers. Customers are invited to share their opinions on the style, fit, and quality of specific sunglass models. The invitations appear when customers are conducting a search. Maui Jim sends customers an e-mail asking them to review products and the company has reviews on its pages in selected social network sites.

Social Recommendations and Referrals

Recommendation engines allow shoppers to receive advice from other shoppers and to give advice to others.

Social shopping may combine recommendations in a social network platform with actual sales. Social recommendations and referrals are closely related to ratings and reviews and are sometimes integrated with them.

Example: ThisNext

ThisNext (**thisnext.com**) is a social commerce site where community members *recommend* their favorite products so others can discover desirable or unique items and decide what to buy. ThisNext uses WOM, social experiences, and personalization to facilitate shopping. To assist with discovery and help finalize shopping decisions, the community includes experts, bloggers, style mavens, and trendsetters. ThisNext has also developed a set of shopping tools for bloggers, designers, and shoppers. For further description, see **thisnext.com/company**.

It makes sense to combine recommendations with marketing communications and shopping. Sites in this category allow shoppers to receive and provide advice to specific friends, in contrast with traditional online product reviews that include advice provided by unknown shoppers. Furthermore, these sites sell ad space, provide coupons, and some offer automatic cash-back rewards for shopping with local merchants.

Sometimes, social recommendations are embedded in social shopping portals that offer shopping tools as well as bundling recommendations with ratings and reviews.

Common recommendation methods are:

- **Social bookmarking.** Recommended products, services, etc. are bookmarked so members of social networks can easily find them.
- **Personal social recommendations.** These are based on finding people with similar profiles. By using these customers' actual purchases, conclusions can be reached about general and targeted recommendations (e.g., see Apple's Near Me [**getnearme.com**]; applications that are popular based on a user's current location), Amazon Recommendations, and Snoox (**snoox.com**; "your friends' recommendations on everything").
- **Referral programs.** Affiliate programs (e.g., Amazon Associates [**affiliate-program.amazon.com**], Apple's iTunes Affiliate Program [**apple.com/itunes/affiliates**] pay people for referring new customers). For more about referral programs, see **slideshare.net/getAmbassador/building-an-effective-referral-program**.
- **Matching algorithms.** Consulting companies and vendors (e.g., Netflix) provide recommendations based on similarity algorithms (as described in Chapter 3).

Illustrative Example of Recommendation Sites

A typical example is provided next.

Buzzillions

Buzzillions (**buzzillions.com**) is a user-generated product review site. It gets reviews from its parent company, PowerReviews (acquired by Bazaarvoice), which provides customer review software to e-commerce sites. It also incorporates product reviews from companies that use other third-party providers, or have an in-house review system. The site provides several useful tools for tagging and researching the reviews. It also provides ranking. By 2016, it had over 17 million product reviews.

Buzzillions' business model is based on selling traffic, or product leads, from Buzzillions right back to the merchant network that uses PowerReviews. In other words, Buzzillions' readers read reviews imported from many other sites, and they can then click on products of interest, giving them the opportunity to read more about these products and possibly purchase them at the seller's site.

The company is unique because:

1. The rankings are based on feedback from customers. The company provides the tools to narrow down the search, but the consumers have to read the reviews to see if the product is right for them.
2. Positive or negative, all reviews are encouraged on Buzzillions. Unless a review is profane or violates the company's terms, it will be shown on the site.
3. Buzzillions does not sell products, although the company has retail partners listed on the site for direct contact by consumers.

Concerns About Social Reviews and Recommendations

Some people raise the issue of how accurate the reported reviews and recommendations are. Fake reviews and claims are suspected to be 30–40% of the total reviews in some sites. For example, see the "allegations against business owners" at **en.wikipedia.org/wiki/Yelp**. There is also a concern about businesses paying money to review sites to manipulate the reviews. Another concern is that in cases of small number of reviewers a bias (positive or negative) may be shown. For a discussion, see Barnett (2015).

Other Shopping Aids and Services

In addition to recommendations and marketplaces, there are several sites that provide social shopping aids, as illustrated in the following examples.

Yelp: The Shoppers' Best Helper

Yelp (**yelp.com**) is company that operates a local guide for helping people find in a specific city services ranging from mechanics to restaurants based on reviews and recommendations of users. In this way, it connects people with great local businesses. Community members, known as "Yelpers," write reviews of the businesses and then rate them. Yelpers also find events and special offers and can "talk" with each other (e.g., see **yelp.com/talk**).

The site is also a place for businesses to advertise their products and services (paying fees to Yelp for posting a "Yelp Deal"). Yelp is also accessible via mobile devices. The site offers several social networking features such as discussion forums, photo posting, and creation of groups and have followers. Yelp has a company blog (**yelpblog.com**), along with a community blog for Elite Yelpers worldwide (**yelpblog.com/section/yelp-community**). Yelpers who frequently become actively involved and engage on the site can apply to become an "Elite Squad" member (see **yelp.com/elite**).

How Yelp Works

Users look for a business in a specific location. Yelp's search engine finds available businesses and presents them with ratings and reviews as well as with accessibility and directions.

Yelp connects with Google Maps to show the business location and further aids in discovering related businesses.

Adding social features to user reviews creates a reputation system, whereby site visitors can see the good and the bad. For the topic of reputation management, see **seofriendly.com/search-engine-marketing-and-reputation-management**. For more on Yelp's operation, see "How Yelp Works" at **computer.howstuffworks.com/internet/social-networking/networks/yelp.htm**. For further information, see **yelp.com/faq** and **en.wikipedia.org/wiki/Yelp**.

Note that some shopping aids can be used for both online and off-line shopping. One such aid is the touch-screen PC available at kiosks in physical stores (e.g., Kohl's), where you can examine catalogs and place your order to be shipped to your home, while you are in the store.

Collaborative Reviews

Sites such as ProductWiki (**productwiki.com**) are structured like a wiki; thus, every user can contribute to the site. The goal is to create a comprehensive resource collection. The companies believe that a need exists for unbiased, accurate, and community-based resources for product information. These sites use *collaborative reviews*, a collection of pros and cons about a product submitted by and voted on by the consumers. The result is a comprehensive review that takes the opinions of many people into account and highlights the most important aspects of a product. A collaborative review is made up of two things—short statements and votes. Community members submit and vote on specific statements that are separated by pros and cons, making it easy to see what is good and bad about each product.

Dealing with Complaints

As seen earlier, customers have learned how to use social media to air their complaints. For a UK survey that shows that customers are more likely to complain via social media, see **xlgroup.com/press/new-survey-finds-customers-increasingly-likely-to-use-social-media-to-complain**. See also **wptv.com/dpp/news/science_tech/facebook-fb-twitter-twtr-used-to-complain-get-answers**.

Social Marketplaces and Direct Sales

The term **social marketplace** refers to a marketplace that uses social media tools and platforms and acts as an online intermediary between buyers and sellers. Ideally, a social marketplace should enable the marketing of members' own creations as Polyvore does.

Some examples of social marketplaces include:

- **Craigslist.** Craigslist (**craigslist.org**) can be considered a social network marketplace in that it provides online classified ads in addition to supporting social activities (meetings, dating, events).

- **Fotolia.** Fotolia (**fotolia.com**) is a social marketplace for royalty free photos, images, and video clips. In 2014, there were more than 31 million images available on the site. It serves a community of artists, designers, and other creative people who express themselves through images, forums, and blogs. Buyers can legally buy images (pay only one time for each or periodically) and then use these images and photos as they wish (e.g., resell them, modify them). For details, see **us.fotolia.com/Info/AboutUs**.
- **Flipsy.** Anyone can use Flipsy (**flipsy.com**) to list, buy, and sell books, music, movies, and games. It was created to fill the need for a free and trustworthy media marketplace. Flipsy does not charge commissions in order to increase the trading volume. Payment processing for items purchased is handled by a third party, such as PayPal.
- **Storenvy.** Storenvy (**storenvy.com**) is a marketplace for unique businesses and photos. At no cost to sellers, a simple way is made available (no programming experience is needed) to create personalized webstores. Sellers have the ability to make the sites as socially friendly as they wish, giving customers the chance to interact with the seller as well as other customers.
- **ShopSocially.** ShopSocially (**shopsocially.com**) is a consumer-to-consumer marketing communication and experience-sharing platform for shopping. This platform also enables shoppers to recommend products to their friends. ShopSocially combines the concepts of online shopping and social networks, creating a new business model of online social shopping. Users can solicit shopping information from friends via Facebook, Twitter, and e-mail. A combination of shopping questions, their answers, and purchases shared by friends creates a powerful experience and shopping knowledge base. For details and benefits to retailers, see **shopsocially.com**.

Direct Sales from Within Social Networks

There is an increased volume of direct sales, mostly on Facebook. Here is an example:

Example: How Musicians Sell Online via Social Networks

Many musicians and other artists used to invest money to make their own CDs, T-shirts, and other items before they sold them. Now there is a free social commerce solution. Audiolife Inc. (an Alliance Entertainment Company) provides artists with webstores (one per artist), where artists (sellers) can directly interact with potential buyers. This arrangement also allows artists to "make-to-order" and sell merchandise.

To entice fans to order products, artists post their own Audiolife selection on any large social network site (e.g., Facebook). Each order, even for one item, is then forwarded to the artist for production. Audiolife arranges payment and shipping to the buyers. By 2012, Audiolife powered close to 100,000 webstores worldwide, serving 300,000 artists, including those who are already established. Audiolife was acquired by Allince Entertainment in May 2012.

Example: How Buy Buttons Work

Following Facebook, other social networks and retailers introduced "buy buttons." Examples are: Twitter, Pinterest, Instagram (Kuchler 2015), Google and many more.

Socially Oriented Person-to-Person (P2P) Selling, Buying, Renting, or Bartering

When individuals trade online, they may do so with some social elements. For example, some consider **craigslist.org** to be a socially oriented virtual community and so is **altimetergroup.com**. Here are some more examples:

P2P Lending

P2P money lending is growing rapidly, enabling one person to lend money directly to another. In the process, they get to know each other. Another start-up created a community of people that rent goods to people in need, usually for the short term. **Snapgoods.com** helps these people connect over the Internet.

P2P Sharing (also Known as *Collaborative Consumption*)

SnapGoods facilitates P2P sharing. Some other sites like SwapBabyGoods.com (**swapbabygoods.com**) and Swapmamas (**swapmamas.com**) that help people share fruits that are growing in their yards or find fruit trees on public lands have a niche market. The sharing and renting trend is booming, especially during the economic recession; and there is a "green" aspect as well—saving on the use of resources. There is also the social aspect of sharing, allowing people to make meaningful connections with others (see Walsh 2010 for details).

Several variations exist. Some people share cars (ride sharing; e.g., Uber and Lyft), others invite travelers to stay free in their homes, or exchange homes (e.g., **homeexchange.com**) for a short periods and much more. LendingTree (**lendingtree.com**) is another company that allows prospective borrowers to get quick offers from multiple lenders. For a case study of P2P lending, see Online File W7.1.

In May 2013, Google invested money in the P2P investment site **lendingclub.com**. This company became a success in 2015, and it is listed on the New York stock exchange.

Shopping for Virtual Goods in a Virtual Economy

An increasing number of shoppers purchase all kinds of virtual products and services online. **Virtual goods** are computer

images of real or imaginary goods. These include, but are not limited to, properties and merchandise on Second Life (such as virtual mobile phones to equip your avatar), and a large number of items sold in multiplayer games on social networks (e.g., FarmVille on Facebook).

The Virtual Economy

A **virtual economy** is an emerging economy existing in several virtual worlds, where people exchange virtual goods frequently related to an Internet game or to a virtual business. People go there primarily for entertainment. However, some people trade their virtual goods or properties. A virtual property can be any resource that is controlled by virtual objects, avatars, or user accounts. For the characteristics of these properties, see **en.wikipedia.org/wiki/Virtual_economy**.

Why People Buy Virtual Goods

There are several reasons why people buy virtual goods. For example, many people in China buy virtual properties because they cannot afford to buy properties in the real world. According to Savitz (2011), there are four major reasons for such purchases made in any country:

1. **Generating special experiences.**
2. **Generating emotions.**
3. **Small purchases make people happier.**
4. **Virtual goods are low cost and low hassle.**

Real-Time Online Shopping

In real-time online shopping, shoppers can log onto a site and then either connect with Facebook or with another social network instantly from a smartphone or computer, or invite their friends and family via Twitter or e-mail. Friends shop online together *at the same time*, exchanging ideas and comparing experiences.

Some real-time shopping platforms are Facebook's social graph-based shopping platforms. Another player in this area is BevyUP (see **bevyup.com/resources** and **samesurf.com/about.html**). These empower multiple users to share their experiences in real time.

For more on how Facebook "likes" and social plug-ins help business websites, see **searchengineland.com/by-the-numbers-how-facebook-says-likes-social-plugins-help-websites-76061**.

Note: Facebook is considering building a shopping mall to compete with Amazon.com. Facebook will add a strong social flavor to the mall (see King 2015).

Social Shopping in the Near Future

Imagine this scenario: A retailer will ask you to log in with Facebook on your mobile device as soon as you step into a physical store. Many of Facebook's partners have custom Facebook applications (Partner Apps) that users can download through their app stores, including Blackberry and Windows Phone (see **facebook.com/mobile**).

In this way users can receive *customized recommendations* on their mobile phones. You can expect that your friends who have been in that store will indicate electronically, which clothes may be the best fit for you (e.g., using "likes"), then walk in and find what to buy. What about the risks? Privacy is a concern to many, but less important to "Millennials" who frequently share their experiences with others. In addition, sometimes people do not need to reveal their full identity on an in-store screen. See a related video titled "The Future of Shopping" (48 s) at **youtube.com/watch?v=R_TAP0OY1Bk**.

For example, when you walk into a dressing room in a department store, the mirror reflects your image, but you also see the images of apparel items (you like and certain) celebrities wear, all on an interactive display. A webcam also projects an image of a consumer wearing the item on a website, for everyone to see. This creates an interaction between the consumers inside the store and their social network (friends) outside the store. The technology behind this system uses RFID (Radio Frequency Identification), and has already been tried by the Prada store in New York City for showing customers which shoes and purses would go with the clothes they are trying on in the dressing room. You can watch a video titled Future Store "Smart Dressing Room" (2:53 min) of how a "smart" dressing room works at **youtube.com/watch?v=0VII-xdg5Ak&feature=related**. Note that due to privacy concerns, Prada (and others) discontinued their RFID experiments.

SECTION 7.4 REVIEW QUESTIONS

1. Define social shopping and describe its drivers.
2. List the major benefits of social shopping.
3. List the major models of social shopping. Briefly describe their functionalities.
4. Describe ratings, reviews, and recommendations.
5. Define group buying.
6. Define social communities and social clubs as they relate to marketing. How do they work?
7. Define social marketplaces. What is going on there?
8. Describe the major shopping aids.
9. Describe shopping for virtual goods.
10. Describe social shopping in the near future.

7.5 SOCIAL ADVERTISING: FROM VIRAL ADVERTISING TO MICROBLOGGING AND OTHER PROMOTIONS

The major current revenue source for many social commerce companies is advertising. The reason is that seeing the large number of members and visitors in the social networks, and the amount of time they spend there, has given advertisers the motivation and justification to pay a great deal for placing ads and running promotions in those networks. Like other SC activities, advertising is done both in public and in private company-owned social networks.

Many advertisers are placing ads on Facebook, YouTube, LinkedIn, Instagram, Pinterest, or Twitter. Although social media campaigns may have a small impact on actual online retail sales, they may have huge benefits with regard to increasing *brand awareness*. Millions of companies have pages and a presence on all major social networks.

Social Ads and Social Apps

Most ads in social commerce are branded content paid for by advertisers. These come in two major categories: *social ads* and *social apps*.

1. **Social ads.** These display ads and banners are placed in social games and discussion boards in social networks.
2. **Social apps.** These applications support social interactions and user contributions. These are more complex to implement than social ads.

Facebook features hundreds of thousands of third-party software applications on its site. One popular application area is travel. For example, one specific application is "Where I've Been," which includes a map of places where users have visited or hope to visit. You can plan trips, organize group travel, and find and rate paid or free accommodations (e.g., at Couchswap). This information can be sold to travel-oriented vendors, who in turn advertise their products to Facebook members. Of special interest is Tripadvisor's "Cities I've Visited" with its interactive map.

Viral (Word-of-Mouth) Marketing and Social Networking

Viral marketing refers to electronic word-of-mouth (WOM) method by which people tell others (frequently their friends) about a product they like or dislike. Viral marketing and advertising has several variations and it plays a major role in e-commerce and social commerce. For more, see Logan (2014) and Turban et al. (2016).

Young adults are especially good at viral marketing. If members like a certain product or service, word-of-mouth advertising will spread rapidly sometimes to millions of people at a minimal cost to companies' advertisers. For example, when YouTube first started up, the site conducted almost no traditional advertising in its first few months, but millions joined because of WOM. For the "power of WOM," see **bazaarvoice.com/research-and-insight/social-commerce-statistics** and Wilde (2013), for an example of using Instagram to acquire customers, see Smith (2015).

Viral Blogging

Many retailers are capitalizing on WOM marketing by using bloggers. When viral marketing is done by bloggers, it is referred to as **viral blogging**. Viral blogging can be very effective with the use of tools such as Twitter (e.g., do a Google search for "Dell Uses Twitter to Drive Sales").

Note that paid bloggers may be biased in favor of those that hire them. This could be a concern for the blogs' readers.

Other Viral Marketing Methods

Viral marketing is done in most social networks through internal e-mail, text messages, and forwarding of videos, stories, and special offers. In addition, there are other innovative ways to go viral.

Location-Based Advertisements and Social Networks

Location-based advertising and marketing is a business model for m-commerce. The model is based on knowing where a customer is via the GPS in her or his cell phone. Once the vendor knows that a person is near a certain business, the vendor can send a text, e-mail, or even a telephone call offering discounted products, coupons, or services. This targeted ad-based business model was not too successful in traditional e-commerce. Customers were not interested, and those with GPS shut it off due to privacy concerns.

The situation changed with the introduction of social networks. The nature of location-based marketing changed to being social, entertaining, and rewarding; advertisement came as an add on service. Location-based ads generated significantly more interactions than non-targeted ads. The technology is based on geolocation and geosocial networks.

Geosocial Networking

Geosocial networking is social networking with location awareness capabilities. This enables social networks to connect

users with local businesses, people, or events. The location of people is found by tracking their mobile phones or receiving text messages from them that provide their locations.

The Technology for Location-Based Social Networks

The basic idea is that users who have a GPS-enabled smartphone can let their friends know where they are. Users can also examine locations recommended by friends or "check in" with them remotely. Users may give permission for ads to be sent to them.

Foursquare and Its Competitors

Several start-ups are competing fiercely in the geolocation market. A major one is Foursquare.

How Foursquare Works

Foursquare works with all major smartphones. Alternatively, one can use the Foursquare mobile website. Either way, Foursquare will find your location (with your permission) and provide a map, marking your location as "checking in." This information can be transmitted, with your permission, to your friends and to vendors. A detailed explanation of how Foursquare works and how to join is provided at **computer.howstuffworks.com/internet/social-networking/networks/foursquare.htm**.

You can check in at any participating location. When your friends are aware of your location, they can suggest what you visit or where to shop in the vicinity of your location.

Foursquare provides incentives to encourage users to digitally "check in" to specific locations. The check-ins show up on Twitter, Facebook, and other social networks.

Changes in the Business Model

In April 2014, Foursquare introduced a major change in its business model. The company changed its check-in capability to show users which of their friends are nearby (an app known as "Swarm"). The company also embarked on local recommendations, competing with Yelp. For an example, see Online File W7.2.

Privacy Concerns for LBS

There are some privacy concerns regarding finding the location of people or showing their profiles and shopping habits.

Opt-In Versus Op-Out

Location can be allowed with *opt-in* or *opt-out*. An "opt-in" is a permission-based system that requires a user to join or sign up. Foursquare (or a similar company) is then given permission by friends or vendors to access the user's information and to contact him or her. An "opt-out" is an option which excludes the user from a group. Thus, users need to remove themselves from the system if they wish to be excluded.

Facebook's Place Tips App

This app uses your phone's location service to surface more information about places you visit. The app draws on posts created from a place's page and from your friends. Facebook also uses the app to make recommendations and may place ads. Now when you visit a location, the app will bring up posts and photos (see Tam 2015). Recently, companies started to use Instagram for advertising (see Smith 2015).

Using YouTube and Other Social Presentation Sites for Advertising

Using videos for advertising is becoming a major successful strategy. Sellers introduce new products or try to improve a brand image by attaching video clips to their product pages on social networks, or their corporate portal.

Viral Videos

A **viral video** is any video that is forwarded rapidly from one person to others, sometimes with a recommendation to watch it. Social networks are an ideal place to disseminate such videos, which became popular due to Internet sharing (mostly through video sharing websites, e-mail, texting, blogs, etc.). This method is inexpensive.

In Chapter 9 we will describe the use of videos for advertising, mostly via their viral impact. Here we briefly describe how viral videos work with social commerce. Social media can be most powerful when a video goes viral, because it is an attention grabber (e.g., funny). People forward videos or their URLs to their friends and acquaintances, and as a result, many watch a video that may contain an ad or show a brand logo. Certain videos can receive several million hits in less than a week. Of course, big brands dominate here. For example, among the most well-known viral videos of 2012 were those produced by Nike, Visa, Mattel, and Samsung.

Why It Works

Interesting videos seen on YouTube are usually shared through Facebook, Twitter, or e-mail. These posts are in turn shared through the same channels from the recipients.

Interesting examples are available at **blog.socialmaximizer.com/youtube-business-use-cases**.

Using Twitter as an Advertising and Marketing Tool

Twitter and some other microblogging sites have added social networking capabilities to their sites such as creating profiles and lists of fans and friends. Sellers can reach out to these friends to create strong WOM.

Twitter is becoming a little more of a business. The company launched its first ad product—"promoted tweets"—in 2010 and netted $45 million in ad dollars. That was due in part because brands like Virgin America, Coke, Ford, and Verizon were willing to experiment with the idea. Twitter earned about $2.2 billion in 2015, up from $1.4 billion in 2014. Companies can tweet about their business and product offerings, including promotions. This way, they can attract Twitter followers to visit their stores. Twitter may help disseminate ads resulting in increased sales. Twitter's software suites help merchants reach their Twitter followers by posting "tweets" when the merchants add new products or create promotions. For successful examples, do Google searches for "twitter simply speakers," and "twitter SBLpublishing." Twitter is already the world's second-largest social networking platform (about 1.3 billion registered users in August 2015), see reports at **mediabistro.com**. This may help the microblogging site compete with Facebook in attracting advertisers.

Finally, here are some more ways one can do business or advertise on Twitter. These are:

- **Recruiting and finding jobs.** These can be facilitated by direct contacts, or contacts via an intermediary.
- **Brand display.** A company's blog, display ads, and marketing communications can be displayed on Twitter. Bloggers can display their capabilities.
- **Market research.** By listening to tweets, companies can learn what customers and competitors say. Also, companies can actively participate in discussions.
- **Delivering offers.** Companies can offer promotions, coupons, and discounts to those that opt-in. For example, American Express synchronized their customers' accounts with the customers' Twitter account to provide discounts from participating merchants.
- **Collaboration.** Twitter provides for efficient collaboration within and between organizations.
- **Customer service.** As will be described in Section 7.5, Twitter can facilitate CRM and customer service.
- **Using professionals to enhance company presence on Twitter.** Twitter is used by many professionals, some of who are social commerce influencers. Companies can interact with these professionals and with active bloggers.
- **Cost effectiveness.** Interacting with customers and business partners using Twitter is very cost-effective. An example is American Apparel, which is using Twitter to solicit and discuss ideas for ads.

A major success factor is the mobility of Twitter. Most people tweet from mobile devices. As a matter of fact, the majority of its advertising revenue comes from mobile ads.

Other Innovative Ways to Advertise in Social Media

A major objective of social advertising is to increase traffic to the digital and or physical sites, as described in the Starbucks opening case in Chapter 1. There are many innovative ways to do this. 3dCart (**3dcart.com**) lists the following: Advertise your Facebook store on your company's Facebook Page, place a "Like" button linked to a customer story to your product page, and use social e-mail marketing on Facebook; advertise your store using customer stories through Twitter; advertise in videos on YouTube; use mobile apps; and social bookmarking will improve communications from your product page.

- Use a Facebook Page for your company, and add a Facebook Store. Customers will become "fans" of your business to check on updates and meet others with similar interests.
- Tweet about the business and any promotions/new products, etc.
- Blog to your customers to keep them updated about new products, etc.
- Integrate videos (e.g., YouTube) on your website.
- Add social bookmarking to your product's page for easy return.
- Embrace mobile apps.
- Add a Facebook "Like" button with its sponsored story to your product (e.g., Gatorade brand scored 1.2 million conversations in 6 months using their "Mission Control" campaign).

For details on each of the above and more, see **blog.3dcart.com/7-social-commerce-tools-to-increase-traffic** and Offerpop (2014).

For how ZIPCAR is using social campaigns on Facebook to drive traffic to their website, see Belosic (2015).

The Changing Rules of Branding

The December 2010 issue of *Harvard Business Review* is dedicated to the new rules of branding introduced by social media. Four articles there discuss how social networks can help you build—or destroy—your brand.

Using Blogs

Blogs are Web 2.0 tools known as being an effective means of market communication, information dissemination, recommendations, and discussions about products (including upcoming ones). For example, merchants can post ideas about new products to start a discussion and collect opinions. Blogs can be added to a company's Facebook page (or pages of other social networks) as well as to the company's in-house webstore. In addition, companies can place click-on banners on bloggers' pages.

Using Coupons

Coupons can be distributed in several ways in social commerce. One method is to distribute coupons by deploying LBS. Once a vendor knows your location and how to e-mail or text you, targeted coupons can be sent to you. Another way is to offer coupons on a company's Facebook Offers page. This is done via *Facebook Offers*. Coupons are used by Groupon (see the closing case in this chapter).

Facebook Offers

This feature allows companies to post coupons on their Facebook page. Fans as well as other users can "claim" the offers (click on "get offer") that come as a mobile newsfeed. Any offer that is claimed is e-mailed to the person who claimed it for printing or sharing with friends. Offers can be daily deals and other promotions.

Using Snapchat

This social network is emerging as a serious venue for advertising and sales. For an overview, see Quensenberry (2016).

Mobile Advertising

Mobile advertising is a rapidly developing area. It refers to advertisements on smartphones and other mobile devices. The competition for mobile ad revenue is intensifying, especially with the increased use of smartphones. Advertisers are starting to attach ads to video clips (see Chapter 9). Finally, advertisers use microblogging, especially Twitter, to reach large audiences.

SECTION 7.5 REVIEW QUESTIONS

1. Describe advertising in social commerce.
2. Define social ads and social apps.
3. Define viral marketing.
4. Describe viral blogging.
5. Define geolocation and geosocial networks.
6. How does location-based advertising work?
7. List some concerns of LBS advertising.
8. Describe viral videos.
9. How is Twitter used for advertising?
10. Describe mobile advertising.

7.6 SOCIAL CUSTOMER SERVICE AND CRM

The customer service landscape is undergoing significant transformation. The change is reflected both in the way that customers interact with organizations and the manner in which the company's employees interact with customers. For an overview, see Goldenberg (2015).

These changes resulted from the introduction of social media; and at first, one may think that not much of a connection exists between customer service and social commerce. However, the opposite is true. Managing customer relationships is a major business challenge related to social business implementation.

How Does Social Networking Empower Customers?

It is said that one angry tweet can torpedo a brand, but one sweet tweet can correct a problem. Many customers have ended a relationship with vendors due to perceived poor customer service. Let us examine how Facebook helped change a policy for one company.

Example: How Facebook's Chorus Ended the Instrument Luggage Ban at Qantas Airways of Australia

Qantas Airways had a policy that required large musical instruments to be stored in the cargo hold, which would sometimes cause damage to the instruments. In Fall 2010, after suffering $1200 in damages to her saxophone, Jamie Oehlers of Australia organized a Facebook campaign to persuade the

airline to reverse the policy. When one person complains, the company's standard response is to send the customer a letter of apology, but usually the policies does not change. However, more than 8700 people (including members of the country's symphony orchestras) joined forces on Facebook by posting similar incidents and pictures of damaged instruments and saying they would boycott Qantas if the airline did not change their policy. Qantas announced that they listened to their customers, and indeed, amended the policy, by allowing any instrument in a hard-shelled case on board, provided it falls within the airline's length and weight restrictions. For information about Qantas's new policy, see **qantas.com/travel/airlines/carry-on-baggage/global/en**.

This story is not unique; similar stories appear in the media frequently. A well-known case is "United Breaks Guitars," which also is published in a book and a video that has been watched by over 15 million people, see **youtube.com/watch?v=5YGc4zOqozo**.

Social CRM

Customer relationship management (CRM) is a customer service approach that focuses on building long-term and sustainable customer relationships that adds value for both the customers and the merchants. When delivered online, it is referred to as e-CRM (Online Tutorial T1). A major area of e-CRM is social CRM.

Definition

Social customer relationship management (**SCRM)** (also known as **CRM 2.0**) is CRM supported by social media (e.g., Web 2.0 tools, social network sites), which is designed to engage the customer in conversations, sharing, and other interactions in order to provide benefits to all participants and increase trust. SCRM is based on social media, in support of companies' stated goals and objectives of optimizing the customer's experience, and building trust and loyalty. Success requires considering people, business processes, and technology associated with the interactions between customers and enterprises. Like CRM, a major goal of SCRM is building trust and brand loyalty.

SCRM is an extension of CRM, not a replacement. It adds two dimensions: social media and people. It is designed to engage customers in conversations using social media tools. An important goal of SCRM is to add benefits to the sellers (e.g., increased trust, loyalty, and sales from their customers) and to the customers (e.g., better and quicker service, and more engagement). SCRM is the segment of business strategy that addresses the issue of how companies adapt to the *social customers* and their expectations regarding the treatment by the companies with which they interact. For a detailed presentation of social CRM, download the free e-book by Fagan (2014). For comprehensive coverage of social CRM, see Lacy et al. (2013) and Goldenberg (2015).

The Components of Social CRM

The major elements and characteristics of SCRM are shown in Figure 7.3. As the figure illustrates, these characteristics are the foundations of a social customer who is driven by social networking. The social customer's needs are different from those of the customer who does not use social media. Social customers, for example, want to communicate with vendors by using the Internet. This communication is provided by social media, which is the major element of social CRM. The social environment is also a major element of social CRM, since it is the source of interactions with the social customer.

How to Serve the Social Customers

Empowered customers are referred to as **social customers** (see Chapter 1). These are customers who usually are members in social networks, do social shopping, and understand their shopper's rights and how to use them to their advantage. Social customers select the mode of interaction with companies. These customers are influenced by friends, mavens, and family. Merchants must understand how social customers differ from conventional customers, and provide them with socially based customer service (see Goldenberg 2015 for details).

Methods and Guidelines for Social Customer Service

How does a company serve the social media customer?

Companies are looking for an answer to this question not only because they are afraid of the negative comments posted by social network members, but also because they see an opportunity to involve customers in providing feedback and ideas on how to improve customer service and operations. Furthermore, companies can solicit feedback from customers to improve customer loyalty and make their own customer service people more satisfied at work. For how this is done, see Fagan (2014). Procedures, guidelines, and software are available for social CRM (e.g., see Goldenberg 2015).

The Benefits of Social CRM

Social customers place new demands on organizations. However, social media tools meet these demands nicely, usually at a low cost. Social media provides for engagement and collaboration that eventually results in a competitive advantage to the organization if implemented properly (see Turban et al. 2016).

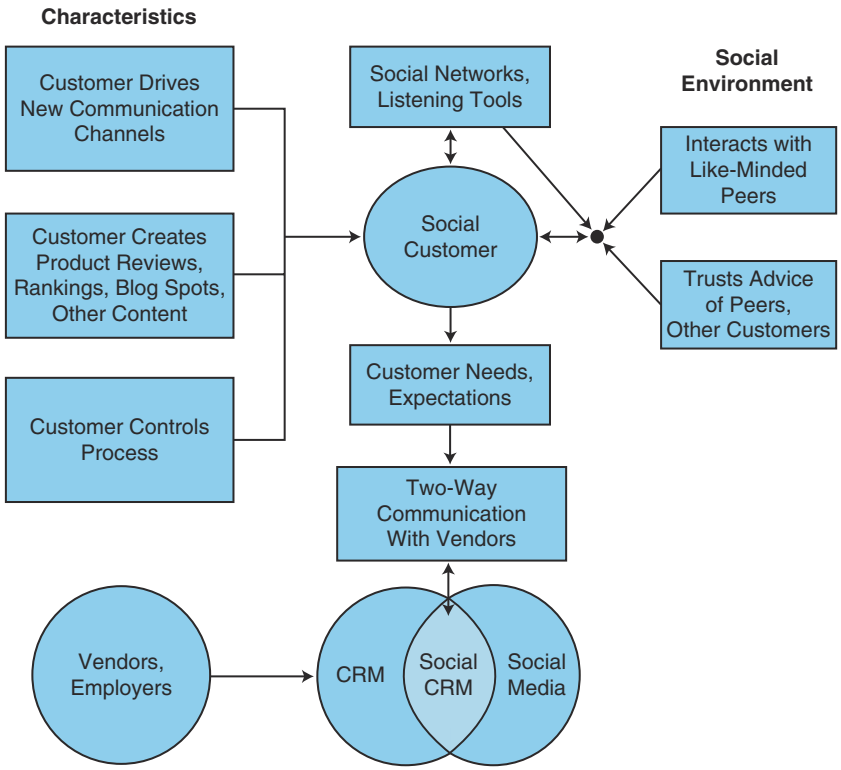

Figure 7.3 The elements of social CRM

Social CRM offers the following potential benefits to customers ("c") and enterprise ("e"):

Note: Several of these are illustrated in Case 7.2 (iRobot, presented later in this chapter). These benefits to iRobot are marked with an [i].

For additional benefits, see Fagan (2014).

- Drives quick resolution of customers' problems (c).
- Provides for effective and efficient business-customer collaboration (c), (e).
- Improves the reputation of companies (e), (i).
- Provides better understanding of customer needs and wants (e).
- Provides focused, intuitive, and easy-to-use CRM applications (e).
- Provides better marketing, better targeting, and improved products/services due to customers' creation of content, and WOM (e).
- Provides customer input for market research at a quicker rate and at a low cost for improving products and customer service (e).
- Provides customers with more information about products/services quickly (c), (i).
- Increases trust and loyalty (e).
- Provides a more complete view of the customer than what traditional CRM can provide (e).
- Decreases overall customer care costs (e.g., through self-helping communities) (e).
- Enables salespeople to find sales leads quickly and easily (e).
- Develops new revenue opportunities and turns new customers into repeat customers (c).
- Increases CRM staff productivity by teaching them to use analytics and collaboration 2.0 techniques (e).
- Improves employee performance by benefiting from knowledge sharing gained in social networks (e).
- Improves customer satisfaction by providing them with opportunities for engagement using social media platforms (c), (i).
- Converts leads to opportunities with more effective campaigns (e).

CASE 7.2: EC APPLICATION iROBOT USES SOCIAL MEDIA FOR MULTICHANNEL CRM

iRobot (**irobot.com**), which was founded in 1990 by three roboticists at MIT with the vision of making practical robots a reality, designs and builds some of the world's most important

nonmilitary robots. According to their website, in 2015, iRobot generated $617 million in revenue. iRobot makes robots for the government, defense and security, military and civil defense forces worldwide, commercial applications, industry, and home use. The public is mostly familiar with the Roomba vacuuming robot. Due to the technical nature of its products, the company's customers may require specialized support and service. On their customer care website, the company provides self-diagnosis, support videos, live chat, product FAQs go to "customer help" and (type in a problem and receive automatic answers), and more (e.g., see **homesupport.irobot.com/app/answers/list/session/L3RpbWUvMTQwMDQzNjk4NS9zaWQvODJsX1ZBVWw%3D**). However, there are home market customers who may need more technical assistance since many are new at using robots. The company's objective is to expand the sale of home market products. Therefore, they must provide extensive assistance to inexperienced customers. The company supports a community and provides discussion boards, community search capability, and live chat.

Social CRM: Serve the Customers While Learning from Them

iRobot utilizes a CRM system with the help of Oracle RightNow Inc. (see Oracle Service Cloud at **oracle.com/us/products/applications/rightnow/overview/index.html**). The system enables customers to contact iRobot's service group via several different communication channels, including e-mail, live chat, social networks, and Web self-service. This way, iRobot can respond to any online customer communication in a timely manner, regardless of the channel used. All this needs to be done at a low cost; therefore, it is necessary to automate the services.

Specific Social Media Activities

iRobot customers can post service and support requests or complaints on **homesupport.irobot.com** or they can contact the help desk. Customers can also communicate with each other. The company monitors these messages and tries to provide immediate responses. iRobot tries to find the identity of the customers that have problems by monitoring relevant conversations in the various social channels (e.g., in forums on social networks). Once identified, iRobot communicates with the customers privately to resolve the issues.

The social media-oriented activities are integrated with documents and videos in a knowledge base managed by RightNow. The company uses RightNow's monitoring tools to identify the customers who post the comments. Some customers may provide their real names. Anonymous customers are encouraged to contact iRobot directly. For how the company listens to social media, see **informationweek.com/software/social/roomba-robots-listen-to-social-media/d/d-id/1100404?**. For a podcast, see **moneybasicsradio.com/2013/04/irobot-social-media**.

Responding to issues quickly is important because, as discussed earlier, customers can attract a considerable amount of attention using YouTube or Twitter (the company runs promotions, such as giveaways and games on Twitter), to publicize their complaints. In addition to problem resolution, the company gets valuable feedback from the customers, so it can improve its products and services.

iRobot has a presence on Facebook, Twitter, Pinterest, YouTube, and Tumblr. The company uses these sites to disseminate information and collect customer feedback and complaints.

Sources: Based on **irobot.com/About-irobot.aspx** (accessed March 2016).

Questions

1. What is meant by the term *multichannel service support*? What is the benefit of multichanneling?
2. What are the activities related to social media at iRobot? What are their benefits?
3. Describe how the company listens to their customers' complaints, and how they resolve the problems.

The Evolution of Social CRM

Now that you have a basic understanding of CRM, e-CRM, and SCRM, we can look at the evolution of SCRM as well as some differences between SCRM and e-CRM. SCRM can be viewed as an extension of e-CRM. Most e-CRM software companies, such as Salesforce Inc. (**salesforce.com**), offer social media features in their products. However, there are some significant differences between e-CRM and SCRM. These differences can be seen at **slideshare.net/JatinKalra/e-crm-112520123741** and Turban et al. (2016; Chapter 7). Social CRM today is delivered in many cases by mobile devices (see Goldenberg 2015).

Cipriani's Multidimensional Presentation

Fabio Cipriani (2008) outlines the difference between CRM and SCRM (referred to as CRM 1.0 and CRM 2.0) along the following dimensions: landscape, customer touch points, business processing modeling, technology, and organizational mindset. The differences between CRM 1.0 and CRM 2.0 are illustrated in Figure 7.4.

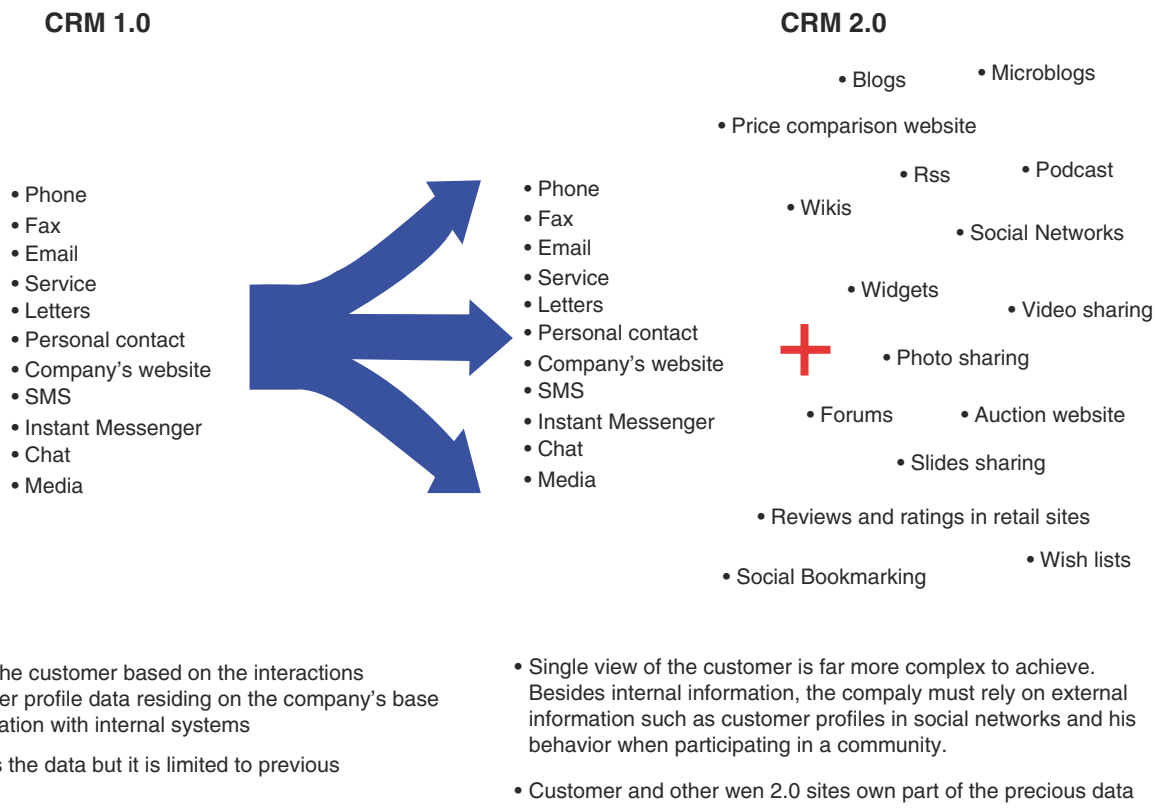

Figure 7.4 Touch points in CRM versus SCRM (Source: Courtesy of F. Cipriani, "Social CRM: Concept, Benefits, and Approach to Adopt," November 2008. **slideshare.net/fhcipriani/social-crm-presentation-761225** (accessed March 2016). Used with permission)

Example: Get Satisfaction for CRM

Get Satisfaction (**getsatisfaction.com**) is a platform where customers can interact with one another and voice their opinions and complaints. Using a forum, they can quickly get resolutions to their problems. Each community is organized around four topics:

1. **Ask a question**. Customers can answer one another's questions.
2. **Share an idea**. Aggregated feedback is provided from customers (by topic, product, vendor).
3. **Report a problem**. Search to see if anyone posted a similar problem. Post yours.
4. **Give praise**. Customers can praise a product or vendor.

Get Satisfaction provides information on the customers' conversations to interested vendors at no charge.

For an example of a Get Satisfaction Support Community, see **getsatisfaction.com/safarichallenge**.

Conclusions

Implementing social CRM requires empowering the employees, which means that a new set of employee skills may be needed. For a long time, marketers have said that everything starts with the needs of consumers. With social CRM and all the social media product discussions, marketers must now learn how to incorporate this philosophy in their strategies.

Examples of Implementation of Social Customer Service and CRM

There are several models and methods for implementing social customer service. First let us look at what Safeway is doing in this area.

Example 1: How Safeway Provides Social Customer Service

Safeway, a large grocery chain, has a virtual customer club. Members can get in-store discounts as well as e-mails with coupons and a description of what is on sale. An online newsletter with health news and recipes, shopping tips, etc. is also available to members. To extend this service, Safeway invites their customers to become Safeway Fans on Facebook and follow the company on Twitter. This allows customers/members to know about exclusive promotions. Also, members can connect and share information with other Safeway shoppers.

In their "Just for U" program, shoppers can get digital coupons and personalized deals when they click on a certain

coupon, say for milk; then, when they buy milk they get a 10–20% discount. There is no need to clip coupons anymore. For more information, see **safeway.com/ShopStores/Justforu-FAQ.page**.

Additionally, customers can visit the company's blog, *Today at Safeway!*, where the company's team members post items from Floral, Bakery, and other departments throughout the store. Safeway's experts also publish information about nutrition, environmental sustainability, and more. Members of the virtual customer club can comment on the blog and are asked to post original content only.

Example 2: REI Adventure

This fast-growing adventure travel company has a trip planning division that sells outdoor clothing and gear. For customers who want to travel to a specific destination with others who share similar interests, REI Adventure puts together groups of people and fully plans the group trip. The planning documents are prepared manually and shipped to the customers. A fully computerized solution is initiated around Salesforce Sales Cloud. The system has two parts: One for employees and another one for customers. This is basically a social CRM system on both parts. It permits customization of trips to individuals in the groups. The system has a friendly interface, and all documents are sent quickly online. Overall, the system makes customers very satisfied, the employees can serve more customers, the customers can communicate with each other as they discover their adventure destinations. For details, see Brown (2016).

Example 3: How Best Buy Uses Twitter to Provide Real-Time Customer Service

Best Buy is a large appliances retailer. The company uses their Twitter account @twelpforce to interact with customers.

Best Buy empowered its technical support service (called Geek Squad) and other corporate employees (total 4000 participants). There, any employee who finds a relevant tweeted question can answer the customer. The answers are visible on the website, allowing other employees to add information.

For additional examples, see **socialmediatoday.com/tags/customer-service**.

Social Networking Helps Customer Service in Small Companies

Most of the examples provided so far have dealt with large companies. What about the small ones? Obviously, there are some applications the SMEs cannot afford. But many other applications can be deployed.

Example: Teusner Wines

Teusner Wines (**teusner.com.au**) is a small three-person boutique winery in Australia. Using Twitter, the company's one-person marketing department:

- Initiates online conversations about wine with influential people in the wine industry.
- Sends tweets to people he finds talking online (e.g., in communities) about Teusner Wines, praising them for trying the wines.
- Starts to build trust with customers via online conversations.
- Invites people to tour the winery and taste the wines.
- Advises potential customers in the United States and Canada where they can buy the Australian wine.
- Monitors real-time online feedback from customers.
- Encourages customer-to-customer social media conversations.
- Posts customer reviews using Twitter.
- Shares all information with Twitter followers.
- Use Instagram to show photos and get "likes."

All this is done in a tiny company at virtually no cost. For details, see **dottedlinecollaborations.com/social-media/case-study-using-twitter-attract-new-customers**.

For large companies, it is necessary to integrate marketing, customer services, and social networks.

Reputation Management System

Not all postings in social networks are positive. The problem is what companies do when they see negative comments (see Christman 2014 for an overview).

Companies cannot block people from posting negative comments on social platforms, including Facebook pages. If a company blocks such postings, it eliminates the potential positive comments from its fans, losing the positive WOM and customer feedback. If companies delete posts, the poster and others may retaliate. A possible solution for reputation management is to design the space for comments in a way that encourages positive ones. Reputation systems should:

- Build trust in the sellers.
- Promote quality of the products and services.
- Sustain loyalty.

For comprehensive coverage, see **reputationinstitute.com**.

SECTION 7.6 REVIEW QUESTIONS

1. Define the social customer and describe their characteristics. (Consult Chapter 1.)
2. Why and how are customers empowered by social networks?
3. Define social CRM.
4. What are the needs of social customers?
5. List 5–8 benefits of social CRM.
6. How does social CRM differ from traditional CRM?
7. Describe a reputation management system.

MANAGERIAL ISSUES

Some managerial issues related to this chapter are as follows.

1. **How will social commerce influence businesses?** The impacts of social marketing can change the manner in which many shoppers make purchasing decisions. Social commerce will change both B2B and B2C by increasing interactions, engagement, and collaboration. The impact will change business processes, the manner in which companies treat customers and employees, and may even restructure some organizations. A strong impact will be felt in advertising, viral marketing, collaboration, and brand recognition. The impact will also be strong on delivering customer service, conducting market research, and organizing collaboration. For more information, see Jamieson (2014).
2. **Do companies need to sponsor a social network?** Although sponsoring a social network might sound like a good idea, it may not be simple to execute. Community members need services, which cost money to provide. The most difficult task is to find an existing community that matches your business. In many cases, the cost of a social network may be justified by its contribution to advertising. However, social network service providers need to create various revenue models to maintain sustainable services. Creating revenue is the most challenging issue to social network service providers.
3. **Is it wise for a small business to be on Facebook?** The answer depends on the business and on what you are trying to achieve. It could be helpful for those that need to constantly reach customers and/or suppliers. Facebook, at present, may not be very helpful for direct sales. However, just having a presence costs little and therefore should be considered. A major issue for SMBs is the loose security in social networks. See **entrepreneur.com/article/239539** for comprehensive coverage of this topic.
4. **How to deal with false reviews and fake followers?** Unfortunately, there are many fake followers. Some are paid by companies to boost their image; others are paid by competitors. It is possible to use software to detect some fake accounts. These fictitious data can mislead companies when deciding, for example, where to advertise. This issue is discussed in Chapter 8.
5. **Should we embark on selling via social networking?** For most cases the answer would be yes. Just view it as an additional channel to increase sales. Which model to use will depend on the product, the competition, and the potential risks. See Chapter 12 for strategy and implementation. For justification, see cases by Petersen (2014).

SUMMARY

In this chapter, you learned about the following EC issues as they relate to the chapter's learning objectives.

1. **Social commerce definition and evolution.** Social commerce (SC) refers to conducting EC in the social media environment. It can be viewed as a subset of EC where activities are done in social networks and by using social media tools. It operates at the intersection of social media, EC, e-marketing, and supporting theories from several disciplines including social psychology, marketing, sociology, and information technology.
2. **The scope, content, and drivers of social commerce.** Social commerce is a comprehensive field comprised mostly of social media marketing (advertising, market research, and customer service) and social enterprise (problem-solving, recruiting, and collaboration). It also includes social entertainment, social games, and crowdsourcing. Social commerce is driven by the existence of giant social networks, Web 2.0 tools, and the emergence of social customers.
3. **Benefits and limitations of social commerce.** A large number of benefits are available for customers, retailers, and other businesses. Customers can get better prices, improve customer service, and also receive social support (e.g., product recommendations) from friends. They can find new friends as well, and establish new contacts. Retailers can reach more customers, get quick feedback, improve relationships with customers, go global, and use free word-of-mouth marketing communication. There are also benefits to businesses. Businesses can conduct fast and inexpensive market research, recruit employees from all over the globe, innovate, collaborate, and locate experts when needed.

4. **Describe social shopping.** Social shopping refers to online shopping that is supported by social media and involves friends and online social media communities. The major drivers are the large number of people who are engaged in social networking, reliance on friends' recommendations, the potential of receiving large discounts for the buyers, the increase of sales volume for the sellers, the socially oriented shopping models, and the rise of the social customer.
5. **How advertisements and promotions are conducted in social networking.** The major driver of SC is the money spent by advertisers who see a huge potential market. Advertising can be done in many ways. Using word of mouth is almost free for companies, but it can be dangerous (e.g., negative comments). The use of banner ads and other paid advertisement and social search models generate billions for social networks (mostly to Google and Facebook). Large numbers of advertising apps exist. Also, bloggers can provide positive (but sometime negative) comments. Many companies have developed special campaigns that engage community members in advertising-related activities (play games, vote, generate ideas, etc.). In addition, advertising on Pinterest, Twitter, and YouTube is becoming popular.
6. **Conducting social customer service and CRM.** When the CRM platform involves social media (e.g., Web 2.0 tools and social network sites), CRM is referred to as social CRM (SCRM). SCRM provides many benefits for customers, vendors, and public institutions that include an improved relationship between the empowered customers and the vendors, and service providers as well as providing better service to customers. The evolution to SCRM can be described along the following five dimensions: The landscape (e.g., structure and focus); the touch points (e.g., the use of social media tools); business processes (e.g., how to listen to customers); the technology (e.g., socially oriented tools); and the organizational mindset (e.g., patterns of interactions). This evolution is driven by the explosive use of social network sites, the rise of the social customer, and the importance buyers place on social recommendations. Customers are empowered by social networks, so they can get attention quickly for problem resolution. Organizing a Facebook complaint blitz is not difficult. Customers can make suggestions for improvements and vote on them.

KEY TERMS

Communal shopping (collaborative shopping)
Customer relationship management (CRM)
Enterprise 2.0
Geosocial networking
Social business
Social commerce (SC)
Social customer
Social customer relationship management (SCRM; CRM 2.0)
Social marketplace
Social media marketing (SMM)
Social shopping (sales 2.0)
Viral blogging
Viral marketing
Viral video
Virtual economy
Virtual goods

DISCUSSION QUESTIONS

1. Compare social computing to traditional computing.
2. Discuss the social element in social media.
3. Discuss the contribution of social commerce to e-commerce.
4. Compare Polyvore to Pinterest.
5. Discuss the reasons why people buy virtual goods.
6. Discuss how traditional online vendors can add social networking capabilities to their sites.
7. Under what circumstances would you trust an expert's recommendation rather than a friend's?
8. How can marketers use social networks for viral marketing?
9. Why are advertisers so interested in social networks?
10. Discuss the issue of possible fraud in P2P transactions.
11. Discuss the shortcomings of user-generated reviews and recommendations.

TOPICS FOR CLASS DISCUSSION AND DEBATES

1. Debate the privacy dangers to social shoppers.
2. Debate: "Is the social media influence on purchasing overrated?" Start by viewing the slideshow titled "Social Media Influence on Purchase Overrated" (McCafferty 2011) at **baselinemag.com/c/a/Intelligence/Social-Media-Influence-On-Purchasing-Overrated-660095**.
3. Debate: One day all e-commerce will be social.
4. Daily deals are being offered today by many off-line and online retailers and other organizations (e.g., newspapers). Only on the Internet are these offers common. Is there a need for intermediaries? Debate.
5. Discuss how trust is affected in social shopping. (Consult: Bazaarvoice.com 2011).

6. Why do you think that Wanelo is popular?
7. Examine Facebook Offers. What is the potential of the viral service? What is the advantage of mobile newsfeeds? Explain the competition with Living Social.

INTERNET EXERCISES

1. Enter **smartmobs.com**. Go to the blogroll. Find three blogs related to social commerce, and summarize their major features.
2. Enter **thisnext.com**. What are the features of the site? What do you like? Dislike? Why?
3. Enter **salesforce.com** and identify all SCRM activities supported by the company, especially those related to their Chatter product. View the slide show at: **slideshare.net/Salesforce/salesforce-customer-servicebest-practices-25640141**. Write a report.
4. Enter **salesforce.com/dreamforce/DF14**. Find topics that deal with SCRM. Write a summary.
5. Enter **bazaarvoice.com**. Summarize its major services. Examine SocialConnect.
6. Enter **tkg.com/social-media-marketing**. Prepare a list of information you can get there about social shopping.
7. Enter **select2gether.com**. What services can you get from this site?
8. Enter **powerreviews.com**. Compare their activities to those of similar sites.
9. Enter **deal-of-the-day-review.toptenreviews.com**, and summarize the lessons learned.
10. Enter **socialshoppingnetwork.org**. Find material related to this chapter. Write a report.

TEAM ASSIGNMENTS AND PROJECTS

1. **Assignment for the Opening Case**
   (a) What social media tools and platforms does Sony use?
   (b) How does each tool facilitate customer service?
   (c) What are the major benefits of social CRM to Sony?
   (d) Relate Sony's use of Pinterest to social CRM. (Start by entering **community.sony.com**.)
   (e) Find CRM-related activities. Summarize.
   (f) Go to Sony's community and ask a question. Get results. Summarize four experiences.
2. Facebook is increasingly offering marketing tools (e.g., Open Graph, Social Plug-ins). Identify all the tools offered. Each group concentrates on the business implications in one of the following areas: advertising and search engine optimization (SEO), shopping, market research, customer service, CRM, and others. Make a class presentation.
3. Each group adopts one or two of the following companies that actively advertise and engage on Facebook and Twitter: Coca-Cola, Starbucks, Ford, Pepsi, Levi's, Disney, Victoria's Secret, iTunes, Toyota, Sony, or P&G. Find and summarize what advertising methods they use and how they do their campaigns. Write a report.
4. The class will investigate group buying in China and India. What is the prospect for group buying in Asia? (Start with Madden's article "China Pioneers Group Buying Discounts Without Groupon" at **adage.com/article/global-news/advertising-china-group-buying-discounts-groupon/147641**. Also check WoWo Ltd. in China.
5. The class reads Gil (2015) and divides the 50 predictions among groups. Research progress and submit reports.

CLOSING CASE: GROUPON: WILL THE COMPANY PROSPER?

The name Groupon is a combination of *group* and *coupon*. Groupon was founded in November 2008 and has been considered the fastest-growing company ever by 2012 (in terms of sales). Initially, Groupon offered both *group buying* and *deal of the day* (one highly discounted deal per day) in selected metro areas in the United States. As of 2014, Groupon serves 500 markets worldwide, in 48 countries.

The Opportunity

Groupon is a start-up that offers special highly discounted deals, mostly via e-mail. The idea is that when subscribers hear about a big discount, they would forward the news to friends who may also place an order (the "social" element). Initially, the more buyers who joined in the sale, creating a group buy, the larger the discount. However, this model has been changed as will be described next.

The Solution

To exploit the opportunity, Groupon developed a unique business model.

The Initial Business Model and the Strategy

According to Groupon (**groupon.com**), the company offers special sales, called "Groupons," in each city that the company serves. The advertised deal lasts for a limited time (usually between 24 and 72 h) and becomes available to all registered members. According to Groupon's customer service department, in the past, Groupon's policy was to guarantee

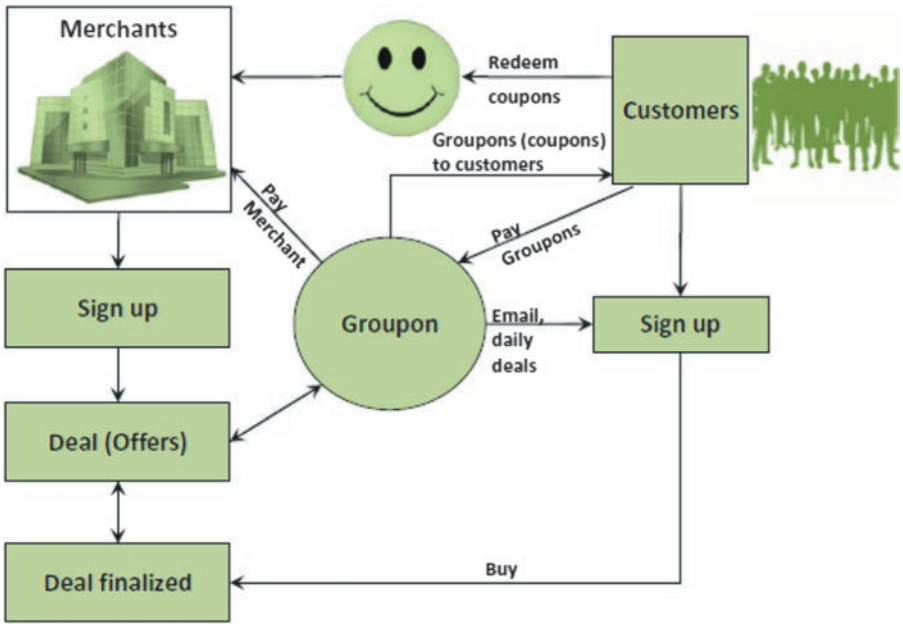

Figure 7.5 The business model and process of Groupon

participating merchants a certain number of sales. In other words, the customer would only get the discount if enough people (hence, the "group" element) purchased that particular Groupon. If Groupon did not meet that promised quota, there was no need for the seller to honor the deal, nor was any commission paid to Groupon, and the customer was not charged.

Groupon charges advertising and promotions fees, usually a percentage of the revenue generated by the sellers. The retailers can use the system to promote their business, gain new customers, and run sales during their slow seasons (e.g., running a promotion such as liquidation during the late summer). The initial process, a combination of *group buys* and *flash deal models*, is illustrated in Figure 7.5. Today, it is basically a flash (daily) deal. The reason merchants are willing to offer a 50–80% discount to volume shoppers is that the merchants' marketing and overhead costs are lower, while their market share is increased.

Groupon's business strategy is to work with quality merchants who are willing to provide substantial discounts. Groupon uses both traditional e-mail and social networking (e.g., Facebook, Twitter, Pinterest) to promote the deals. Deals are e-mailed directly to members when available, but those interested in current daily deals can go to the Groupon website (Groupon Goods; **groupon.com/goods**). Groupon offers a "refer a friend" program, where the shopper can earn $10 for every friend they refer who buys their first deal (see **groupon.com/referral**).

Benefits and Expansion

The major benefits to customers are:

- Steep discounts (50–80%).
- Discovery of new/specialized services and products.
- Deals related to the daily offer are presented by Groupon.
- Useful recommendations provided to family and friends.

The major benefits to merchants are:

- Can sell larger quantities and liquidate merchandise, quickly.
- Save on advertising and marketing expenses (e.g., by using viral advertising).
- Get repeat customers (if they like the deal and the service, customers will come back).
- Lower customer acquisition cost.
- Knowledge of and collaboration with vendors in a close geographical area.

Limitations of the Model

Smaller vendors may not be able to fulfill large orders generated by Groupon. For example, a restaurant in Tokyo sold 500 Groupons for a traditional New Year's dinner, but the business was unable to process the orders in a timely fashion due to the overwhelming demand of the orders. Apparently, some of Groupon's deals became too large for vendors to fulfill, and customers complained about late deliveries and about orders arriving "in terrible conditions."

In response to such a problem, Groupon officials have created formulas to help vendors it partners with to determine how to meet consumer demand, and how many coupons to offer (capped the orders to a reasonable number).

Another limitation is that some businesses may not make money on the deal and may possibly even suffer a loss. Finally, although Groupon and similar companies can generate large revenues, they may have large expenses as a result, and actually lose money by offering more deals. Thus, the profitability of the model is questioned by many, especially in light of the strong competition.

Groupon is attempting to become more than just a deal of the day business. As part of their branching out, in November 2013, Groupon opened an e-commerce "marketplace" (online retail site), known as Groupon Goods (**groupon.com/goods**), which focuses on slightly discounted products. These deals also have a time limit (ranging from 3 to 7 days).

In 2011, Groupon partnered with Expedia (**expedia.com**) to launch Groupon Getaways (**groupon.com/getaways**), which focuses on discounted travel (hotels, tours, etc.).

Groupon also has a program called Groupon "Reserve" (**groupon.com/reserve**), where participating restaurants give diners discounts when they have empty tables. Unlike the usual daily deal where you buy a voucher, with Groupon Reserve, you make a reservation online and show up.

By March 2016, over 50% of North American transactions were completed on mobile devices (see **groupon.com/mobile**).

The Competition

As with any successful business, there are many companies that are attempting to clone Groupon. Worldwide, there are thousands of similar sites. For example, there were over 1000 similar companies in China alone, but many did not succeed. Nevertheless, as of November 2013, Groupon's only *serious competitor* is LivingSocial (**livingsocial.com**), sponsored by Amazon.com, with competition from Google emerging. Google Offers (**plus.google.com/+GoogleOffers/posts**) which is available on Google+. Other notable competitors include Gilt City (**giltcity.com**), Gilt Groupe (**gilt.com**), Woot! (**woot.com**; an independent subsidiary of Amazon), and HomeRun (**homerun.com**; available nationally and in limited cities along with three European countries). Yipit (**yipit.com**) is an e-mail-based "daily deal aggregator" that gathers deals (in your city) on products from daily deal sites such as Groupon. Tell Yipit what you want, and they will alert you when there are deals that match. Groupon still controls more than 50% of all daily deals in the USA.

Possible future competitors include Yahoo!, Amazon.com, Yelp, and local and national newspapers. Finally, some major retailers, manufacturers, and service providers (e.g., Walmart, Home Depot) offer daily deals independently.

Factors in the Competition

It is challenging to compete with Groupon, given its large size and resources. Therefore, competitors use strategies such as concentrating on a niche market, which targets consumers in smaller demographics, such as one product, or one industry (e.g., tickets for sporting events; **crowdseats.com**, travel, food, and fashion). In addition, some sites concentrate on a small territory (e.g., a city) where they have a competitive advantage (e.g., see **scorebig.com**).

Several sites have either folded (e.g., Facebook Deals) or were acquired by another company. For example, BuyWithMe was purchased by Gilt Groupe, Buy.com was purchased by the Japanese company Rakuten.com Shopping (**rakuten.com**), and private travel site Jetsetter (**jetsetter.com**) was acquired by TripAdvisor in 2013. As of March 2014, Groupon has acquired 30 sites, including the hotel booking site Blink (**blinkbooking.com**), which is now known as "Blink by Groupon." In January 2014, Groupon announced that it had has acquired "Ticket Monster," a Korean e-commerce company (a subsidiary of LivingSocial).

Recent Developments

In 2015, the company lost money and laid off 1100 employees and closed operations in nine countries. (For the downsizing, see Lunden 2015). Groupon, Inc. (2016) reported in its news version 16.3 about significant efforts to return to profitability. Among them are:

- Mobile and Web tools are in one brand-Groupon Merchant
- Groupon Merchant tablet app includes several useful capabilities for merchants (see Lunden 2016).
- Several features were added to expedite transactions
- Expand its travel deals (see **groupon.com/Getaways**).

In addition, Groupon launched its own food delivery business (Perez 2015a). Groupon is using social media to advertise its operation.

Example: The Banana Bunker Going Viral

To promote the product sold by Cultures Containers Company, Groupon started a viral campaign. Groupon provided the plastic

banana carrier with a 3-pack deal. Groupon steered the conversation about the product to create a flood of curiosity. The viral flood received the attention of *Forbes*, *AdWeek*, *Mashable*, *U.S. Magazine*, and *Buzzfeed*. For details, see Kissmetrics (2015).

The Results

In 2010, Groupon rejected a $6 billion buyout offer from Google. Instead, the company went public on November 4, 2011, raising $700 million. Share prices soared 31% the first day, bringing Groupon's valuation to about $16 billion. Since then, the share price has declined due to concerns about profitability. Groupon lost money until the first quarter of 2013. After large losses in 2015, the company started to recover in late 2015 and 2016.

Sources: Based on **grouponworks.com/merchant-resources** (accessed March 2016).

Questions

1. It is difficult for sellers to do business with Groupon. Many merchant applications are dismissed by Groupon. Why do you think Groupon is so strict and how will this policy affect the competition?
2. Some claim that Groupon is an e-mail list that charges advertisers to send out their coupons (called Groupons). Comment.
3. Groupon is changing its business model again, moving from coupons to discount sales. Comment on this business model.
4. Write a short essay on Groupon's chance of survival in the intensely competitive environment. Examine its revenue model and expansion plans. Check stock market analysts' report about the company.
5. Learn more about Groupon's order fulfillment (e.g., ability to handle volume, control of deliveries, and dealing with marketing and competitors). Write a report.
6. Groupon also deals in B2B. Search the Internet and find out how this is being done and how successful it is.

ONLINE FILES

Available at **ecommerce-introduction-textbook.com**

W7.1 Application Case: Social Money Lending: Zopa and Prosper

W7.2 Examples of Successful Location-Based Applications

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Social Enterprise and Other Social Commerce Topics

8

Contents

Learning Objectives

Upon completion of this chapter, you will be able to:

1. Understand the concept of the social enterprise and its variants.
2. Describe business-oriented public social networks, their characteristics and benefits.
3. Describe the major social commerce activities that can be conducted within and by enterprises and the characteristics of such private social networks.
4. Discuss the online employment market, including its participants and benefits.
5. Review the social commerce activities and their relationship with e-entertainment and gaming.
6. Describe social gaming and gamification.
7. Define crowdsourcing and crowdfunding and describe their use in social commerce.
8. Describe social collaboration and its benefits. Also comment on the future of social commerce.

OPENING CASE: HOW A PRIVATE ENTERPRISE NETWORK TRANSFORMED CEMEX INTO A SOCIAL BUSINESS

CEMEX (**cemex.com**) is a Mexico-based global building materials company known primarily for its cement and ready-mix concrete. They do business in over 58 countries, throughout the Americas, Europe, Africa, the Middle East, and Asia and maintain trade relationships in approximately 108 nations.

The Problem

The global economic slowdown of 2008–2012, and especially the drastic reduction in construction activities, drove CEMEX to try a host of traditional activities for cost reduction and

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increased productivity. However, this was not enough. In addition, top management was looking for ways to facilitate innovation. Given the company's global nature, top management realized that they needed to improve the company's internal and external collaboration to foster innovation.

The Solution

Recently, many companies have implemented Enterprise 2.0 platforms that include social media tools as well as mechanisms of social network services. CEMEX decided to follow this trend. The company wanted to fully utilize the institutional knowledge possessed by its thousands of employees worldwide and make it available to others whenever needed.

CEMEX created an internal private social collaboration platform called Shift (**cemex.com/whatisshift**), which facilitates innovation, efficiency, and collaboration by letting employees share information and jointly conduct problem-solving. Shift integrates some of the best capabilities of social networks with knowledge management (KM) and collaboration techniques (using IBM Connection and its language translation feature). Shift includes many internal communities; each is composed of people with similar interests.

The Results

The main result was the major change in the way that people worked together. The workforce became more cooperative; employees helped each other, shared more information and knowledge, were more empowered, and were able to be more mobile. This led to better internal collaboration using in-house networking.

Projects started to move more quickly, with faster time to market; therefore, business processes improved. In short, the company successfully leveraged the collective talents and skills of its employees. One internal community, the "Construction for the twenty-first Century," was challenged to suggest the strategic topics that CEMEX should focus on to remain a leader in the construction industry. The 400 community members of this twenty-first Century group responded by proposing innovative ideas, tactics, and strategies addressing the challenge. Overall, Shift drew 5000 users by the end of its first month. By 2013, there were 25,000 users of Shift and over 500 groups. By 2014, the company's stock price increased by over 300%.

For more results and discussion see: **slideshare.net/soccnx/shifting-the-way-we-work-at-cemex**.

Sources: Based on Garcia et al. (2011), Hinchcliffe (2012), and Donston-Miller (2012).

LESSONS LEARNED FROM THE CASE

The CEMEX case illustrates a successful private in-house social network whose major objectives were to foster collaboration among its thousands of employees worldwide and facilitate idea generation via internal crowdsourcing. Using Web 2.0 tools, collaboration became effective and efficient. A major result was idea generation and the evaluation and implementation of these ideas that facilitated innovation in the company. This chapter presents the major activities that private social networks support within enterprises and the structure and benefits of public business networks. This chapter also presents the issues of network-based job markets, social entertainment, gaming and gamification, crowdsourcing and crowdfunding, and social collaboration.

8.1 SOCIAL BUSINESS AND SOCIAL ENTERPRISE

A major forthcoming trend in social commerce is its move to the enterprise level. This trend is related to the concept of social business. Let us define both terms.

Definitions: Social Business and Social Enterprise

The social enterprise concept has several names, definitions, and explanations. The concept is sometimes confused with the related concept of social business. Generally, one can distinguish between the two concepts that often are used interchangeably. Let us explain.

Social Business

A **social business** is a name for a commercial for-profit or nonprofit organization that is designed to achieve some social goal(s), such as improving human well-being, rather than just make a profit. SocialFirms UK (**socialfirmsuk.co.uk**) provides several other definitions (of what they call *social enterprise*). They cite the following UK government definition: "A social enterprise is a business with primarily social objectives whose surpluses are reinvested for that purpose in the business or in the community, rather than being driven by the need to deliver profit to shareholders and owners." About.com distinguishes between two types of social business: one type that describes companies that "aspire to

social purposes more than to profit-making," and a second type that describes companies that "use social media to advance their business objectives." (See **webtrends.about.com/od/web20/a/social-media.htm**.)

The above second type is the basis for the *social enterprise*. In summary, we view a *social business* as one that is built mainly around social objective(s), while a *social enterprise* uses social networking to facilitate its commercial objectives.

A major organization dedicated to social business (referring to itself as "social enterprise") is the *Social Enterprise Alliance* (see **se-alliance.org/what-is-social-enterprise**).

Social Employees

The successful social business needs to empower their employees (e.g., using IBM Connections). For how it is done in IBM, AT&T, and other large corporations, see Burgess and Burgess (2013).

The Social Enterprise (Enterprise 2.0)

Social enterprise refers to the use of social media tools and platforms and conducting social networking activities in organizations, while its major objectives are either commercial or nonprofit activities (e.g., the government) (Ridley-Duff and Bull 2015).

The concept of the social enterprise has become a buzzword in recent years. For an example, see **socialenterprise.us/about/social-enterprise**.

Social enterprise applications are growing rapidly. They appear under different names, mostly as social enterprises and Enterprise 2.0. Enterprise applications are conducted inside enterprises, on companies' private social networks or portals. They also are conducted on public social networks, both pure business-oriented (e.g., LinkedIn), and other networks, mostly Facebook and Twitter. Major applications are recruitment, collaboration, and problem-solving. Enterprise social capabilities facilitate a new type of collaboration, encourage business upgrades, and enable more vendor applications.

Most workers used social media for business purposes at least once a week. Corporations are rushing to get involved in several innovative ways, as will be described later in this chapter.

For additional definitions, characteristics, and discussion on social enterprise, see **centreforsocialenterprise.com/what-is-social-enterprise**.

For a comprehensive description, see Ridley-Duff and Bull (2015).

More Complex Definitions

In addition to the above definitions, there are some definitions that are more complex, as illustrated next.

The Social Business Forum's Definition

The Social Business Forum defines *social business* as "an organization that has put in place the strategies, technologies and processes to systematically engage all the individuals of its ecosystem (employees, customers, partners, suppliers) to maximize the co-created value" (**2012.social-businessforum.com/what-is-social-business**). The Forum also discusses the implications of this definition and its relevance, across and outside organizations. Note that an efficient creation of value using technology is emphasized.

Three interesting videos are recommended for a better understanding of the concept:

1. "Social PHD Sandy Carter: How Do You Become a Social Business?"(1:05 min) at **youtube.com/watch?v=OZy0dNQbotg**
2. "How Do You Become a Social Business?" (3:27 min) at **youtube.com/watch?v=3Hov0l7SvAo**
3. "Social Business at IBM"—An Interview with Luis Suarez, Social Computing Evangelist (8:50 min), at (**youtube.com/watch?v=enudW2gHek0&feature=related**)

Notice that our definition of social enterprise is based on the use of social media tools and platforms. A related topic is *business networks*.

Business Networks

Business networks are a core component in the social enterprise. A *business network* refers to a group of people with a professional business relationship; for example, the relationships between sellers and buyers, buyers and suppliers, and professionals and their colleagues, such as the twenty-first Century Community at CEMEX. In this chapter, we use the term *buyers* to refer to agents buying something for a business (e.g., a purchasing agent). Such a network of people can form **business social networks**, which are business-oriented networks that are built on social relationships and can exist off-line or online. For example, public places, such as airports or golf courses, provide opportunities to make new face-to-face business contacts if an individual has good social skills. Similarly, the Internet is proving to be a good place to network and connect. In this book, we address online networks. The most well known network is LinkedIn (**linkedin.com**). For a discussion about business social networks, see Bughin and Chui (2013).

Types of Business Social Networks

There are three major types of business social networks: (a) *public networks*, such as LinkedIn, which are owned and operated by independent companies, and are open to anyone

for business networking. The networks connect, for example, sellers and buyers or employers and potential employees; (b) *enterprise private networks*, which operate inside companies, like in CEMEX in the opening case. These usually restrict membership to employees and sometimes to business partners. An example is USAA that has an internal social network for employees who can ask for help from their peers; and (c) *company-owned and hosted networks* that are controlled by a company but open to the public, usually for brand-related networking (e.g., Starbucks, Dell Computer).

The Benefits and Limitations of Enterprise Social Networking

Social networking appeals to business users for many reasons. For example, networking makes it easy to find people and discover information about companies, understands the relationships and communication patterns that make a company tick, and creates a common culture across large organizations.

Benefits of Enterprise Social Networking

The major reasons an organization becomes a social enterprise are the abilities to:

- Improve collaboration inside the enterprise and with business partners
- Facilitate knowledge distribution (increase access to specialized knowledge)
- Build better customer and employee relationships
- Facilitate recruiting and employee retention
- Increase business and marketing opportunities (e.g., meet new potential business partners and/or customers)
- Reduce operation, communication, and travel costs
- Increase sales and revenue (e.g., more sales leads)
- Improve customer satisfaction
- Reduce marketing and advertising costs
- Improve employee and organizational performance
- Foster internal and external relationships
- Collect feedback from employees
- Build an effective workforce
- Improve decision-making capabilities including forecasting
- "Spy" on competitors (intelligence gathering)
- Find experts and advice (internally and externally)
- Improve customer service and CRM
- Accelerate innovation and competitive advantage

For details of these and other benefits, see Bughin and Chui (2013) and Section 8.2.

Enterprises that use social media extensively can reap the benefits found in the previous list and be transformed into social businesses. For details, see **ibm.com/social-business/us-en**.

For how to select the best organizational model for a social business, see Terpening (2015).

Obstacles and Limitations

Some limitations, such as security of information and information pollution, slow down the growth of social enterprising. For details, see **slideshare.net/norwiz/what-is-enterprise-20**.

How Web 2.0 Tools Are Used by Enterprises

Web 2.0 tools are used in different ways by various corporations. Typical uses are: increasing speed of access to knowledge; reducing communication costs; increasing speed of access to internal experts; decreasing travel costs; increasing employee satisfaction; reducing operational costs; reducing time to market for products/services; and increasing the number of successful innovations for new products or services.

Some of the uses outside the enterprises include recruitment, advice in problem-solving, joint design, collaboration on supply chain issues, and marketing communication. For a comprehensive slide presentation on Enterprise 2.0, see **slideshare.net/norwiz/what-is-enterprise-20**. For an e-book, see World Library (2015).

SECTION 8.1 REVIEW QUESTIONS

1. Define social business and relate it to the social enterprise.
2. How does IBM define social business?
3. What is a business network?
4. List five reasons why organizations want to become social enterprises.

8.2 BUSINESS-ORIENTED PUBLIC SOCIAL NETWORKING

Social networking activities are conducted in both public and/or private social networking sites. For example, LinkedIn is a business-oriented public network, whereas Facebook is primarily a public social network used for socially oriented activities. Facebook, however, allows its members to conduct business-oriented activities.

"My Starbucks Idea" (**mystarbucksidea.force.com**) is an example of a company-hosted social network that is open to the public. In contrast, CEMEX's internal social network, SHIFT (see opening case), is open only to the company's employees and is considered private. In this section, we will concentrate on public social networks.

The following are some examples of business-oriented public social networks.

- **Google+**. Google+ ("one Google account for everything"), which began operating in 2011, designated itself as a business-oriented social network. In its fourth year of operation, it has over 1.1 million users. For an overview, see **martinshervington.com/what-is-google-plus**.
- **LinkedIn**. Referred to as the premier business-oriented network, **linkedin.com** is known as the most popular network for business, as illustrated in the closing case of this chapter. Also see the infographic at **blog.hootsuite.com/social-network-for-work**.

  LinkedIn shows content and provides customer service in a multitude of languages, including English, Spanish, French, and Tagalog, among others, with a plan for considering other languages in the future.

Several other networks similar to LinkedIn are Wealink (**wealink.com**) in China, Rediff (**rediff.com**) in India, International High Potential Network (iHipo) (**ihipo.com**) in Sweden, and Moikrug (My Circle) (**moikrug.ru**) in Russia.

There are many public business-oriented networks that focus on specific industries or types of professional specialties; one example is the Network of Entrepreneurial Women (**connectw.org**).

Entrepreneur Networks

Some business-oriented public networks concentrate on entrepreneurial activities. A few examples are listed next.

Gottlieb (2015) lists 42 social networks for entrepreneurs. Here are some more in detail:

For how social entrepreneurship works, see Martin et al. (2015).

- **Biznik** (**biznik.com**). Biznik is a community of entrepreneurs and small business owners dedicated to helping each other by sharing ideas and knowledge. Their motto is "collaboration beats the competition." According to **biznik.com**, their policy is that members must use their real names on the site and Biznik supplements its interactions with face-to-face meetings.
- **EFactor** (**efactor.com**). The world's largest network of entrepreneurs (over 1.9 million members in 222 countries across 240 industries) provides members with people, tools, marketing, and expertise to succeed and make real, trustworthy, and lasting connections (2011 data). Members connect with like-minded people and with investors.
- **Startup Nation** (**startupnation.com**). Participants in this community of startup owners and experts are helping people start and operate new businesses. Sharing knowledge and ideas is the main objective.
- **Inspiration Station** (**inspiration.entrepreneur.com**). Inspiration Station is one of the best portals for small businesses and start-ups. It not only has a lot of useful information for business owners, it has a great community for you to take advantage of, and to connect with fellow business owners from around the globe.

SECTION 8.2 REVIEW QUESTIONS

1. Distinguish between private and public business-oriented networks.
2. List and briefly describe public business-oriented networks.
3. Define entrepreneur networks and list two examples.

8.3 ENTERPRISE SOCIAL NETWORKS

An increasing number of companies have created their own in-house, enterprise social networks. Some of these networks can be private, developed for use only by their employees, former employees, and business partners. Others are open to the public, although these are mostly used by their customers. Private networks are considered to be secured ("behind

the firewall"), and are often referred to as *corporate social networks*. Such networks come in several formats, depending on their purpose, the industry, the country, and so forth. For the evolution of the networked enterprise, see Bughin and Chui (2013).

Taxonomy of Social Enterprise Applications

The following terms are frequently used in enterprise networking. Most will be discussed in this chapter.

1. **Networking and community building**. Conducting networking and community building involving employees, executives, business partners, and customers.
2. **Crowdsourcing**. Gathering ideas, insights, and feedback from crowds (e.g., employees, customers, and business partners; see Section 8.7). Salesforce Success Community (**success.salesforce.com**) and My Starbucks Idea (**mystarbucksidea.force.com**) are examples.
3. **Social collaboration**. Collaborative work and problem-solving using wikis, blogs, instant messaging, collaborative office documents, and other special purpose Web-based collaboration platforms such as Laboranova (**laboranova.com**).
4. **Social publishing**. This is the creation of user-generated content in the enterprise, which is accessible to all (e.g., **slideshare.net**, **youtube.com**).
5. **Social views and feedback**. Getting feedback and opinions from the enterprise's internal and external communities on specific issues.

Characteristics of Enterprise Social Networks

Enterprise social networks, like any social network, enable employees to create profiles and interact with one another. By encouraging interactions among members, a company can foster collaboration and teamwork, and increase employee satisfaction. For more benefits, see **zdnet.com/blog/hinchcliffe**.

For additional information, see the *International Journal of Social and Humanistic Computing*. For additional tips and sources, see **socialcast.com**.

An Example of a Private Enterprise Network

In the opening case of Chapter 1, we introduced Starbucks' hosted enterprise network. We also described Sony's and iRobot's hosted enterprise social network in Chapter 7. Many other companies also have enterprise networks of all kinds. Here is an example of another private network:

Example: IBM'S Business and Professional Community

The Greater IBM Connection (**ibm.com/ibm/greateribm**) is an internal social networking site that gives IBM employees and former IBMers a rich connection to the people with whom they work, on both a personal and a professional level. The network helps employees make new connections, track current friends and coworkers, and renew contacts with people they have worked with in the past, including retirees. When employees join the network, they get a profile page. They can use the status message field and the free-form "MyIBM" section on their profile page to let other people at IBM know where they are, what they are doing, and even what they are thinking. By 2016, about 460,000 IBMers were connected to one another using IBM Connections platform.

Employees can also use the network to post photos, create lists, and organize events. If users are hosting an event, they can create an event page on the network and invite people to attend. The page can also be a place to spread the buzz about the event and get people talking about it through the comments feature.

In addition to the social goal, the network team created the site to help IBM employees meet the challenge of building professional relationships that are vital to working in large, distributed enterprises. The network can help IBM employees discover people with common interests or the right skills for a project. Learning more about someone—personally and professionally—facilitates making contacts and might entice people to learn about the ongoing projects and activities of other people. This network can also provide valuable insights for managers evaluating employees for promotion.

The IBM network is related to IBM's social business Innovation Projects, cited later in this chapter. It is also related to *IBM's Connections*, the company's social software platform.

Note: Gartner Inc. named IBM a leader for social software in 2015.

How Enterprise Social Networking Helps Employees and Organizations

Enterprise social networking can help employees in one or more of the following ways:

1. **Quick access to knowledge, knowhow, and "know-who."** As people list their skills, expertise, and experience, enterprise social networks can help simplify the job of locating people with specified knowledge and skills.
2. **Expansion of social connections and broadening of affiliations**. Enterprise social networks help managers and professionals to know people better by interacting with them in online communities, and by keeping up with their personal information. Such interaction and information about others can decrease the social distance in a company.
3. **Self-branding**. People can become creative in building their profiles the way they want to be known. It helps them promote their personal brand within the corporation.
4. **Referrals, testimonials, and benchmarking**. Enterprise social networks can help employees prepare and display referrals and testimonials about their work and also benchmark them with their colleagues.

Benefits to Organizations

The benefits to organizations, as well as to employees, were presented in Section 8.1. In addition, the benefits to employees can develop into benefits to organizations in the long run.

Support Services for Enterprise Social Networks

Businesses can use a variety of services and vendors to support their social networking. Two examples follow.

Example 1: Socialcast

Socialcast (**socialcast.com**), a VMware company, is an online vendor providing social network platforms that enterprises can deploy to let employees create their profiles and use them to facilitate collaboration and communication with coworkers. In 2016, the company had tens of thousands of customers in 190 countries. The platform connects people to knowledge, ideas, and resources. For details, see **socialcast.com/about**.

Example 2: Socialtext

Socialtext (**socialtext.com**) is a vendor of enterprise social software, providing an integrated suite of Web-based applications including social media tools and platforms. The company also provides Web security services. Businesses can benefit by keeping employees connected to the enterprise strategy and operations. For details, see **socialtext.com/about**.

Example 3: Yammer—A Collaboration Platform

Yammer, Inc. (**yammer.com**), is a Microsoft company. According to its website, Yammer is a private social network that helps employees collaborate across departments, locations, and business apps in over 500,000 companies (in 2016). Yammer brings together people for conversations, content, and business data in a single location. With Yammer, you can easily stay connected to coworkers and information, collaborate with team members and make an impact at work. It is used for communication and collaboration within organizations, or between organizational members and predesignated groups.

Key Features

Yammer's social networks allow users to (compiled from **products.office.com/en-US/yammer/yammer-features**):

- **Converse using enterprise microblogging**. Start a conversation, read posts, and actively collaborate with coworkers in real time using microblogging.
- **Create profiles**. Report your expertise, work experience, and contact information. You can upload photos, images, and documents. This will help you share information with others, and become easier to find.
- **Manage groups**. Create new groups or join private or public groups, and then discuss issues or collaborate with the group members. (Discover and join groups, invite team members to join and start collaborating.)
- **Conduct secure and private messaging**. Create a private dialog with one or multiple coworkers, similar to what you can do on Facebook. Secure the messages with Yammer's security features.
- **Create external networks**. Create external networks for working with business partners.
- **Create a company directory**. Create a directory of all employees.
- **Archive knowledge**. Archive all online conversations to be fully searchable.
- **Use administrative tools**. Keep the Yammer network running smoothly with a suite of features built to increase managerial control.
- **Employ tagging**. Tag the content and message in the company's network to make content easy to search for and to organize.
- **Integrate applications**. Install third-party applications into Yammer to increase the functionality of the company's network.
- **Deploy mobile capabilities**. Connect to the company's network from anywhere, at any time. Download free iPhone, Blackberry, Android, and Windows Mobile applications.

Note that in 2016 Microsoft changed Yammer, for details see Buckley (2015).

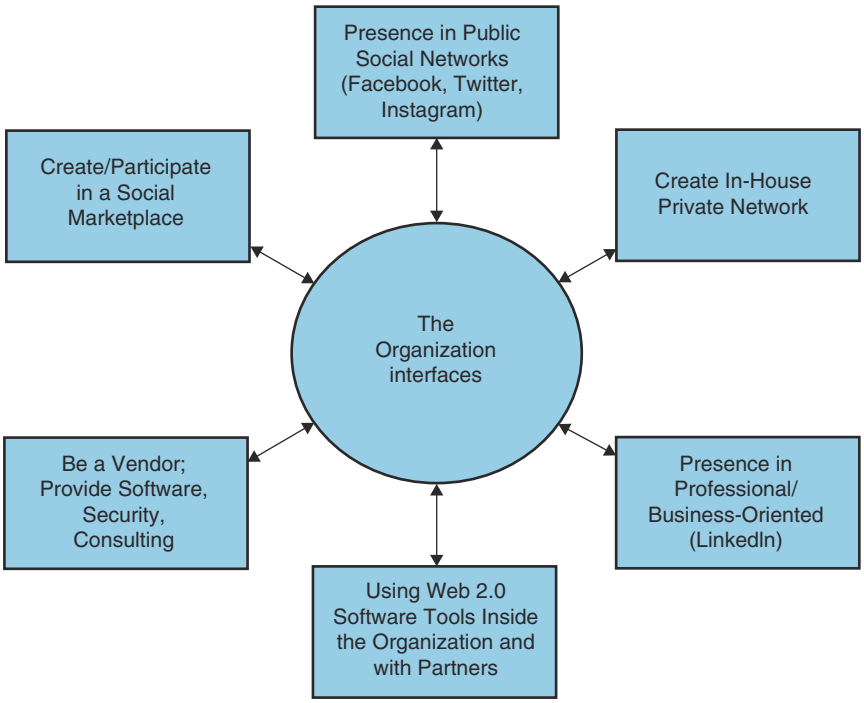

Figure 8.1 The major interfaces with social networking

How Companies Interface with Social Networking

Enterprises can interface with public and/or private social networks in several ways. The major interfaces, which are shown in Figure 8.1, are described next.

- Use existing public social networks, such as Facebook, to create pages and microcommunities; advertise products or services; and post requests for advice, job openings, and so forth.
- Create an in-house private social network and then use it for communication and collaboration among employees and retirees or with outsiders (e.g., customers, suppliers, designers). Employees can create virtual rooms in their company's social networks where they can deploy applications to share information or to collaborate.
- Conduct business activities in a business-oriented or professional social network (e.g., LinkedIn or Sermo).
- Create services for social networks, such as software development, security, consulting services, and more (e.g., Oracle, IBM, Microsoft).
- Use Web 2.0 software tools, mostly blogs, wikis, workspaces, microblogging (Twitter), and team rooms, and create innovative applications for both internal and external users.
- Create and/or participate in a social marketplace (such as Fotolia; **us.fotolia.com**; now an Adobe company).

SECTION 8.3 REVIEW QUESTIONS

1. Define enterprise (private) social networks.
2. List the major characteristics of enterprise social networks.
3. Describe the enterprise social network within IBM.
4. List the benefits to organizations.
5. Describe Yammer and identify its connections with social networks.
6. List the different ways that companies interface with social networking.

8.4 SOCIAL NETWORKS-BASED JOB MARKETS

A major enterprise area of activity in social networks, private and public, relates to job seeking and recruitment.

Social Recruiting

Finding qualified employees in certain fields may be a difficult task. To accomplish this task, companies pay considerable fees to executive recruiters or third-party online companies.

If job seekers are online and active in their search and in posting their résumés, there is a good chance that they will be discovered by recruiters. In addition, many so-called passive job seekers are employed and are not actively looking for a new job. Therefore, it is important that both active and

passive job seekers maintain a *profile* online that present them in a positive light, especially on LinkedIn and Facebook.

Both recruiters and job seekers are moving to a new recruiting platform—the online social networks—mostly LinkedIn, Facebook, and Twitter (e.g., using TwitJobSearch; **twitjobsearch.com**), a job search engine that allows employers to post job ads on Twitter. Enterprise recruiters are scanning online social networks, blogs, and other sources to identify and find information about potential employees.

Clearly, the electronic job market has benefits, but it can also create high turnover costs for employers by facilitating employees' movements to look for better jobs. In addition, finding candidates online is more complicated than most people think, mostly due to the large number of résumés available in social media sites. To facilitate recruitment, top recruiters are using electronic aids, like interviewing candidates by video from remote locations. Recruiters use social media tools and multiple social networking sites to find candidates faster. Some recruiters send Facebook "friend" invitations to candidates whom they have interviewed. However, this can be a controversial practice due to ethical implications.

Facebook has many features that help people find jobs (see **jobcast.net** for jobseekers and employers to connect; Social Jobs Partnership (**facebook.com/socialjobs**, a collaboration between Facebook and the U.S. Department of Labor.

LinkedIn provides a similar service. LinkedIn's search engine can help employers quickly find an appropriate candidate. For finding employees (jobs) in other countries, one can use LinkedIn or Xing (**xing.com**). An interesting global recruiting community is EURES (**ec.europa.eu/eures**), which specializes in online recruiting in Europe.

Lately, there has been an increased use of mobile recruiting tools in general and Twitter in particular, as aids for people who are searching for jobs. The following are possible activities:

(a) Search for posted positions
(b) Follow job search experts
(c) Follow and read about people in your field
(d) Engage, communicate with people, and ask for help
(e) Connect with people at your target companies

For an infographic showing how using social media can help you land a new job, see **mashable.com/2013/01/23/social-media-your-next-job-infographic**.

Recruiting and Job Searching Using Social Networks

Most public social networks, especially those that are business-oriented, facilitate recruiting and job finding. For example, recruiting is a major activity at LinkedIn, and was the driver for the site's development (see the closing case to this chapter). To be competitive, companies must also look at the global market for talents. Luckily, they can use global social networking sites to find them. Large companies are using their in-house social networks to find in-house talents for vacant positions. Furthermore, some claim that social media significantly changed the hiring process (e.g., see Huff 2014). For how to use social media to impress recruiters see AOL (2014).

According to a Jobvite survey on social recruiting **web.jobvite.com/rs/jobvite/images/Jobvite_SocialRecruiting2013.pdf**, 94% of companies use, or plan to use, social media to recruit and hire new employees, while 78% have hired at least one candidate through social media. Of these, 94% use LinkedIn, 65% use Facebook, and 55% use Twitter. Among these, the success rate for hiring is very high on LinkedIn (92%), moderate on Facebook (24%), and low on Twitter (14%). See **web.jobvite.com/rs/jobvite/images/Jobvite_SocialRecruiting2013.pdf**.

As described earlier, LinkedIn, Facebook, Google+, and Craigslist provide job listings, in competition with nonsocial networks online recruiters such as Monster. Several other social networks offer job listings as well.

Note that, while over 90% of recruiters use social networks while seeking and researching qualified candidates, nearly 69% have rejected candidates due to the content posted on their social network sites. It is important for Jobs seekers to keep their social media personal information secure (or as private as possible). Another issue for employed candidates is that many times employers have discovered through social networks that their employees are looking for a job elsewhere. For recruiting via gamification, see Greenberg (2013). For a thorough guide to job searching with social media, see Waldman (2013).

Note to job seekers: It is important you write your Internet profile in a correct way. For suggestions how to do it and what not to do, see Bernstein (2015).

Virtual Job Fairs and Recruiting Events

Virtual job fairs are other new strategies for quickly finding qualified candidates at a reduced cost. These are done using special vendor sites (e.g., **on24.com**, **expos2.com**, and **brazencareerist.com**), or employers' websites.

The following are few examples:

- IBM needed qualified employees for leadership positions in Africa. To quickly attract qualified employees, it used ON24 to conduct a job fair. For the complete story, see **on24.com/case-studies/ibm-job-fair**.

- P&G of Western Europe conducts annual virtual recruiting conferences using INXPO platform. The event is successful and it is used as a model for other European companies. The state of Michigan periodically conducts virtual career fairs where job seekers and recruiters meet online. The latest one was held in November 2015. For details, see **michiganvirtualcareerfair.com**.

Training Employees

Several companies use enterprise social networking, for training purposes. Black and Decker is using user-generated videos posted on YouTube to help users of its products. These videos help reduce training time.

SECTION 8.4 REVIEW QUESTIONS

1. List the benefits of social networking to job seekers.
2. List the benefits to corporate recruiters.
3. What special services are provided by social networks such as LinkedIn?
4. Describe virtual job fairs.

8.5 SOCIAL ENTERTAINMENT

The rich media capabilities of Web 2.0 technologies; the ability to engage millions of people who congregate in social networks and who are interested in online entertainment; the availability of innovative social media tools; and the creative and collaborative nature of Web 2.0 all facilitate social entertainment (e.g., *Gangnam Style* was YouTube's most watched video in 2012 and 2013). Web 2.0 tools also are aiding in the proliferation of on-demand entertainment. The most well known entertainment application is streaming music (e.g., iTunes; **apple.com/itunes**). Also popular are Spotify, Pandora, and Google's All Access (**play.google.com/about/music**). The trend today is to stream music on-demand usually for free, which gives listeners the ability to enjoy whatever they want, whenever they want. Jurgensen (2014) provides a comprehensive coverage of digital music today and tomorrow, including information about providers and about players. Finally, Facebook and Twitter entered this area. This section describes some of the entertainment-centered social networks, as well as other issues related to entertainment in social commerce. Note that a major issue with such social networks is copyright violations, a topic we discuss in detail in Online Chapter 12.

Entertainment and Social Networks

A large number of social networks are fully or partially dedicated to entertainment. Well-known examples in 2016 are Vimeo, Netflix, and MySpace. MySpace has a licensing agreement with Sony BMG and other large media companies that gives its members free access to streaming videos, music, and other entertainment. The following are representative examples of the use of Web 2.0 applications for entertainment.

Mixi

In Japan, Mixi, Inc. (**mixi.com**) is a highly visited social networking service even though users must be invited to join. Mixi's goal is to allow users to build friendships with other users who share common interests. The site has about 27 million members and over 1 million small communities of friends and interests. Mixi is going global, while Facebook is overtaking it in Japan.

Last.fm

Last.fm (**last.fm**) is not just an Internet radio station. It is considered an online music catalog with free music streaming, videos, lyrics, etc. It also recommends music to its listeners. Musical profiles are constructed when users listen to a personal music collection with a Last.fm plug-in or when they listen to the Last.fm Internet radio service. As of 2016, regular membership is free; premium membership is $3 per month. The site, which operates in 12 major languages (as of 2013), won the Digital Music Award for Best Music Community Site in 2006.

Pandora

Similar to Last.fm, Pandora (**pandora.com**) is a site for music lovers. It mostly acts as a personal radio. The site is based on user-centered music recommendations. Pandora can create a personalized "radio station" based on a user's search for a particular artist, song, or genre.

Web Series and Streaming Movies

Web series are similar to episodic series on TV (e.g., soap operas). The number of Web series is increasing, and some are already available on DVD. Examples include *Hemlock Grove, House of Cards, and Johnny Dynamo*. For more about Web series and other examples, see **webserieschannel.com/web-series-101**.

Hulu

Hulu (**hulu.com**) offers advertisement-supported streaming on-demand videos of TV shows and movies from NBC, Fox, Disney (including ABC programs), and other networks and studios. Due to copyright laws, Hulu offers videos only to users in the United States and a few other countries. Hulu provides video in Flash video format. In addition, Hulu offers some TV shows and movies in high definition in a manner similar to Google Sites, Fox Interactive Media, and Yahoo! Sites. Users can manually share videos they like on their Facebook pages by using the "Facebook" button. It is not necessary to connect their Hulu and Facebook accounts to do this. Hulu is one of the most popular Internet video sites (see **nielsen.com/us/en/newswire/2013/binging-is-the-new-viewing-for-over-the-top-streamers.html**). Hulu offers some of its services free, supported by advertising. It also offers Hulu Plus, which includes premium shows and the ability to watch on more devices for a monthly fee of $8.99. This service, however, also features limited advertising. For more about their offerings and difference between Hulu and Hulu Plus, click on the "frequently asked questions" tab at **hulu.com/plus**.

Advertising and subscriptions are the primary social commerce business models for most streaming entertainment sites.

Funny or Die and Cracked.com

According to their website, Funny or Die (**funnyordie.com**) is a comedy video website created by actor and comedian Will Ferrell, among others. Unlike other viral video sites, members of Funny or Die are encouraged to vote on videos that they view. If they think the video is funny, viewers cast a vote for "Funny." The video then gets a score of the total percentage of people who voted the video "Funny." If the video receives an 80% or greater "Funny" rating after 100,000 views, it gets an "Immortal" ranking. If the video receives a 20% or less "Funny" rating after 1000 views, it "dies" and is relegated to the Crypt section of the site.

Cracked.com, another humor website (which includes videos), also uses crowdsourcing to solicit material from the Internet crowd.

Multimedia Presentation and Sharing Sites

Multimedia sharing can be done in several ways, and its purpose is entertainment, advertising, training, and socialization. The following are some representative types of sharing, and companies in each area:

- **Photography and art sharing**. Flickr, Instagram, Picasa, SmugMug, Photobucket
- **Video sharing**. YouTube, Vimeo, Metacafe, Openfilm, Japan's Niconico (**nicovideo.jp**; now available in English as well),
- **Livecasting**. Twitch.tv, Livestream, Skype, Ustream
- **Mobile social networks**: Path, Liveme
- **Music and audio sharing**. ccMixter, FreeSound, Last.fm, MySpace, Reverb-Nation, The Hype Machine (**hypem.com/popular**)
- **Presentation sharing**. SlideSnack, SlideShare, authorSTREAM
- **Media and entertainment platforms**. Kaltura Open Source Video (**corp.kaltura.com/Video-Solutions/Media-and-Entertainment**)
- **Virtual worlds**. Second Life, The Sims, Activeworlds, IMVU
- **Game sharing**. Miniclip, Kongregate

Note that many of these have some features of social networks; therefore, they may be referred to as such. In addition, most of these generate revenue from advertising and/or subscriptions, including from mobile devices.

SECTION 8.5 REVIEW QUESTIONS

1. Relate social networks to streaming music.
2. Describe the ways you can watch videos on the Web (streaming videos on-demand).
3. Describe some of the multimedia presentation sites.

8.6 SOCIAL GAMES AND GAMIFICATION

A **social game** is a video multiplayer game played on the Internet, mostly in social networks or in virtual worlds. Gamers can play against computers or against each other. Many social games are "massively" multiplayer online games (known as MMOG or MMO), which are capable of supporting hundreds to many thousands of players simultaneously. MMOG players can compete, collaborate, or just interact with other players around the globe. Many game consoles, including the PSP, PlayStation 8, Xbox 860, Nintendo DSi, and Wii can be played on the Internet. Additionally, mobile devices and smartphones based on such operating systems as Android, iOS, webOS, and Windows Mobile are seeing an increase in the number of MMO available games. Social games are very popular.

Games on Social Networks

A **social network game** is a video game that is played in social networks, and usually involves multiplayers. Social (network) games may have little or nothing to do with how *social* the games are played. However, some games have social elements such as educating the public, gift-giving, and helping other or sharing playing strategies.

For a game to be more social, it should facilitate and encourage engagement and communication about the environment outside the game, run on or integrated with a social network, and use that network to enhance game play between players.

Example: Popular Games on Facebook

Players can choose from several thousands of games on Facebook. Some games are played by 50–150 million people each. The most popular games each attract tens of millions of players. Facebook's list of popular games for February 2014 includes Candy Crush Saga (most popular in 2014), FarmVille, FarmVille 2, CityVille, Bejeweled Blitz, Pet Rescue Saga, Criminal Case, Texas HoldEm Poker, Words with Friends, and Bubble Safari. (See **gamehunters.club/top-games/on-facebook**.)

Representative major Facebook developers for games are King, Zynga, Social Point, and Pretty Simple. Note that there is a trend to play more casino type games. To enhance the game experience, some platforms utilize the players' social graphs.

To learn more about social games, go to **www.museum-stuff.com/learn/topics/Social_network_game**.

The Business Aspects of Social Games

To understand the variety of games and their properties and commercial possibilities, we suggest you watch the video "Social Media Games: Worldwide Gamification Is the New Paradigm for Life and Business" at **youtube.com/watch?v=xCWsgBHY_VU**. The video presents opportunities for advertising, marketing, and training, among others. Also, visit the site of Zynga (**zynga.com**), a major vendor in the field. During the fourth quarter of 2013 Zynga had about 298 million visitors. It took Facebook 4.5 years to reach the same level of visitors that Zynga reached in 2.5 years. However, Zynga's revenue was overestimated, causing the stock price to decline drastically. As far as revenues, Facebook games provide very little per person per month income. Electronic Arts, a Zynga competitor, has some games that generate three to five times more per game. Both companies have gone mobile. For example, FarmVille2 for iPad and iPhone are now available.

For the relationship between YouTube and gamers, see Hutchinson (2015).

Educational Social Games

Games can also be educational as the following examples show. Environmental apps for adults and kids (e.g., for tablets) can be found at **ecogamer.org/environmental-games.**

Example 1: Pollution Reduction Game

The Philippine-made Facebook game called Alter Space aims to educate the people on how to reduce pollution. Specifically, it educates the players about the concepts of carbon footprints and cleaner energy, and how people can help achieve a cleaner world. (Inactive now.)

Example 2: Economic and Finance Game—Empire Avenue

Empire Avenue (**empireavenue.com**) is a social media stock market simulation game where individuals and businesses buy and sell virtual shares from each other. The shares can be of individuals, companies, etc. The share price is based on the shares' trading activity coupled with the players' influence on the major social networks. The trading is done with reward points called *Eaves* and *Vees*. In the game, there are financial data and decision-making capabilities about dividends, number of shares outstanding, and share prices, to name just a few. Empire has many variables within the game. The reward points can also be used as virtual currency to play the Social Market game. Players can interact via popular social networks (e.g., Facebook, Twitter, Instagram) across the Web. The more social the player is, the more virtual currency the player will earn, and the bigger the player's Empire will become. Several major brands are already using this site (e.g., Toyota, AT&T, Audi, and Ford). For details, see Empire Avenue at **businessesgrow.com/2014/01/08/how-empire-avenue-crushed-my-soul**.

Gamers Helped Scientistsc

For decades, scientists were unable to unfold the chemical chain of an enzyme of an AIDS-like virus. However, researchers at the University of Washington turned Foldit, a "fun for purpose" program created by the university, which transfers scientific problems into competitive computer games.

The gamers were divided into groups and were challenged to compete by using their problem-solving skills to build 3D models of a protein that scientists had been unable to find for years. The players solved the chemical chain problem accurately in just 3 weeks (see **balita.com/online-gamers-crack-aids-enzyme-puzzle**). For more about Foldit ("Solve Puzzles for Science"), see **fold.it**.

Gamification

Some social games are designed so that players will connect with vendors or brands in the game environments. This is only

one aspect of **gamification**, which refers to the introduction of gaming into social networking. Gamification can also be viewed as the introduction of social networking activities into online games. Our interest is in those applications that are related to social commerce and e-commerce. For more definitions and limitations, see the Gamification Wiki (**gamification.org**), and Duggan and Shoup (2013).

Social activities are not new to online gaming. For example, players collectively agree to the rules of the games. Also, gamers need trust between the players. What is new here is the integration of traditional multiplayer games and social networking. Given that so many people play online games, it is not surprising that vendors are encouraging players (e.g., via rewards) to engage in desired behavior (e.g., problem-solving or collaboration). Vendors also use games as advertising platforms. For a gamification framework, see Chou (2012).

According to a Lithium white paper (2011) and Florentine (2014), companies can use gamification to create winning social customer experiences such as increasing loyalty, building trust, accelerating innovation, providing brand engagement, and increasing relevant knowledge. For how to use gamification to engage employees, see Hein (2013).

For commercial possibilities and strategies of social games and gamification, see Zichermann and Linder (2013).

For additional information, you can download the e-book titled "The Essential Social Playbook: 8 Steps to Turn Social into Sales," at **powerreviews.com/assets/new/ebooks/powerreviews_essential_social_playbook.pdf**.

SECTION 8.6 REVIEW QUESTIONS

1. Describe online games.
2. Describe games in social networks.
3. Discuss the business aspects of social games.
4. What is gamification? Relate it to social commerce.

8.7 CROWDSOURCING AND CROWDFUNDING

The essentials of crowdsourcing were described in Chapter 2. Listed there, as a major capability, was the facilitation of problem-solving.

Crowdsourcing as a Distributed Problem-Solving Enabler

Crowdsourcing actually describes a set of tools, concepts, and methodologies that deal with the process of outsourcing work, including problem-solving and idea generation to a *community* of potential solvers known as the "crowd."

More than just brainstorming or ideation, crowdsourcing uses proven techniques to focus on the crowd's innovation, creativity, and problem-solving capacity on topics of vital interest to the host organization. An overview of crowdsourcing is provided in Jeff Howe's video titled "Crowdsourcing" (3:20 min) at **youtube.com/watch?v=F0-UtNg3ots**, **crowdsourcing.org**, and in Brabham (2013). Also watch Brabham's video "Crowdsourcing As a Model for Problem Solving" (6:1 min) at **youtube.com/watch?v=hLGhKyiJ8Xo.**

Crowdsourcing Models

Howe (2008) has classified applications of crowdsourcing into the following four categories:

1. **Collective intelligence (or wisdom)**. Here, people are solving problems and providing new insights and ideas leading to product, process, or service innovations.
2. **Crowd creation**. Here, people are creating various types of content and sharing it with others (paid or for free). The content may be used for problem-solving, advertising, or knowledge accumulation. This can be done by splitting large tasks into small segments (e.g., contributing content to create the Wikipedia).
3. **Crowd voting**. Here, people are giving their opinions and ratings on ideas, products, or services, as well as evaluating and filtering information presented to them. An example would be voting on American Idol.
4. **Crowd support and funding**. Here, people are contributing and supporting endeavors for social causes, which might include volunteering their effort and time, offering donations, and micro-financing.

Chaordix Corp. (**chaordix.com**) classifies crowdsourcing into the following three models:

1. **Secretive**. Individuals submit ideas, and the winner is selected by the company. Ideas are not visible to all participants.
2. **Collaborative**. Individuals submit ideas, the crowd evaluates the ideas, and the crowd picks the winners. Ideas are visible to all participants.
3. **Panel selects**. Individuals submit ideas, the crowd evolves ideas, a panel selects finalists, and the crowd votes for the winner.

A *crowdsortium* is a community of industry practitioners whose mission is to advance the crowdsourcing industry

through best practices and education (see **crowdsortium.org**).

Crowdsourcing also has the potential to be a problem-solving mechanism for governments and nonprofit use via community participation. Urban and transit planning are prime areas for crowdsourcing. One project used crowdsourcing to encourage public participation in the planning process for the Salt Lake City transit system. Another notable application of crowdsourcing to government problem-solving is the Peer to Patent Community Patent Review project for the U.S. Patent and Trademark Office, see **peertopatent.org**.

Progressive companies and organizations now recognize the value of tapping into the wisdom of the crowd to capture the best answers and the most innovative ideas.

Crowdsourcing can be used for many purposes. For an overview, see Zoref (2015).

The Process of Crowdsourcing

The process of crowdsourcing, which was described briefly in Chapter 2, differs from application to application depending on the models of the specific problem to be solved and the method used. However, the following steps exist in most enterprise applications, even though the details of the execution differ. The major steps are based on the generic process described in Chapter 2. They are:

1. Identify the task (problem) you want to investigate or accomplish.
2. Select the target crowd.
3. Broadcast the task to the crowd. (Frequently to an unidentified crowd in an open call, as Starbucks and Dell do.)
4. Engage the crowd in accomplishing the task (e.g., idea generation).
5. Collect the user-generated content. (This may include a submission of solutions, voting, new ideas, etc.)
6. Evaluate the quality of submitted material—by the management that initiated the request, by experts, or by the crowd.
7. Accept or reject a solution.
8. Compensate the crowd.

For a comprehensive slide show, see Leimeister (2013).

Successfully Deployed Crowdsourcing Systems: Some Representative Examples

The following are some representative examples of implemented crowdsourcing systems.

- **Dell's IdeaStorm** (**ideastorm.com**) enables customers to vote on Dell's product features they prefer, including new ones. Dell is using a technically oriented crowd, such as the Linux (**linux.org**) community. The crowd submits ideas and sometimes members of the community vote on them.
- **Procter and Gamble's** researchers post their problems at **innocentive.com**, and at **ninesigma.com**, offering cash rewards to problem solvers. P&G uses other crowdsourcing service providers such as **yourencore.com**.
- **Amazon Mechanical Turk** (**mturk.com**) is a marketplace for distributing large scale work that requires human intelligence. It is limited to large tasks that can be divided (known as HITs—human intelligence tasks) and is posted by companies that need assistance. Then, Amazon arranges workers (the "Mechanical Turk Workers"), each of whom is allocated a small subtask, and is paid when the work is completed. For details, see **mturk.com**.
- **Facebook** (**facebook.com**) used crowdsourcing to translate its site into more than 65 different languages. The completion of the English to French translated by over 4000 volunteers only took 1 day; however, Facebook had to hire a team of professional translators to oversee the whole crowdsourcing process to ensure that the resulting translations were accurate.
- **Goldcorp** (**goldcorp.com**), a Canadian mining company, was unable to find sufficient gold. In 2000, the company initiated an open call to the public, providing geological data and a $575,000 in prizes to participants with the best methods. Using the submitted ideas, the company discovered $3 billion worth of gold.
- **Frito-Lay** (**fritolay.com**) used crowdsourcing for designing a successful annual Super Bowl advertising campaign.
- **Wikipedia** (**wikipedia.org**) is considered by many to be the "granddaddy" of crowdsourcing, and is certainly the world's largest crowdsourcing project.

Example: How Airbnb Created a Film

Airbnb is a global marketplace for vacation rentals (190 countries). Using a crowdsourcer vendor, Vines, the company created a successful 4.5 min film which was presented at the Sundance Channel. The project started by inviting Airbnb community to participate by twitting them a storyboard of shots created by Vines. According to Gioglio (2015), "The Vine scenes were solicited over a 6-day period, during which Airbnb leveraged Twitter (**twitter.com/Airbnb**) as its 'director' by tweeting visual twitpic instructions to communicate how different clips should be created. Following each short list tweet, fans had 48 h to submit their creation for a chance to be included and earn a $100 Airbnb credit. Over the course of the campaign, 44 unique Vine shot numbers were pitched to the Airbnb community. In the end, Airbnb collected over 750 submissions, more than 100 of which were included in the short film."

Example: Innovation Excellence—A Marketplace for Crowdsourcing

According to its website, Innovation Excellence (**innovation-excellence.com**) is a multinational social marketplace with about 1,000,000 registered experts in more than 170 countries. As a problem-solving individual or research organization, one can create a profile, make professional contacts, and connect with colleagues (for a fee), peers, and friends. If you are a problem solver and only want to solve problems on Innovation Excellence, you choose what information you want to disclose and decide who can see it. In Innovation Excellence, users can share activities with their contacts on other social networks. You can develop your own networks or join one of the many networks that already exist on Innovation Excellence. Users can meet with people who share their interests and follow their friends' activities. After seeing what their friends are working on, people can decide to either compete or collaborate with their friends on problem-solving.

Note: Crowdsourcing is used by thousands of volunteers to search disaster areas, such as typhoons in the Philippines and locating the missing MH370 Malaysian jet.

Tools for Crowdsourcing and Crowdfunding

To launch crowdsourcing initiatives, businesses and developers can make use of crowdsourcing tools and platforms, such as NineSigma, InnoCentive, YourEncore, yet2, UserVoice, Get Satisfaction, and IdeaScale.

Crowdfunding and Kickstarter

Raising funds from the crowd for different purposes is gaining popularity with several start-ups operating in this area. A notable company is Kickstarter. For how they help small businesses, see the 2013 video **youtube.com/watch?v=xudOhEYIwyU**.

Examples of Crowdfunding

An increased number of startups are using crowdfunding to raise funds for their businesses. Here are four examples:

- Filmmaker Zach Braff used Kickstarter to raise money for his 2013 film (watch the video "Zach Braff Uses Kickstarter to Get Money for Next Film" (0:51 min) at **youtube.com/watch?v=CIyJtcxjWhw**.
- Zach Danger Brown collected over $52,000 on Kickstarter in July 2014 for his "potato salad" idea. For details, see Root (2014) and a video about how the collection went global at **abcnews.go.com/GMA/video/zach-danger-browns-potato-salad-kickstarter-global-24464503**.
- The digital music phenomenon, Kawehi, is raising money via Kickstarter to promote her music projects in Hawaii. For details, see Russo (2014).
- Next Thing Co. raised $700,000 from 15,000 people, using Kickstarter in May 2015. The company boasted that they would produce $9 computer. For details, see della Cava (2015).

For eight successful Kickstarter campaigns, see Serino (2015). For a crowdfunding strategy guide, see Stegmaier (2015).

For tools for crowdfunding, see Roth (2016).

SECTION 8.7 REVIEW QUESTIONS

1. Define crowdsourcing.
2. List the seven crowdsourcing models.
3. List the major steps of the crowdsourcing process.
4. What are the capabilities of Kickstarter and Innovation Excellence?

8.8 SOCIAL COLLABORATION (COLLABORATION 2.0) AND THE FUTURE OF SOCIAL COMMERCE

One of the major applications of Web 2.0 and social media in the enterprise is in the area of collaboration. Some even equate Web 2.0 with enterprise collaboration. Social collaboration is used for many purposes, an important one being product design.

Essentials of Social Collaboration

Collaboration in business can be defined as *people working with other people toward a common outcome or goal*. For many images of social collaboration, search Google for: "Images of social collaboration."

Social collaboration refers to people's collaboration within and between communities enabled by social media tools and platforms. The processes help people interact and share information to achieve a common goal. It is also known as *Collaboration 2.0*. Collaboration 2.0 is recognized as a major element in social enterprise that can provide considerable benefits (e.g., see examples in IBM Software Group 2011). For implementation of social collaboration, see Carr (2013). For a comprehensive report including benefits and lessons learned, see Avanade (2013).

Social Collaboration (Collaboration 2.0)

Collaboration drives business value up by enabling people to work together more efficiently. Wikis and other social software tools can be used effectively by all types and sizes of enterprises for a wide range of tasks and activities. Collaboration helps with solving business problems and uncovering new opportunities, especially with the help of social media tools (see details at Morgan 2012). Collaboration in social networking is done both internally, among employees from different units working in virtual teams, and externally, when working with suppliers, customers, and other business partners. For example, collaboration occurs in forums and other types of groups and by using wikis and blogs. For the benefits of social collaboration, see Buckley (2015). For the use of Collaboration 2.0 in the enterprise, see Turban et al. (2016).

Social collaboration has several dimensions as illustrated in Figure 8.2.

Some believe that in the future, people will use mostly Web 2.0 tools, rather than e-mail, for collaboration. For a discussion, see **thefutureorganization.com**.

A large number of Web 2.0 tools are used to support social collaboration. The support is given to idea sharing, communication, working together on the same documents, and more. The Web 2.0 tools range from wikis to virtual worlds. For the success story of Walgreens, see **rightpoint.com/case-studies/Walgreens**. Dunay (2014) describes in a webinar how to use enterprise social networks for internal collaboration.

The development of tools, philosophies, and procedures of social media support for collaboration allows employees and managers to engage much more fully in the collaboration process. Furthermore, social collaboration has improved the organizational culture.

Figure 8.2 The various dimensions of social collaboration

Social collaboration is supported mainly by:

- Wikis, blogs, and microblogging (e.g., Twitter)
- Collaborative communities (forums and discussion groups)
- Early vintage Web 2.0 technologies
- Crowdsourcing
- Other tools (e.g., Yammer)

Most collaboration software vendors are adding Web 2.0 tools to their collaboration suites (e.g., Binfire Inc.).

Using Blogs and Wikis Inside the Enterprise

In Chapter 2, we provided some examples of blogs and wikis used within enterprises. The use of these tools is expanding rapidly. Companies use blogs and wikis for the following activities:

- Project collaboration and communication
- Process and procedure documentation
- FAQs
- E-learning and e-training
- Forums for new ideas
- Corporate-specific dynamic glossary and terminology
- Collaboration with customers

As you can see, most of the activities in the previous list relate to collaboration. For additional information, see **zdnet.com/blog/hinchcliffe** (several blogs).

Using Twitter to Support Collaboration

Twitter already is used extensively in the enterprise to support collaboration. Twitter is used extensively for interaction with customers and prospects as well as for conducting collaboration.

The Role of Mobile Commerce in Social Collaboration

As described in Chapter 6, mobile commerce is growing very rapidly. Most enterprise social applications can be done on wireless devices. This is particularly true for communication and collaboration.

Questions and Answers in Social Networks

In a Q&A "answer" function individuals and companies can post questions. For example, in LinkedIn community: go to the Help Forum and use the posting module on your home page to ask your network a question, and the community usually will provide you with answers. You can also ask a question on the "share box" on the home page. Many other professional networks and their internal groups provide advice and supporting material for helping in decision-making. These services can be either paid or for free. For example, according to the medical social network "Sermo" (**sermo.com**; "Social Media Meets Healthcare"), a large online community exclusive to physicians, "has an app that allows physicians to author and discuss urgent and interesting patient cases from any Web- or mobile-enabled device, and based on market tests, be almost assured feedback from multiple colleagues. Typical questions and responses include requested/suggested diagnoses and treatments with the best insights often resulting from collaboration among the doctors" (see **sermo.com/who-we-are/press-releases-view/3**).

Suites of Tools for Social Collaboration

Several companies offer suites of social collaboration tools, either as stand-alone products or as added tools in existing collaboration suites.

Example 1: IBM Connections

IBM Connections provides tools such as forums, wikis, and blogs, and new capabilities like advanced social analytics, which enable users to expand their network of connections and engagement. For details, see press release "IBM Launches New Software and Social Business Consulting Services" at **ibm.com/press/us/en/pressrelease/32949.wss**.

You can download many free white papers at the IBM Jam Events page (**collaborationjam.com**). IBM has about 20,000 internal blogs (used by over 100,000 people). Over 70,000 members are in SocialBlue (an internal clone of Facebook). 350,000 members are on LinkedIn (January 2016), and over 500,000 are participants in crowdsourcing. Today these numbers are probably larger. IBM also provides the tools needed to support innovation.

Example 2: Cisco WebEx Meeting Center (Formerly Cisco Quad)

Cisco WebEx, according to Cisco's website, is an enterprise collaboration platform, which is designed for today's workforce. It is characterized by social, mobile, visual, and virtual features. WebEx connects people to the information and expertise they need, when they need it. Knowledge and ideas

are easily shared across the enterprise, and teams collaborate across geographical and organizational boundaries.

WebEx Meetings is a universal app available for all major smartphones and tablets. For other WebEx social features, see **webex.com/products/web-conferencing.html#pricing**.

For a list of vendors, the tools they use, and the type of collaboration/communication supported in the context of general use cases. For the benefits of social collaboration, see Buckley (2015).

The Future of Social Commerce

In determining justification and strategy of social commerce, we need to look into the future. Many researchers and consultants are speculating on the future (e.g., **slideshare.net/YairCarmel1/e-commerce-trendsesenglish?related=3**). The predictions are diverse, ranging from "SC will dominate EC" to "it is a buzz word and will disappear soon." See Gebauer (2015) for 132 case studies, both successes and failures. Given the popularity of Facebook, Twitter, Pinterest, YouTube, social games, social shopping, and social advertising, it is difficult to side with the pessimistic predictions. It looks as if mobile social commerce will be a major area of EC growth. Also, several of the social shopping and social collaboration models could be very successful. In the enterprise area, there is a trend to have a "social as a service" rather than as an application approach (due to the influence of cloud computing).

The future of social commerce depends largely on social media trends. For some 2016 trends, see Levy (2016).

Conclusion: IBM's Watson and Social Commerce

There are many opinions on what the future of SC will be. Instead of presenting them, we decided to end this chapter by looking at IBM's Watson supercomputer. In February 2011, IBM's Watson won a *Jeopardy* 8-day tournament against two world champions. This was a great achievement for what IBM calls Social Business and Smart Computing. Aided by intelligent systems such as IBM's Pure Systems, Watson will be able to do much more. According to **ibm.com/smarterplanet/us/en/ibm**, Watson may assist people in the following social commerce-related tasks.

- **Personal investment advisor**. There is no need to conduct research any longer. All you have to do is to state your investment goals and Watson will make recommendations after checking all the needed input data. Given what goals you have, Watson can figure out what you need, recommending what stocks to buy or sell. Upon your approval, Watson can complete the deal for you.
- **Language translator**. In EC we sometimes need language translation for introducing websites to people who understand other languages, in order to exploit global opportunities. We need it also for translating a natural human language to a language that a computer can understand. Today's automatic machine translation is not optimal, but it is improving. Computer systems, such as IBM's Watson, have powerful natural language processors that are getting even better with time, and thus provide better machine translation.
- **Customer service**. Providing technical support is critical for success (e.g., see the iRobot case in Chapter 7). Watson's intelligence will enable automatic guides for people who need help, taking them through all the necessary steps. The service will be consistent, top quality, and available in real time.
- **Q&A service**. Watson will provide the best answers to any business, medical, legal, or personal question you have. It can answer any question and subsequent subquestions.
- **Matchmaking**. Watson can match sellers and buyers, products and markets, job seekers and job offers, partners to bartering, P2P lending participants or any other match you can think of. For example, Watson will be able to find you a partner who will fit your stated goals. IBM's Watson is related to IBM's Smarter plant activities (see **ibm.com/smarterplanet/us/en/ibmwatson**).

SECTION 8.8 REVIEW QUESTIONS

1. Define social collaboration.
2. List and describe the major benefits of social collaboration briefly.
3. List social collaboration tools.
4. What are the major points related to the future of social commerce?

MANAGERIAL ISSUES

1. **What are some of the ethical issues that may be involved in deploying social commerce?** Using social commerce can lead to several ethical issues such as privacy and accountability. In addition, mistakes can cause harm to users as well as to the company. Another important ethical issue is human judgment, which is frequently a key factor in social commerce. Human judgment may be subjective or corrupt, and therefore, it may lead to unethical consequences. Companies should provide an ethical code for system builders and users. There are ethical issues related to the implementation of idea generation and other problem-solving-related considerations. One

issue to consider is whether an organization should employ productivity-saving devices that are not ethical. Another ethical issue is the use of knowledge extracted from people in crowdsourcing. A further related issue is whether a company should compensate an employee when others use knowledge that he or she contributed. This issue is related to the motivation issue. It also is related to privacy. Should people be informed as to who contributed certain knowledge?

2. **How should we deal with social commerce risks?** There are several possible risks in implementing social commerce, depending on the applications. For example, to protect the security of the SC open source system, you need to consult your internal security experts and you may need some outside legal advice. There is also the risk of information pollution and biased or falsified user-generated content. You may also need to use a consultant for large projects to examine and evaluate the associated risks. Weighing the benefits of social media against security and other potential risks is a major strategy issue.
3. **Should we move to be a social enterprise?** It depends on the estimated costs and benefits. Also, it is possible to introduce some, but not all, features of social enterprise. For example, using crowdsourcing can be very beneficial. Social collaboration may be cost-effective as well.
4. **What about a private, in-house social network?** Such a venture may bring many benefits and it can be combined with internal activities of crowdsourcing, as well as with social collaboration with business partners. Most successful in-house networks are used for idea generation, internal collaboration, recruitment, and public relations.
5. **Shall we try gamification?** In most cases it is wise to wait and see the results of other companies. The deployment requires skilled employees. In certain applications the reward can be large. But in most cases we are not sure at this time. As one says: "Try it, you make like it."

SUMMARY

In this chapter, you learned about the following EC issues as they relate to the chapter's learning objectives.

1. **The social enterprise**. Conducting social networking activities in the enterprise can result in substantial benefits. Two types of business social networks exist, public and private. The private network is company owned; it may have restricted access, or it may be open to the public. The public network (e.g., LinkedIn) is used mainly for recruiting, connections, collaboration, and marketing communication. The private, in-house social enterprise uses Collaboration 2.0, social CRM, social marketing media, and more. You can even "spy" on your competitors (see **entrepreneur.com/article/229350**). All this translates to improved relationships with employees, customers, and business partners. Significant cost reduction, productivity increase, and competitive advantage can be achieved as well.
2. **Business-oriented public social networks**. Following the successful examples of LinkedIn and Xing, many public business-oriented networks were created. Notable networks are Viadeo (**us.viadeo.com/en**) and Google+. Applications vary from recruiting to market research and advertising. Most notable is f-commerce. One major activity in public networks is external collaboration. Several entrepreneurship networks also exist.
3. **Major enterprise social commerce activities**. Currently, collaboration and communication, as well as community building, are the major activities. In addition, problem-solving via idea generation and finding expertise are becoming more and more important. Related to this is knowledge creation and management. Companies recruit, train, and conduct other HRM activities in enterprise networks. Several companies also use the enterprise social network for interactions with customers, suppliers, and other business partners.
4. **The online job market and its benefits**. The online job market is growing rapidly, with thousands of jobs matched with job seekers each day. The major benefits of online job markets for employers are the ability to reach a large number of job seekers at a low cost, provide detailed information online, accept applications online, and even conduct skill tests. In addition, résumés can be checked and matched with positions more quickly by using intelligent software agents. Many job offers are posted on the Internet, helping job seekers to obtain employment. Job seekers can also post their résumés for recruiters to find. Recruiting via social networks, especially via LinkedIn and Facebook, is growing very rapidly.
5. **Social commerce, entertainment, and gaming**. Rich media, user-created content, and groups and subgroups with common interests have opened many possibilities for a second generation of online entertainment. Add to this the wireless revolution and the increased capabilities in mobile devices to support Web 2.0 tools and social networking activities, and you will discover a new and exciting world of online entertainment ranging from music and videos to comedy.
6. **Social gaming and gamification**. Many Internet-based games include some social activities. Players collectively agree to the rules and act as community members. Companies such as King and Zynga create the games which are played on Facebook and other social networks. This is one aspect of gamification. Another aspect is the introduction of social media into games.
7. **Crowdsourcing and crowdfunding**. Crowdsourcing in the enterprise is used mostly for idea generation, voting, and problem identification. Content creation and updating projects, such as volunteers translating the Facebook

website to French and German, falls into this category. Crowdfunding is an application for raising funds only from a large number of people.

8. **Social collaboration and the future of social commerce**. Many see social collaboration (Collaboration 2.0) as the major activity that social media supports. Activities supported range from joint design to problem-solving.
9. **The future of social commerce**. The general consensus is social commerce will grow rapidly; but some disagree. A major boost to social commerce is IBM's innovations (particularly the Watson Computer and Smarter Commerce).

KEY TERMS

Business social networks
Gamification
Social business
Social collaboration (Collaboration 2.0)
Social enterprise
Social game
Social network game

DISCUSSION QUESTIONS

1. How do public business-oriented networks and private enterprise social networks differ?
2. Discuss the role of crowdsourcing in idea generation and in other enterprise activities.
3. Corporate social networking: Booster or time-waster? What are the pitfalls of enterprise social networking? Discuss.
4. How can crowdsourcing reduce risks to merchants?
5. What are some of the risks companies may face if they decide to use public social networks?
6. Discuss how social collaboration can support commercial activities.
7. How can gamification be used in business?
8. Compare and contrast social collaboration and crowdsourcing.

TOPICS FOR CLASS DISCUSSION AND DEBATES

1. Debate: Should a crowd have professional knowledge of the task it has been given or not?
2. Some claim that using social collaboration may be slow and ineffective. Others disagree. Debate the issue.
3. Idea generation by the employees or customers using crowdsourcing is becoming popular. However, some say it is only an electronic suggestion box. Others disagree. Discuss.
4. Enter **quara.com** and ask for the benefits and limitations of social enterprises. Write a report.
5. Debate: Should companies build in-house social networks for external activities (e.g., marketing, CRM) or use existing public social networks?
6. Examine the Grand Theft Auto game. Why the game is so popular? Are there any social elements there?
7. Why does one need a special entrepreneur network? What features make it effective?
8. What are some of the risks companies may face if they decide to use public social networks?
9. Review the features of Socialtext (**socialtext.com**). Discuss how you would make use of this platform in a small enterprise in (a) retail, (b) manufacturing, and (c) financial services.
10. Would you use **monster.com** or **linkedin.com** for recruiting top managers, or would you rather use a traditional agency? Why?
11. Crowdfunding is becoming very popular. Find recent information about its success. What are some of the implementation challenges?

INTERNET EXERCISES

1. Enter **xing.com** and **linkedin.com** and compare their functionalities (capabilities). Also, enter **youtube.com/watch?v=pBAghmYMG0M** and view the video "Ryze Business Networking Tutorial" (7:20 min). Compare Ryze's capabilities with those of LinkedIn.com. Write a report.
2. Enter **pandora.com**. Find out how you can create and share music with friends.
3. Check several crowdfunding sites such as Kickstarter and GoFundMe and compare their processes. Find information about crowdfunding in China. Can it be a $50 billion by 2025? Write a report.
4. Post a question on **quara.com** about the future of social commerce. Summarize the answers and comment.
5. Enter **innocentive.com**. Describe how this site works. List their major products and services. Identify benefits and challenges.
6. Enter **hulu.com/plus**. Why is it an online entertainment service? What are the benefits to viewers? Compare this site to **starz.com**.
7. Enter **gaiaonline.com** and find all socially oriented activities. Write a report.

8. Enter the **gillin.com/blog** and find information related to enterprise applications of social commerce technologies. Write a report.
9. Enter **brazen.com/about** check the services Brazen provides. Compare services to the virtual event hosted at **expos2.com**.
10. Compare what **jobserve.com** and **aspiremediagroup.net** offer regarding solutions for recruitment. Differentiate services to employees from services to employers. Write a report.
11. Identify a difficult business problem. Post the problem on **linkedin.com** and **answers.com**. Summarize the results or offers you received to solve the problem.
12. Enter **huddle.com** and take the interactive demo. (Registration required.) Also, view the video on the main page. Write a report on social collaboration activities.

TEAM ASSIGNMENTS AND PROJECTS

1. **Assignment for the Opening Case**
   Read the opening case and answer the following questions:
   (a) Describe the drivers of Shift at CEMEX.
   (b) Describe its major benefits.
   (c) Relate the case to Collaboration 2.0 and to crowdsourcing.
   (d) Enter Garcia et al. (2011) and view the supporting videos. Prepare a summary of one video.
2. The crowdsourcing model works with designers, like this: (1) A company outlines an area for which they need a design. (2) The company turns the design outline into a competition (e.g., among experts, among amateurs, or between amateur and professional designers). (3) A winner is selected by management, consultants, or by the crowd. This is done at little cost.
   (a) If this model becomes widespread, how will it affect the design industry?
   (b) What is the purpose of the competition?
   (c) Some believe that amateurs can do the best job. Others disagree. Find information and discuss.
   (d) Compare this situation to the Polyvore model. Discuss.
3. Some consider gamification to be a major social commerce technology of the future. Enter **badgeville.com/wiki/External_Resources**. Find additional resources. Write a report on the existing and potential applications of gamification in e-commerce and social commerce.
4. All students register as members at LinkedIn.
   (a) Each team member joins two LinkedIn groups and observes their activities.
   (b) All join the EC group: (**group-digest@LinkedIn.com**). Follow some of the discussions there. Have a joint class presentation on the value of groups at LinkedIn.
5. Check the competition in the area of streaming music services (e.g., check Spotify, Amazon, Apple, Google). Write a report.
6. Yammer, Huddle, Chatter, and Jive Software are cloud-based social networking services. They are considered very useful, replacing traditional enterprise tools. Investigate the issue and write a report.

CLOSING CASE
LINKEDIN: THE PREMIER PUBLIC BUSINESS-ORIENTED SOCIAL NETWORK

Let us look at LinkedIn (**linkedin.com**), the world's largest professional network. LinkedIn is a global business-oriented social networking site (has offered in 23 languages), used mainly for professional networking. By January 2016, it had about 414 million registered users spanning 200 countries and territories. By the end of 2016 there were 2.2 million different groups, each with a special interest. LinkedIn can be used to find jobs, people, potential clients, service providers, subject experts, and other business opportunities. The company became profitable in 2010 with revenue approaching $3 billion in 2016. The company filed for an initial public offering in January 2011, and its stock is one of the best performing on the stock market. A major objective of LinkedIn is to allow registered users to maintain a list of professional contacts (see **en.wikipedia.org/wiki/LinkedIn**), i.e., people with whom they have a relationship. The people in each person's network are called *connections*. Users can invite anyone, whether he or she is a LinkedIn user or not, to become a connection. When people join LinkedIn, they create a profile that summarizes their professional accomplishments. This profile makes it easier to be found by recruiters, former colleagues, and others. Members can also meet new people and find opportunities for collaboration and marketing. For 2016 statistics about LinkedIn, see **expandedramblings.com/index.php/by-the-numbers-a-few-important-linkedin-stats**.

LinkedIn is based on the concept of "degrees of connections." A *contact network* consists of a user's direct connections (called first-degree connections), people connected to their first-degree connections (called second-degree connections), and people connected to the second-degree connections (called third-degree connections). Degree "icons" appear next to a contact's name. The contact network makes it possible for

a professional to gain an introduction, through a mutual, trusted contact, to someone he or she wishes to know. LinkedIn's administrators themselves are also members and have hundreds of connections each (see Elad 2014 and **linkedin.com**).

The "gated-access approach," where contact with any professional requires either a preexisting relationship or the intervention of a mutual contact, is intended to build trust among the site's users.

The searchable LinkedIn groups feature allows users to establish new business relationships by joining alumni, industry, professional, or other relevant groups.

LinkedIn is especially useful in helping job seekers and employers find one another. According to Ahmad (2014), 94% of all U.S. recruiters use LinkedIn to examine potential candidates. Job seekers can list their résumés, search for open positions, check companies' profiles, and even review the profiles of the hiring managers. Applicants can also discover connections with existing contacts (people) who can introduce them to a specific hiring manager. They can even see who has viewed their profiles. For details, see **linkedin.com/company/linkedin/careers** and **linkedin.com/jobs**. For a LinkedIn guide for job searchers, see Boone (2015).

Companies can use the site to post available jobs and find and recruit employees, especially those who may not actively be searching for a new position.

Smart Ways to Use Linkedin

LinkedIn is known mostly as a platform for recruitment, job searches, and making connections. However, there are many opportunities in the network for marketing, advertising, sales, and more (e.g., see Cole 2015). Members can ask others to write recommendations (endorsements) for them. For a list of opportunities, see **linkedintelligence.com/smart-ways-to-use-linkedin**.

In lieu of LinkedIn Answers that was discontinued in 2013, a new service is available, per **linkedin.com/help/linkedin/mobile-apps**.

In 2011, LinkedIn launched LinkedIn "Ads." Ads, which is their version of Google's AdWords, is a self-service, text-based advertising product that allows advertisers to reach a targeted professional audience of their choosing (see their FAQ's at **linkedin.com/help/linkedin/mobile-apps**). For a comparison between Ads and AdWords, see **shoutex.com/linkedin-directads-vs-google-adwords-2**.

According to Ahmad (2014), LinkedIn has three times higher "visitor-to-lead" conversion rate than Facebook and Twitter.

As of 2014, LinkedIn can provide job matching to positions available, by using a computer algorithm that determines potential employee's fitness to potential jobs.

LinkedIn can also be used for several marketing strategies such as creating special groups to promote interest in events, purchasing paid media space, and seeing what your competitors are doing (e.g., **linkedin.com/about-us**). Note that about 75% of LinkedIn members are located outside the United States. For example, many users are in Brazil, India, the United Kingdom, and France. Over 1.5 million teachers are on LinkedIn and use the site for educational purposes.

As previously mentioned, LinkedIn is a public company. It was an instant success, as the share price almost tripled the first day of trading. In contrast, shares of Monster, a major online recruiting company, plunged more than 60% during 2011, mainly due to investors' fear that LinkedIn would take business away from Monster.

LinkedIn constantly adds capabilities to its site. For example, in 2014, the company launched features that help increase local relevance.

Mobile Applications

A mobile version of LinkedIn, launched in February 2008, offers access to most features in the site by using mobile devices. The mobile service is supported in many languages, including Chinese, English, French, German, Japanese, and Spanish (for mobile devices and supported languages, see **linkedin.com/help/linkedin/mobile-apps**).

Some Resources for Linkedin

The following are some useful resources on LinkedIn: **blog.linkedin.com**, **mylinkedinpowerforum.com**, and **linkedin.com/search**.

For LinkedIn success stories, see Elad (2014) and **cbsnews.com/news/linkedin-5-job-search-success-stories**.

Sources: Based upon Elad (2014), Ahmad (2014), Bernstein (2015), **en.wikipedia.org/wiki/LinkedIn**, and **press.linkedin.com/about-linkedin** (both accessed March 2016).

Questions

1. Enter **linkedin.com** and explore the site. Why do you think the site is so successful?
2. What features are related to recruiting and job search?
3. Conduct an investigation to find the company's revenue sources. Prepare a list.
4. Several companies have attempted to clone LinkedIn with little success. Why do you think LinkedIn is dominating?
5. Join the group called "eMarketing Association Network" on LinkedIn (free; it is a private group so you must request

to join) and observe their group's activities regarding social media and commerce for 1 week. Write a report.
6. Research the issue of falsified profiles on LinkedIn.

ONLINE FILES

Available at **ecommerce-introduction-textbook.com**
No online files are available for this chapter.

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Part IV

EC Supportive Services

Marketing and Advertising in E-Commerce

9

Contents

Learning Objectives

Upon completion of this chapter, you will be able to:

1. Describe factors that influence online consumer behavior.
2. Explain how consumer behavior can be analyzed for creating personalized services.
3. Understand consumer market research in e-commerce.
4. Describe the objectives and characteristics of Web advertising.
5. Describe the major advertising methods used on the Web.
6. Learn mobile marketing concepts and techniques.
7. Describe various online advertising strategies and types of promotions.
8. Understand some implementation issues.

OPENING CASE: MARKET RESEARCH HELPS DEL MONTE IMPROVE DOG FOOD

The Problem

Del Monte operates in a very competitive global food industry. In addition to manufacturing canned fruits and vegetables for human consumption, Del Monte produces pet food such as Gravy Train, 9 Lives, and Meow Mix. Therefore, using market research, the company constantly looks for innovative ways to increase its competitive edge. The company noticed the fast growth of social media and decided to deploy social media projects. Their primary goal was to decide how best to use social media-based market research to support its diverse product line—in this case, dog food.

The Solution

The basic idea was first to connect and collaborate with dog lovers via social networks. The corporate IT department was unable to conduct social network research; therefore, the Pet

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Products Division of Del Monte Foods decided to leverage Insight Networks, an offering from MarketTools, Inc. (**metrixlab.com**), a provider of on-demand market research.

Through previous research, Del Monte Pet Products Division identified one segment of the dog owner community as their target, and they wanted to understand that segment more in depth. In order to connect with millions of dog owners, Insight Networks provided Del Monte Pet Products Division with a direct, interactive connection to their consumers. Using their propriety software, Insight Networks monitors millions of relevant blogs in the blogosphere as well as forums in social networks, in order to identify key ideas in which consumers are interested. These ideas are then analyzed in order to predict consumer behavior trends. Such analysis is usually done by using computerized tools such as monitoring consumer interactions, analyzing consumer sentiments, and using social analytics (e.g., see Killekar et al. 2013).

By utilizing social media, Del Monte can conduct better market research. The conventional approach was using questionnaires or focus groups that were expensive and difficult to fill with qualified participants. Using social media, Del Monte can gather much of the same data faster and at a lower cost. All that is required now is to monitor customer conversations, collect the data, and analyze the vast amount of information. The software also facilitates subgroup creation, idea generation, and panel creation. The results of the analysis help Del Monte understand its customers and consequently plan its marketing activities, communication strategies, and customer service applications. The results also help evaluate the success of marketing campaigns, how well the business processes accomplished the goals, and better justify proposed new activities.

The Experiment

The first implementation of the above application was used to help improve the company's dog treat, Snausages Breakfast Bites. For guidance, Del Monte relied on its dog lovers' social community. By monitoring customer blogs and by posting questions to customers to stimulate discussions, Del Monte used text analysis methods to investigate the relationship between dogs and their owners. Del Monte concluded from the analysis that people who own small dogs would be the major purchasers of Snausages Breakfast Bites. The company also found differences of opinions based on the age of owners. Next, a small sample of the improved dog food was produced and tested in the physical market. As a result of both social media and traditional research, the product design decisions were revised. In addition, marketing promotions were modified. The product sells better because dogs love it. Finally, the new approach solidified the community of dog lovers who are happy that their opinions are considered.

The Results

Product cycle time was reduced by more than 50% to only 6 months, and Del Monte was able to develop a better marketing communication strategy. Furthermore, the analysis helped the company better understand customers and their purchasing activities, as well as predicting market trends and identifying and anticipating opportunities.

Sources: Based on Greengard (2008), Big Heart Pet Brands (2012), Wikinvest (2016), and MarketTools, Inc. (2008).

LESSONS LEARNED FROM THE CASE

The opening case illustrates that market research can be useful in a competitive market by providing insights for better product development and marketing strategy. In this case, the company collected data online from its socially oriented customers. MarketTools, Inc. monitored over 50 million conversations on blogs, message boards, and online media sites to find the "voice of the customers." The collected data were then analyzed. The results of the analysis helped Del Monte improve its dog food and devise new marketing strategies. Online market research, as seen in the case, is related to consumer behavior, purchasing decision making, behavioral marketing, and advertising strategies. All these topics are addressed in this chapter.

9.1 LEARNING ABOUT ONLINE CONSUMER BEHAVIOR

Companies are operating in an increasingly competitive environment. Therefore, sellers try to understand customers' needs and influence them to buy their products and services. Customer acquisition and retention are key success factors, both offline and online. This is particularly important for online businesses, as most interactions with their customers are online. For a summary of factors affecting consumer behavior, see **iresearchservices.com/5-common-factors-influencing-consumer-behavior**.

A Model of Online Consumer Behavior

For decades, market researchers have tried to understand consumer shopping behavior and develop various models to summarize their findings. A consumer behavior model is

designed to help vendors understand how a consumer makes a purchasing decision. Through understanding the decision process, a business may be better able to influence the buyer's decision through improved product design or advertising.

Consumers can be divided into two groups: individual consumers and organizational buyers including governments, private corporations, resellers, and nonprofit organizations. These two types of buyers tend to have different purchasing behaviors and usually are analyzed differently. In this chapter, we focus on individual buyers. An individual consumer behavior model often includes *influential internal and external factors* that affect the buyer's *decision process* and the process for making a purchasing decision. Figure 9.1 shows a consumer behavior model.

- **Influential factors**. Factors influencing purchasing decisions fall into five major dimensions. They are *consumer factors, environmental factors, merchant and intermediary factors, product/service factors* (which include market stimuli), and *EC selling systems*. The first three dimensions are not controllable by the sellers, while the last two are mostly controlled by the sellers. The dimensions are shown in Figure 9.1. The influential factors affect the buyers' decision process.
- **The attitude-behavior decision process**. The second part in a consumer behavior model is the decision-making process, which usually starts with awareness of the situation and a positive attitude and ends with the buyer's decision to purchase and/or repurchase (see the oval part in Figure 9.1). A *favorable attitude* would lead to a stronger *buying intention*, which in turn would result in the *actual buying behavior*. Previous research has shown that the links between attitude, purchase intention, and actual purchase behavior are quite strong.

The Major Influential Factors

Major influential factors of consumer purchasing behavior fall into the following categories:

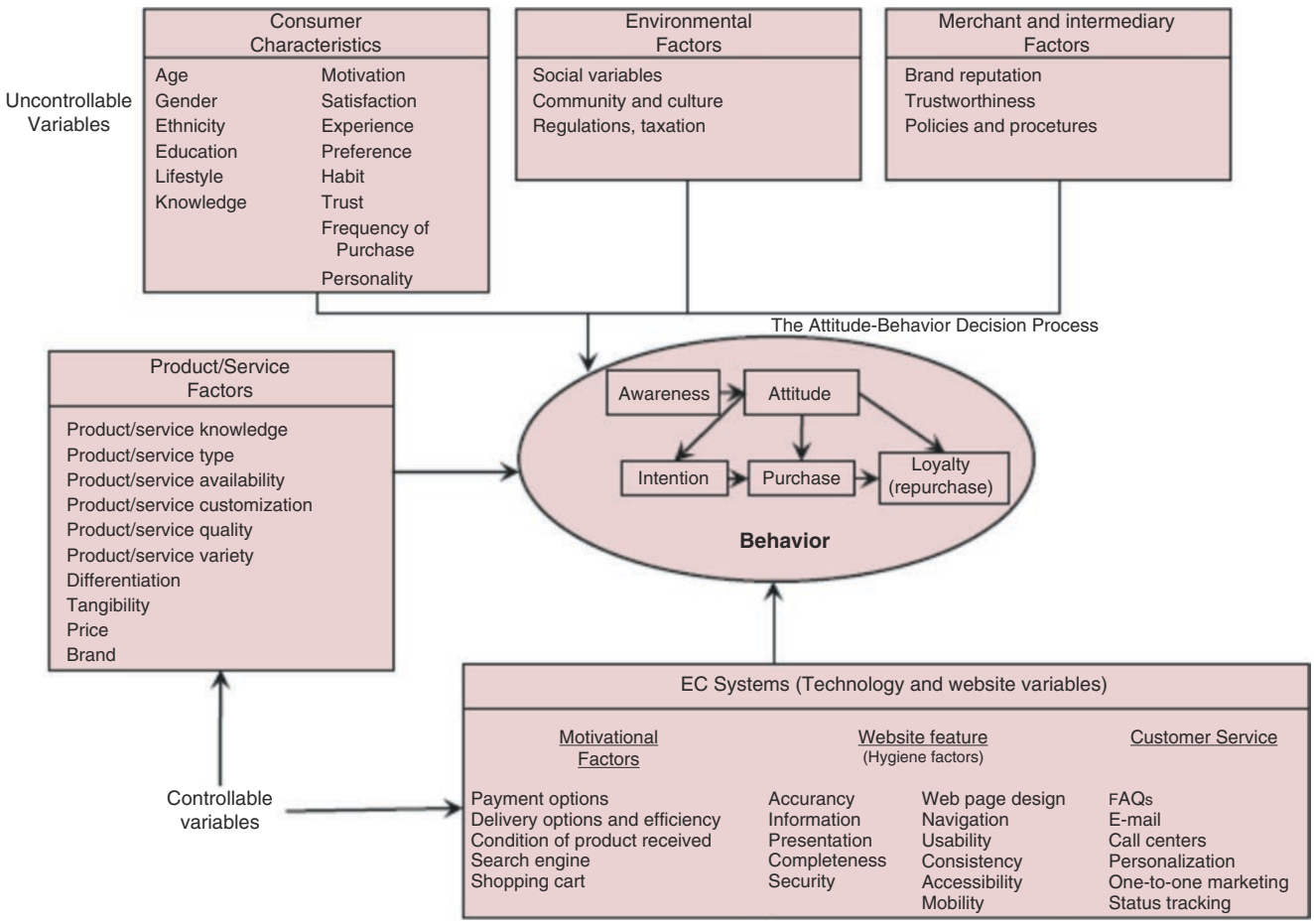

Figure 9.1 EC model of online consumer behavior

Consumer Characteristics

Consumer (personal) characteristics, which are shown in the top-left portion of Figure 9.1, refer to demographic factors, individual preferences, and behavioral characteristics of the consumer. Several websites provide information on customer buying habits online (e.g., **emarketer.com**, **clickz.com**, and **comscore.com**). The major demographics that such sites track are gender, age, marital status, education level, ethnicity, occupation, and household income, which can be correlated with Internet usage and EC data. Both men and women have been found to perceive information differently depending on their levels of purchase confidence and internal knowledge. Marketers also study the psychological variables such as personality and lifestyle characteristics. Several studies show that shopping experience has a significant effect on consumer attitude and intention to purchase and repurchase online (e.g., Chiu et al. 2014).

Merchant and Intermediary-Related Factors

Online transactions may also be affected by the merchant that provides the product/service. This group of factors includes merchant reputation, size of the transaction, trust in the merchant, and so on. For example, a customer may feel more secure when making a purchase from Amazon.com (due to its reputation) than from an unknown seller. Other factors such as marketing strategy and advertising can also play a major role.

Product/Service Factors

The second group of factors is related to the product/service itself. The consumer's decision to make a purchase is affected by the nature of the product/service in the transaction. These may include the price, quality, design, brand, and other related attributes of the product.

EC Systems

The EC platform for online transactions (e.g., security protection, payment mechanism, and so forth) offered by the merchant and the type of computing environment (e.g., mobile vs. desktop) may also have effects. EC design factors can be divided into payment and logistics support, website features, and consumer services. Liang and Lai (2002) classified them into *motivational* and *hygiene* factors and found motivational factors to be more important than hygiene factors in attracting online customers. Another factor that we include here is the type of EC. For example, consumer behavior in m-commerce may be unique and so is behavior during social shopping.

- **Motivational Factors**. Motivational factors are the functions available on the website to provide direct support in the purchasing process (e.g., search engines, shopping carts, multiple payment methods).
- **Hygiene Factors**. Hygiene factors are functions available on the website whose objective is to make the website functional and serviceable (e.g., ease of navigation, show items added to the cart); their main purpose is to protect consumers from risks or unexpected events in the transaction process (e.g., security breaching and site technical failure).

Environmental Factors

The environment in which a transaction occurs may affect a consumer's purchase decision. As shown in Figure 9.1, environmental variables can be grouped into the following categories:

- **Social Variables**. People are influenced by family members, friends, coworkers, and current styles. Therefore, social variables (such as customer endorsements, word-of-mouth) play an important role in EC. Of special importance in EC are Internet communities and discussion groups, where people communicate via chat rooms, electronic bulletin boards, tweeting, and newsgroups. A study (by Liang et al. 2011–2012) shows that social support in online communities significantly enhances the intention to purchase online.
- **Cultural/Community Variables**. The influence of culture on buying behavior varies from country to country. It makes a big difference in what people buy if a consumer lives near Silicon Valley in California or in the mountains in Nepal. Chinese shoppers may differ from French shoppers, and rural shoppers may differ from urban ones. Bashir (2013) conducted a comprehensive study about online shopping for electronics in Pakistan.
- **Other Environmental Variables**. These include aspects such as available public information, government regulations, legal constraints, and situational factors. For example, tax rates may affect online shopping (see Einav et al. 2014).

Lately, attention has been given to customers' behavior in the mobile environment. For more information, see **mobilemarketer.com**.

SECTION 9.1 REVIEW QUESTIONS

1. Describe the major components of the model of online consumer behavior.
2. List some major personal characteristics that influence consumer behavior.
3. List the major environmental variables of the purchasing environment.
4. List and describe five major merchant-related variables.
5. Describe the relationships among attitude, intention, and actual behavior in the behavior process model.

9.2 PERSONALIZATION AND BEHAVIORAL MARKETING

As the Internet provides a huge amount of data for customer profiling, one-to-one marketing becomes effective. There are three generic strategies for one-to-one marketing: *personalization*, *behavioral targeting*, and *collaborative filtering*.

Personalization in E-Commerce

Personalization refers to the matching of advertising content and vendors' services with customers based on their preferences and individual needs. Personalized content on a website has been found to increase conversion rates (see **searchenginewatch.com/article/2334157/How-Personalizing-Websites-With-Dynamic-Content-Increases-Engagement**). The matching process is based on the *user profile*. The **user profile** describes customer preferences, behaviors, and demographics. It can be generated by getting information directly from the users; for example, observing what people are doing online through the use of tools such as a **cookie**—a data file that, frequently without the knowledge of users, is placed on their computers' hard drives. Alternatively, profiles can be built from previous purchase patterns. Profiles can be structured from market research or by making inferences from information known about similar consumers.

One-to-one matching can be done by methods such as *collaborative filtering* (discussed later in this section). Many vendors provide personalization tools that help with customer acquisition and retention. An example of these vendors is Magnify360 (**magnify360.com**).

Web Cookies for Data Collection

Cookies are small files sent from a website and stored in a designated area in your computer. They allow companies to save certain information for future use. The use of cookies is a popular method that allows computers to look smarter and simplifies Internet access. According to Webopedia, "the main purpose of cookies is to identify users and possibly prepare customized Web pages for them" (per **webopedia.com/TERM/C/cookie.html**).

Are cookies bad or good? The answer is "both." When users revisit Amazon.com or other sites, they are greeted by their first name. Amazon.com knows the users' identity by using cookies. Vendors can provide consumers with considerable personalized information if they use cookies that signal a consumer's return to a site. Cookies can provide marketers with a wealth of information, which then can be used to target specific ads to them. Thus, marketers get higher rates of "click-throughs," and customers can view information that is relevant to them. Cookies can also prevent repetitive ads because vendors can arrange for a consumer not to see the same ad twice. Finally, advanced data mining companies (e.g., provided by SPSS and Sift) can analyze information in cookie files so companies can better meet their customers' needs.

However, some people object to cookies because they do not like the idea that "someone" is watching their activity on the Internet. Users who do not like cookies can disable them. On the other hand, some consumers may want to keep the "friendly" cookies. For example, many sites recognize a person as a subscriber by accessing their cookies so that they do not need to re-register every time they visit the site.

Cookies can be removed if the user does not like them. For instructions on deleting cookie files from your Internet browser (e.g., Internet Explorer, Google Chrome, Firefox), see **whitecanyon.com/delete-cookie**.

Using Personalized Techniques to Increase Sales

It has become a common practice for vendors to provide personalized services to customers in order to increase customer satisfaction and loyalty. A prime example is Amazon.com, which provides many personalized services where the most common activity is product recommendations. Amazon.com automatically generates such recommendations based on the buyers' purchasing and browsing histories, and upon the purchasing history of other customers with similar purchasing histories.

Personalized services can be facilitated when the companies know more about their customers. TowerData (**towerdata.com**) offers a service that helps businesses learn more about their customers, so they can personalize content (go to **intelligence.towerdata.com**). For a free e-book about the 40 best ways to personalize website, see **qubitproducts.com/content/40-best-ways-to-personalize**.

Behavioral Marketing and Collaborative Filtering

A major goal of marketing is to enhance customer value through delivering the right product or service to the customer. One of the most popular ways of matching ads with customers is *behavioral marketing*, which is identifying customer behavior on the Web and designing a marketing plan accordingly.

Behavioral Targeting

Behavioral targeting uses consumer browsing behavior information, and other information about consumers, to design personalized ads that may influence consumers better than mass advertising does. It also assumes that users with similar profiles and past shopping behavior may have similar product preferences. Google tests its "interest-based advertising" to make ads more relevant and useful. Representative vendors of behavioral targeting tools are **predictad.com**, **criteo.com**, and **conversantmedia.com**. A major method of behavioral targeting is *collaborative filtering*.

Collaborative Filtering

When new customers come to a business, it would be useful if a company could predict what products or services are of interest to them without asking or viewing their previous records. A method that attempts to do just that is **collaborative filtering**. Using proprietary formulas, collaborative filtering automatically connects the preferences and activities of many customers that have similar characteristics to predict preferences of new customers and recommend products to them. For a free tutorial of 119 slides about collaborative filtering from Carnegie Mellon University, see Cohen (n.d.). Many commercial systems are based on collaborative filtering.

Amazon's "Customers who bought this item also bought…" is a typical statement generated by collaborative filtering, which intends to persuade a consumer to purchase the recommended items by pointing to preferences of similar consumers.

Other Methods

In addition to collaborative filtering, a few other methods for identifying users' profiles are described below.

Rule-Based Filtering

A company queries consumers about their preferences via multiple choice questions and uses the collected information to build patterns for predicting customers' needs. From this information, the collaborative filtering system derives behavioral and demographic rules such as, "If the customer's age is greater than 35, and the customer's income is above $100,000, show the Jeep Cherokee ad; otherwise, show the Mazda Protégé ad."

Content-Based Filtering

This technique allows vendors to identify customer preferences by the attributes of the product(s) they buy or intend to buy. Knowing the customers' preferences, the vendor will recommend products with similar attributes to the user. For instance, the system may recommend a text-mining book to customers who have shown interest in data mining, or recommend more action movies after a consumer has rented one in this category.

Activity-Based Filtering

Filtering rules can also be built by logging the user's activities on the Web. For example, a vendor may want to find potential customers who visit bookstores more than three times a month. This can be done by analyzing the website's visiting level and activities. For a comprehensive discussion and more information about data collection, targeted advertising, and 104 companies that catch data, and so forth (including an infographic), see Madrigal (2012).

Legal and Ethical Issues in Collaborative Filtering

A major issue in using collaborative filtering for personalization is the collection of information from users without their consent or knowledge. Such a practice is illegal in many countries (e.g., the USA) because of the violation of privacy laws. Permission-based practices solve this problem. In fact, empirical research indicates that permission-based practices are able to generate better positive attitude in mobile advertising (Karthikeyan and Balamurugan 2012).

Social Psychology and Morphing in Behavioral Marketing

Cognitive styles that define how people process information have become a subject of research in Internet marketing and advertising. The underlying rationale is that people with different cognitive styles have different preferences in website design and marketing messages. Specifically, an attempt is made to connect the Web with users in their preferred cognitive style. This can make one-to-one advertising messages more effective. MIT designed an empathetic Web that is utilized to figure out how a user processes information and then responds to each visitor's cognitive style.

SECTION 9.2 REVIEW QUESTIONS

1. Define and describe the benefits and costs of personalization.

2. Define cookies and describe their values and drawbacks.
3. Define behavioral targeting and find a sample application on the Internet.
4. Define collaborative filtering and find a sample application on the Internet.
5. Explain how one-to-one advertising is done using cookies and behavioral targeting.

9.3 MARKET RESEARCH FOR E-COMMERCE

In order to sell more effectively, it is important to conduct proper market research to find information and knowledge about consumers and products. The market researcher's goal is to identify marketing opportunities and problems, to provide input for marketing planning, to find out how to influence the purchasing process, and to evaluate the success of promotions and advertisements. Market research aims to investigate the behavior of customers on the Web (see Strauss and Frost 2014). Market researchers gather information about competition, regulations, pricing, strategies, and consumer behavior.

Objectives and Concepts of Online Market Research

Investigation of EC markets can be conducted through conventional methods (e.g., in-person surveys; focus groups) or it can be done by using the Internet. Internet-based market research is frequently faster, allowing researchers to reach remote or diverse audiences. In addition, market researchers can conduct very large studies on the Web at a much lower price than using offline methods. Telephone surveys can cost as much as $50 per interview and their quality may be poor. Such cost can accumulate to thousands of dollars when several hundred respondents are needed. An online survey will cost a fraction of a similarly sized telephone survey and can expedite research considerably. On the other hand, the increased sample size in online surveys can increase the accuracy of the results. McDaniel and Gates (2012) provide a comprehensive review of online market research technologies, methods, tools, issues, and ethical considerations.

What Are Marketers Looking for in EC Market Research?

By looking at a customer's personal profile that includes observed behaviors on the Web, it is possible for marketers to predict online buying behavior. For example, companies want to know why some customers are online shoppers, and why others are not. Major factors that are used for predicting customer online purchasing behavior are (in descending order of importance): product information requested, number of related e-mails, number of orders made, products/services ordered, and gender.

Typical questions that online market research attempts to answer are: What are the purchase patterns for typical individuals, and what are the patterns for specific groups? How can we identify those who are real buyers from those who are just browsing? What is the optimal Web page design? Knowing the answers to these questions can help a vendor advertise properly, price items, design a website, and provide appropriate customer service. Online marketing research can provide data to help answer these questions. More information about market research on the Web can be found in the tutorials at **inc.com/guides/biz_online/online-market-research.html**.

Representative Market Research Approaches

To conduct online marketing, it is necessary to know what the customer wants or needs. Such information can be collected by:

- Soliciting information from customers online (e.g., via interviews, questionnaires, use of focus groups, or blogging).
- Observing what customers are doing on the Web by using transaction logs and cookies.
- Using data, text, and Web mining, or collaborative filtering techniques to analyze the available data.

Data Collection and Analysis

Specific methods for collecting online data include e-mail communication with individual customers, questionnaires placed on websites, monitoring conversations in social networks, and tracking customers' movements on the Web.

Online Surveys

An online survey is a major method for collecting EC data and it is considered the most cost-effective mode of survey research. It has several other advantages, including lower overall preparation and administration costs, better control of the process of filling out the questionnaire (which may lead to fewer response errors, and easier follow-up), and more flexibility in the questionnaire design. In addition, the cycle time can be much shorter. However, online surveys also have some limitations, including the lack of anonymity, data errors due to non-responses, reporting biases, and poor data privacy.

Web-Based Surveys

A special type of online survey is done by placing questions on selected websites and inviting potential consumers to reply. For example, Mazda North America used a Web-based survey to help design its Miata line. Web surveys may be passive (a fill-in questionnaire) or interactive (respondents download the questionnaires, add comments, ask questions, and discuss issues). The surveys may include both approaches.

Online Focus Groups

Several research firms create panels of qualified Web visitors to participate in online focus groups. For example, see NPD Group, Inc. (go to **npd.com/wps/portal/npd/us/about-npd/consumer-panel**). This panel consists of two million consumers recruited online and verified by telephone to provide information for NPD's consumer tracking services. The use of preselected focus group participants helps to overcome some of the research limitations (e.g., small sample size and partial responses) that sometimes limit the effectiveness of Web-based surveys.

Hearing Directly from Customers

Instead of using focus groups, a company may ask customers directly what they think about a product or service. Companies can use chat rooms, social network discussion groups, blogs, wikis, podcasts, and electronic consumer forums to interact with consumers. For example, toymaker LEGO used a market research company to establish a direct survey on an electronic bulletin board where millions of visitors read each other's comments and share opinions about LEGO toys. The researchers analyzed the responses daily and submitted the information to LEGO. Netflix is using this approach extensively by encouraging customers to report their likes and dislikes. Software tools can facilitate obtaining input directly from customers. For example, see **insightexpress.com**, a leading provider of media analytics and marketing solutions.

Data Collection in Social Networks and Other Web 2.0 Environments

Collecting data in social networks and Web 2.0 environments provides new and exciting opportunities. Here are some methods:

- **Polling**. People like to vote (e.g., the U.S. television show *American Idol*), expressing their opinions on certain issues. People provide opinions on products, services, performances of artists and politicians, and so forth. Voting is popular in social networks.
- **Blogging**. Bloggers can raise issues or motivate others to express opinions in blogs.
- **Chatting**. Community members love to chat in public chat rooms. By following the chats, you can collect current data.
- **Tweeting**. Following what travels on Twitter can be enlightening.
- **Live chat**. Here, you can collect interactive data from customers in real time.
- **Chatterbots**. These can be partially interactive. You can analyze logs of communications. Sometimes people are more honest when they chat with an avatar.
- **Collective wisdom (intelligence)**. This is a type of community brainstorming. It is used in crowdsourcing where communication is encouraged.
- **Find expertise**. Expertise is frequently found in the Web 2.0 environment; many times it is provided for free (e.g., Yahoo! Answers).
- **Folksonomy**. This social tagging makes data easier to find and access.
- **Data in videos, photos, and other rich media**. Places where these media are shared contribute to valuable data collection.
- **Discussion forums**. Subgroups in social networks use a discussion format where members exchange opinions on many topics.

Example: Xiaomi's Data Collection from Social Media in China

Xiaomi, Inc. (**mi.com/en**) is a Chinese company that designs and sells smartphones and consumer electronics. The company has grown unprecedentedly to become one of the top five smartphone brands in China in 3 years. It sold 18.7 million smartphones in 2013, only 3 years after its launch. A key to its success story is the effective use of social media as a marketing research tool. Xiaomi engages fans on social media sites. For example, the company organized a flash sale in 2014, using social media to notify their fans about their upcoming sale. According to the company's global director of marketing, social media is very important to Xiaomi, as it is the most direct and effective way to interact with its fans. Within a year, the market research website had enrolled over six million registered users (called Mi Fen). The company analyzed user contributions on the Xiaomi website to design a user interface called MIUI. Xiaomi's first smartphone model was released in August 2011, which received more than 300,000 pre-orders. Two years later, its sales reached US$5 billion in 2013 and started entering the market of other electronic products. Xiaomi's success story shows the importance of market research on social media. By November 2014, the Millet Forum (**bbs.xiaomi.cn**) had more than 221 million

posts from its 30 million members. For more information about Xiaomi and its social media engagement, see **thenextweb.com/asia/2014/04/09/xiaomis-social-media-strategy-drives-fan-loyalty-books-it-242m-in-sales-in-12-hours**.

Observing Customers' Movements Online

To avoid some of the problems of online surveys, especially the reporting bias that occurs when people give false or biased information, some marketers choose to learn about customers by observing their behavior rather than by asking them questions. Keeping track of consumer's online behavior can be done by using transaction logs (log files) or cookie files. This allows activity-based filtering to be done.

Transaction Logs

A **transaction log** (for Web applications) is a user file that records the user's activities on a company's website from the computer log. A transaction log can be further analyzed with log file analysis tools (e.g., from Oracle) to get a good idea about online visitors' activities, such as how often they visit the site.

Note that, as customers move from site to site, they establish their **clickstream behavior**, a pattern of their movements on the Internet, which can be seen in their transaction logs (see upcoming discussion of clickstream analysis).

Cookies and Web Bugs

Cookies and Web bugs can be used to supplement transaction-log methods. Cookies allow a website to store data on the user's personal device. When the customer returns to a site visited previously, the website can find what the customer did in the past from the cookie. The customer can be greeted by his(her) name, or a targeted ad can be sent to her(him). For a comprehensive description of cookies, including examples and privacy concerns, see the Indiana University Knowledge Base (**kb.iu.edu/d/agwm**). Cookies are frequently combined with **Web bugs** that are tiny (usually invisible) objects concealed in a Web page or in e-mail messages. Web bugs transmit information about the user and his or her movements to a monitoring site (e.g., to find out if the user has viewed certain content on the Web page). Many believe that cookies and Web bugs are an invasion of a user's privacy.

Spyware

Spyware is software that enters your computer like a virus does, without your knowledge. It then enables an outsider to gather information about your browsing habits. Originally designed to allow freeware authors to make money on their products, spyware applications are typically bundled together with freeware that is downloaded onto users' computers. Many users do not realize that they are downloading spyware with the freeware. The best defense against spyware is to install anti-virus software, which should detect and remove any viruses or other harmful intrusions.

Web Analytics and Mining

Web analytics deal with the monitoring, collecting, measuring and evaluating, and reporting tasks related to Internet data and activities (e.g., see Provost and Fawcett 2013). Web analytics help us understand and optimize Web usage. Such analysis is done, for example, by retailers for market research. For example, see IBM Coremetrics (**ibm.com/software/marketing-solutions/coremetrics**; now part of IBM Enterprise Marketing Management). A company can also use Web analytics software to improve its website's look and operation. Web analytics can provide quick feedback from customers to help marketers decide which products to promote. For tutorials on data, text, and Web mining, see **mydatamine.com**, **tutorialspoint.com/data_mining/index.htm**, and the video "Introduction to Data Mining 1/3" at **youtube.com/watch?v=EtFQv_B7YA8**.

For details and methods used, see Clifton (2012). A special type of Web analytics is *clickstream analysis*, or just *click analysis*.

Clickstream Analysis

Clickstream data are data that describe which websites users visit, in what order, and the time spent on each. This is done by tracking the succession of "clicks" each visitor makes. By analyzing clickstream data, which can be maintained in a special database or data warehouse, a business can find out, for example, which promotions are effective and which population segments are interested in specific products.

Several companies offer tools that enable such an analysis. For example, Analytics 10 from Webtrends, Inc. (**analytics.webtrends.com**) features several advanced tools for analyzing clickstream data (**webtrends.com/solutions/digital-measurement/streams**). Finally, **clickstreamr.com** configures Google Analytics standards and can be used for such analysis.

Web Mining

Web mining refers to the use of data mining techniques for both Web content and usage in Web documents in order to discover patterns and hidden relationships. Web mining has the potential to change the way we access and use the information available on the Web. For mining the social web, see Russell (2013).

Limitations of Online Market Research and How to Overcome Them

Online market research has technical and behavioral limitations. One technical problem with online market research is that there may be an abundance of data. To use data properly, one needs to organize, edit, condense, and summarize them. However, such a task may be expensive and time-consuming. One solution to this problem is to automate the process by using data warehousing and data mining. The essentials of this process, known as business intelligence, are provided in Online Tutorial T3 and in Sharda et al. (2015).

Behavioral limitations of online research methods are responding biases, sample representatives that are hard to control, and the ethics and legality of Web tracking. As Web-based surveys often use an "open call" to recruit respondents, the response rate is hard to know and the respondent control is limited. Anonymity in Web-based surveys may encourage people to be more honest in their replies. However, anonymity may result in the loss of valuable information about the demographics, preferences, and behaviors of the respondents. To overcome some of the above limitations, online market research methods need to be designed carefully and rigorously. Small companies without proper expertise may outsource their market research to large and experienced companies that have specialized market research departments and expertise.

Privacy Issues in Market Research

Collecting data from customers, sometimes without their knowledge, may constitute an invasion of privacy. For an overview, guidelines, and standards, see **esomar.org/knowledge-and-standards/codes-and-guidelines.php** and **marketingresearch.org/issues-policies/mra-code-marketing-research-standards**.

Biometric and Smartphone Marketing Helps Market Research

Many households have several users; thus, the data collected may not represent any one person's preferences (unless, of course, we are sure that there is one user per device, as in the case of smartphones). Potential solutions are using biometric marketing or smartphones to access individuals.

A **biometric** is one of an individual's unique physical or behavioral trait that can be used to authenticate an individual. By applying the technology to computer users, we can improve security and learn about the user's profile. The question is how to do it. Indeed, there are programs by which users identify themselves to the computer by biometrics, and these are spreading rapidly. Note that utilizing the technology for market research involves social and legal acceptability.

Mobile market research is a method of collecting data though mobile devices including mobile phones, smartphones, and tablets. Typical methods for collecting information are through apps, short message systems (SMS), WAP, mobile Web, and location-based services. A major advantage of mobile market research is that it can be conducted virtually anywhere at any time. However, it does suffer from the limitation that it is hard to define the sampling frame and cannot access the sample without the users' mobile devices. Privacy protection is another key concern for conducting mobile market research. Hence, an organization called ESOMAR has released guidelines for conducting mobile market research (**esomar.org**).

SECTION 9.3 REVIEW QUESTIONS

1. Describe the objectives of market research.
2. Describe the role of transaction logs and clickstream analysis.
3. Define cookies, Web bugs, and spyware, and describe how they can be used in online market research.
4. Describe how the issue of privacy relates to online market research.
5. Describe the limitations of online market research.
6. Describe how biometrics and smartphones can improve market research.

9.4 WEB ADVERTISING

Advertising on the Web plays an extremely important role in e-commerce. Internet advertising is growing very rapidly, especially in B2C, and companies are changing their advertising strategies to gain a competitive edge. Since the Internet provides interactivity, online ads are also useful for brand building directly through response ads. Based on a 2014 IAB Internet Advertising Report conducted by the professional service network PricewaterhouseCoopers (**pwc.com**), online ad revenue reached a record high of $42.8 billion in 2013 in the United States alone, which is a 17% increase from the previous year, while mobile advertising increased by 110% to 7.1 billion in the United States in 2013 (see **iab.com/wp-content/uploads/2015/05/IAB_Internet_Advertising_Revenue_Report_FY_2013.pdf**). The Internet advertising revenue surpassed $40.1 billion of broadcast television and $34.4 billion of cable television.

Search, display/banner ads, and mobile ads are the three most popular types of Internet ads. Social media advertising is another fast growing area. A market research organization, eMarketer (2013), reported social media advertising revenue

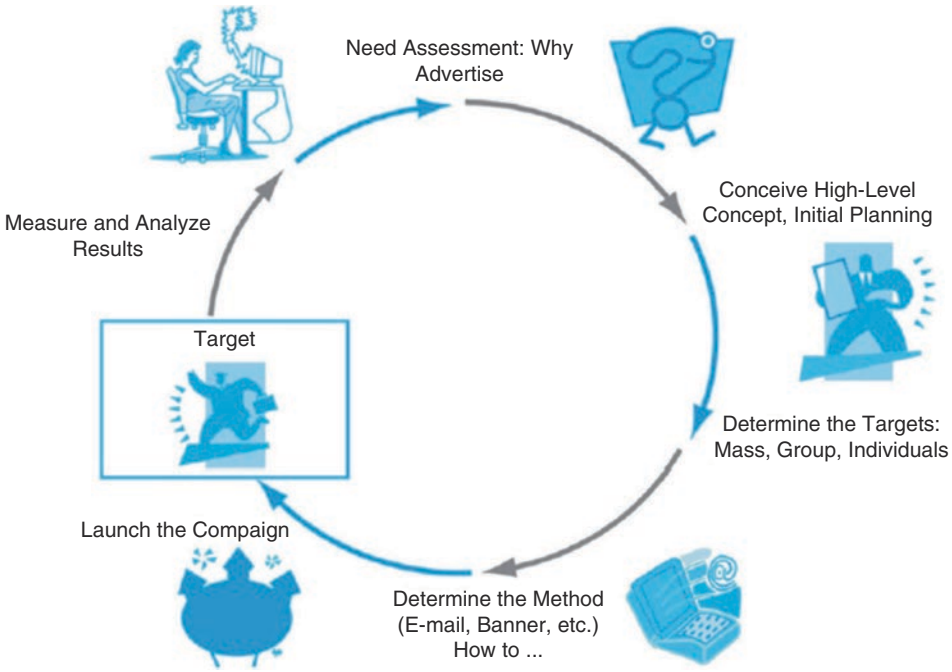

Figure 9.2 The advertising cycle

in 2013 to be $4.4 billion, a 42.9% increase over 2012 and predicted a 30% increase in 2014. All these numbers indicate the fast growing trend in online and mobile advertising. In this section, we concentrate on generic Web advertising.

Overview of Web Advertising

Advertising is the delivery of ads to Internet users in order to influence people to buy a product or a service. Traditional advertising (also known as marketing communication) is an impersonal, one-way mass communication. Telemarketing and direct mail ads attempted to overcome the deficiencies of mass advertising, but they are expensive and their response rate was not too high. For example, a direct mail campaign costs about $1 per person and has a response rate of only 1–3%. This makes the cost per responding person in the range of $20 (for a 5% response) to $100 for 1% response. Such an expense can be justified only for high-ticket items (e.g., cars).

One of the problems with direct mail advertising was that the advertisers knew very little about the recipients. Market segmentation by various characteristics (e.g., age, income, gender) helped a bit but did not solve the problem. The concept of **interactive marketing** enables marketers and advertisers to interact directly with customers.

On the Internet, a consumer can click an ad to obtain more information or send an e-mail to ask a question. The customer can chat live with the merchant (person or avatar), or with peers in a social network chat room. The Internet enables truly one-to-one advertising.

The Advertising Cycle

Many companies are treating advertising as a cyclical process, as shown in Figure 9.2. The cyclical process requires a plan to determine the target audience of a campaign and how to reach that audience. Analyzing a campaign after its completion assists a company in understanding the campaign's success or failure. This knowledge is then used for planning future campaigns.

Before we describe the steps in the cycle as it is implemented in Web advertising, let us learn some basic Internet advertising terminology.

Basic Internet Advertising Terminology

The following terms and their definitions will be of use as you read about Web advertising.

- **Ad views**: The number of times users call up a page that has a banner on it during a specific period; known as *impressions* or *page views.*
- **Button**: A small banner that is linked to a website; may contain downloadable software.
- **Click (ad click)**: A count made each time a visitor clicks on an advertising banner to access the advertiser's website.
- **CPM (cost per mille, i.e., thousand impressions)**: The fee an advertiser pays for each 1000 times a page with a banner ad is shown.
- **Conversion rate**: The percentage of clickers who actually make a purchase.

- **Click-through rate/ratio (CTR)**: The percentage of visitors who are exposed to a banner ad and click on it.
- **Hit**: A request for data from a Web page or file.
- **Landing page**: The page a viewer is directed to after having clicked on a link. In online marketing, this page is used to convert the person from a viewer to a buyer.
- **Page**: An HTML (Hypertext Markup Language) document that may contain text, images, and other online elements, such as Java applets and multimedia files; may be generated statically or dynamically.

Why Internet Advertising?

The major traditional advertising media are television, newspapers, magazines, and radio. However, the market is changing, as many consumers are spending more time on the Internet (about a 25% annual growth) and using mobile devices. Internet advertising is getting more attention. The advertising revenue of Internet advertising exceeded that of broadcast TV, cable TV, and newspapers in 2013, and we can foresee this trend continuing. Hence, online advertising is a clear choice for the future.

Advertising Online and Its Advantages

The major advantages of Internet ads over traditional media advertising are the ability to interact one-to-one with customers and the ability to use rich media (e.g., videos) to grab attention. In addition, ads can be changed easily and campaigns are usually less costly. In comparison with traditional media, the Internet is the fastest growing communication medium by far. Worldwide, as of April 2016, the number of Internet users was getting close to 3.17 billion (see **statista.com/topics/1145/internet-usage-worldwide**). Of course, advertisers are interested in such a fast growing community.

Other reasons why Web advertising is growing rapidly include:

- **Cost**. Online ads usually are cheaper than ads in traditional media.
- **Media richness**. Web ads can include rich and diversified media (e.g., videos, animation). In addition, ads can be combined with games and entertainment.
- **Easy updating**. Updating can be done quickly and inexpensively.
- **Personalization**. Web ads can be either one-to-one or addressed to population segments.
- **Location-based**. Using wireless technology and GPS, Web advertising can be location based.
- **Linking to shopping**. It is easy to link from an online ad to a vendor's webstore. Usually, it can be done in one click.

Traditional Versus Online Advertising

Each advertising medium, including the Internet, has its advantages and limitations. Pfeiffer and Zinnbauer (2010) compared traditional advertising against Internet advertising (including social networks). These results have been replicated recently in many studies including Bilos et al. in 2014. They concluded that, not only is Internet advertising more cost efficient, the business impact of Internet ads is larger than traditional ads.

The synergy between TV and online advertising can help attract more attention than either medium on its own. It has been found that a TV campaign increases brand awareness by 27%, whereas a combined TV and online campaign increases it by 45%. A TV campaign increases intent to purchase by 2%, whereas a combined TV and online campaign increases it by 12%.

The impact of Internet ads on newspaper viability is devastating. Many newspapers are disappearing, merging, or losing money. One solution is to increase their digital ads, as the *New York Times* is doing.

Internet ads are subject to limitations such as screen size, space, and policies.

SECTION 9.4 REVIEW QUESTIONS

1. Define Web advertising and the major terms associated with it.
2. Describe the reasons for the growth in Web advertising.
3. Describe emerging Internet advertising approaches.
4. List the major benefits of Web advertising.
5. Draw and explain the advertising cycle.
6. What is the impact of online advertising on the viability of newspapers and TV?

9.5 ONLINE ADVERTISING METHODS: FROM E-MAIL TO SEO AND VIDEO ADS

A large number of online advertising methods exist. For a list and description, please see **en.wikipedia.org/wiki/Online_advertising**. Next, we discuss the three major categories of ads.

Major Categories of Ads

Ads can be classified into three major categories: *classified*, *display,* and *interactive*.

Classified Ads

These ads usually use text, but lately may include photos. The ads are grouped according to classification (e.g., cars, rentals). They are the least expensive.

Classified ads can be found on special sites (e.g., see classified ads at **craigslist.org** and **superpages.com**), as well as on online newspapers, e-markets, and portals. In many cases, posting regular-size classified ads is free, but placing them in a larger size, in color, or with some other noticeable features is done for a fee. For examples, see **traderonline.com** and **advertising.microsoft.com**.

Display Ads

These are illustrated advertisements that use graphics, logos, colors, or special designs. These ads are usually not classified, but they can be combined. Display ads are popular offline in billboards, yellow pages, and movies. They are becoming very popular on the Internet as well. All major search-based advertising companies (e.g., Google, Yahoo!, Microsoft) are leveraging their online positions in search advertising into the display ad business.

Interactive Ads

These ads use online or offline interactive media to interact with consumers and to promote products, brands, and services. This is most commonly performed through the Internet, often using video as a delivery medium.

There are several variations in each of these categories. The major methods are presented next.

Banners

A **banner** is a display that is used for advertising on a Web page (words, logos, etc. embedded in the page). A banner ad is frequently linked to an advertiser's Web page. When users "click" on the banner, they are transferred to the advertiser's site. A banner must be designed to catch a consumer's attention. Banners often include images, and sometimes video clips and sound. Banner advertising, including pop-up banners, is a popular advertising method on the Web.

There are several sizes and types of banners. The sizes, which are standardized by the Interactive Advertising Bureau (IAB) (**iab.com**), are measured in pixels. **Random banners** appear randomly, not as a result of some action by the user. Companies that want to introduce their new products (e.g., a new movie or CD) or promote their brand use random banners. **Static banners** stay on a Web page regularly. Finally, **pop-up banners** appear in a separate window when its affiliated Web page is activated.

If an advertiser knows something about a visitor, such as his/her user profile, or area of interest, the advertiser will try to match a specific banner with that visitor. Obviously, this kind of targeted, personalized banner is usually most effective. Such **personalized banners** that are tailored to meet the need of target customers are being developed, for example, by Conversant (**conversantmedia.com**).

Live banners are ads where the content can be created or modified at the time the ads pop-up instead of being preprogrammed like banner ads. They usually are rich media. For details and examples, see **en.wikipedia.org/wiki/Live_banner**.

Benefits and Limitations of Banner Ads

The major benefit of banner ads is that, by clicking on a banner, users are transferred to an advertiser's site, frequently directly to the shopping page of that site. Another advantage of using banners is the ability to customize them for individual surfers or a market segment of surfers. In many cases, customers are forced to see banner ads while waiting for a page to load, or before they can get the page they requested (a strategy called *forced advertising*). Finally, banners may include attention-grabbing rich multimedia.

The major disadvantage of banners is their cost. If a company demands a successful marketing campaign, it will need to pay high fees for placing banners on websites with high traffic.

However, it seems that viewers have become somewhat immune to banners and simply ignore them. The click-through rate has been declining over time. Because of these drawbacks, it is important to decide where on the screen to place banners (e.g., right side is better than left side, top is better than bottom). Companies such as QQ.com and Taobao.com in China have built behavior labs to track eye movements of consumers to understand how screen location and Web page design may affect viewer attention. Ad blocking tools are also available to install on a browser to remove all banner ads when a Web page is accessed. This also reduces the number of click-throughs.

Banner Swapping and Banner Exchanges

Banner swapping means that company A agrees to display a banner of company B in exchange for company B's displaying company A's banner. This is probably the least expensive form of banner advertising, but it is difficult to arrange. A company must locate a site that will generate a sufficient amount of relevant traffic. Then, the company must contact the owner/Webmaster of the site and inquire if the company would be interested in a reciprocal banner swap. Because individual swaps are difficult to arrange, many companies use banner exchanges.

Banner exchanges are marketplaces that allow multiple websites to barter space for banners. Such an intermediary finds partners for such trades. A multi-company banner match may provide a better match, and it will be easier to arrange than a two-company swap. For example, company A

can display B's banner effectively, but B displays A's banner with poor results. However, B can display C's banner, and C can display A's banner both successfully. Such bartering may involve many companies.

Pop-Up and Similar Type Ads

One of the most annoying phenomena in Web surfing is the increased use of pop-ups and similar ads. A **pop-up ad**, also known as *ad spawning*, appears due to the automatic launching of a new browser window when a visitor accesses or leaves a website, when a delay occurs. Pop-ups cover the user's current screen and may be difficult to close. They can gain a user's immediate attention, but their use is controversial. Many users strongly object to this advertising method, which they consider to be intrusive. Most browsers provide an option that allows the viewer to block pop-up windows. Legal attempts have also been made to control pop-ups because they are basically a form of spam.

Several other tactics, some of them very aggressive, are being used by advertisers, and their use is increasing. These tactics may be accompanied by music, voice, and other rich multimedia.

Pop-Up Videos

Along with the increase in popularity of free viral videos (e.g., on YouTube) comes the pop-up commercial before them. Some can be skipped; others cannot. These commercials usually last for 10–20 s. These pop-ups may or may not be related to the content of the video you want to watch. Sometimes, video ads come with an incentive, called *incentivized video ads*, which will be described later.

E-Mail Advertising

E-mail marketing refers to the use of e-mails for sending commercial messages to users. E-mail marketing may occur in different formats and for different purposes. Typical e-mail marketing formats are:

1. Using **e-mail advertising** means that ads are attached to e-mails.
2. Sending e-mail messages for facilitating vendor–customer relationships (CRM types).
3. Sending e-mail messages for attempting to acquire new customers.
4. Sending messages via microblogs or other social media platforms.

E-mail messages may be combined with brief audio or video clips to promote a product; some messages provide links that users can click on to make a purchase. Sending coupons and special offers is done by all major retailers, including department stores and supermarkets. Airlines, banks, educational institutions, and anyone else who can get your e-mail will send you e-mail ads.

Major Advantages and Limitations of E-Mail Advertising

The major advantages of e-mail advertising are:

- It is a low-cost and effective method.
- Advertisers can reach a large number of consenting subscribers.
- Most Internet users check or send e-mail on a daily basis. Therefore, ads reach customers quickly.
- E-mail is an interactive medium that can combine advertising and customer service.
- E-mail ads can include a direct link to any website, so they act like banners.
- A consumer may be more likely to respond to relevant e-mail messages, especially when links to discounts or special sales are provided.

Using an infographic, Ellis (2013) explains the benefits of e-mail marketing for customer acquisition and retention, increased sales, and CRM.

Limitations

A major limitation of e-mail ads is that these messages are often treated as spam and are blocked by the user's spam control software. In general, using e-mail to send ads (sometimes floods of ads) without the receivers' permission is considered *spamming*.

As the volume of e-mail increases, consumers' tendency to screen and block messages is on the rise as well. Today, most e-mail services permit users to block messages from specific sources or automatically filter certain ads as junk mail.

Implementing E-Mail Advertising

A segmented list of e-mail addresses can be a very powerful tool for a company, helping it to target a group of people that share common characteristics. In many cases, the mailing list is based on membership and loyalty programs, such as an airline's frequent flyer program. For information on how to create a mailing list, consult **topica.com**.

E-mail can also be sent to mobile devices. Mobile phones, in particular, offer advertisers a real chance to advertise interactively and on a one-to-one basis with consumers—anytime, anyplace. Now e-mail ads are targeted to individuals based not only on their user profiles but also on their physical location at any point in time.

E-Mail Hoaxes

E-mail hoaxes are very popular; some of them have been going on for years (e.g., Neiman Marcus's cookie recipe, the Nigerian Letters, the Homeland Security cashier check hoax). Some of these are scams. For details, see U.S. Federal Trade Commission (**ftc.gov**).

Fraud

Fraud may happen in e-mail ads. For example, a person may receive an e-mail stating that his or her credit card number is invalid or that his or her MSN service will be terminated unless another credit card number is provided by the recipient of the mail. For protection against such fraudulent practices, see **scambusters.org**.

Search Engine Advertisement and Optimization

Search engines are a good mechanism for most people to find information, and therefore, a good platform for online advertising. Placing online ads on Web pages that show results from querying a search engine is known as **search advertising**. If the search result includes your company and product, it is a free advertisement for you. The problem is that the results of a search may include thousands of items, and your product may be not on the first or second page of the results. Note that, search advertising includes mobile search and social network search (see **pipl.com**). Two major forms of search engine advertising are *keyword advertising* and *URL listing*.

Keyword Advertising

Keyword advertising links the appearance of ads with keywords specified by the advertiser. It includes "pay per click." Businesses select the keywords to which they want their advertisements to be searched and matched. Advertisements appear on the screen along with the search results when the chosen keywords are searched. This can substantially increase the likelihood that the advertisement will be viewed and possibly acted on because of its high relevance to user interests. For an example of how this works, see **google.com/adwords/how-it-works/ads-on-google.html**. Google is using two major methods (to be described later) to implement its advertisement strategy. In fact, more than 90% of Google's revenue is generated from advertising (2014).

URL Listing

Most search engine companies allow businesses to submit their URLs for free, so that these URLs can be searched for by the search engines. Search engine spiders crawl through each site, indexing its content and links. The site is then included as a candidate for future searches. Because there are quite a few search engines, advertisers who use this method should register their URL with as many proper search engines as possible. In some cases, URLs may be searched even if they are not submitted to the search engines.

The major advantage of URL listing is that the listing can be very relevant to the subject of the search. This is the key to Google's success, as we will describe later. The second major advantage of using a search engine as an advertising tool is that it is free. Anyone can submit a URL to a search engine and be listed. People searching for a certain product will receive a list of sites that mention the products.

However, the URL method has several drawbacks. The major one is that it is difficult (or expensive) to get your ad to appear in a good location on the list generated by the search engine. Search engines find a very large number of related Web pages for each inquiry made by a user. The chance that a specific company's site will be found and included at the top of a search engine's display list (say, in the first 10 items) is very slim. Hence, many companies provide a service to help advertisers improve the location (usually targeting the first page) of the search result. This is called *search engine optimization.*

Search Engine Optimization

Search engine optimization (SEO) is a process that improves the visibility of a company or brands on the results page displayed by a search engine. Ideally, the results should be in the top 5–10 on the first page. Companies hire search optimizers or try to optimize by themselves. SEO can increase the number of visitors to a website, and therefore companies are willing to pay for this service. For how to do this, see Harris (2014). SEO is performed in all types of online searches, including video search, social network search, and image search. According to Google AdWords, "to get your ads to appear when people search for your product or service, the keywords you choose need to match the words or phrases that people use, or should be related to the content of the websites your customers visit." Figure 9.3 shows the general process of SEO. For further details, see Amerland (2015) and **blog.kissmetrics.com/minimalist-seo**.

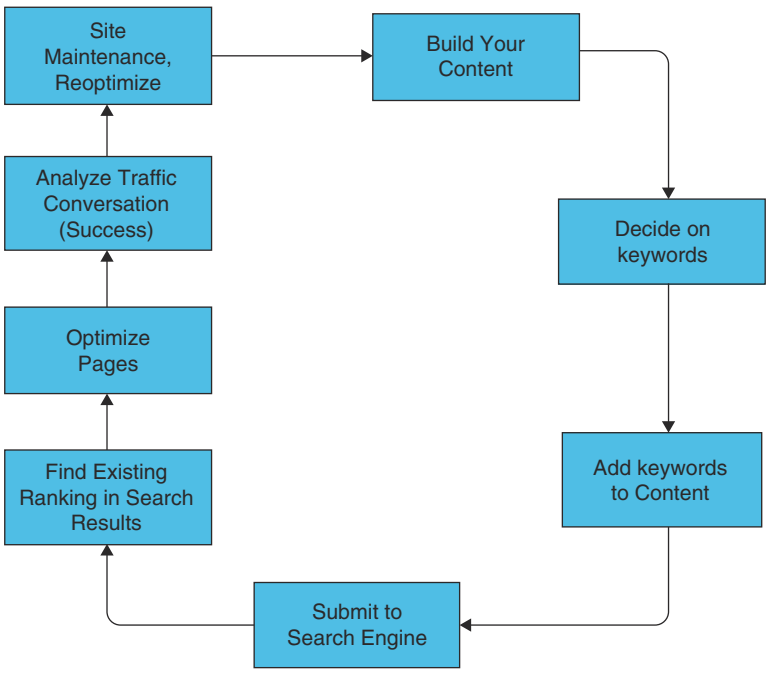

Figure 9.3 The process of search engine optimization

Sponsored Ads (Paid Inclusion)

In addition to optimizing your Web pages so that they will appear on the first page of the search results, you can buy keyword ads to appear on the first page of the results. This is referred to as *paid inclusion* or *sponsored ads*. Your ads will show up on the first page of the results, at the top of the page or on the right side based on the amount you decide to spend. Google uses auctions (first page bids) to sell the best locations to advertisers. For how keywords work, see **support.google.com/adwords/answer/1704371?hl=en**.

More tips for improving a site's listing in various search engines can be found at **searchenginewatch.com**.

Google: The Online Advertising King

Google provides several methods of search engine advertising to their clients, generating most of its billions of dollars in revenue and profits from them. Google uses a behavioral marketing algorithm to determine users' interests while they search for information, and then targets (matches) advertisements to them. Google is continuously improving its matching algorithms (see Williams 2013).

Google's major advertising platform is composed of two programs: Google's AdWords and AdSense, and it can be supported by Google Analytics.

Google's Major Advertising Methods: AdWords and AdSense

The mechanisms of how AdWords and AdSense work are described below:

Google AdWords

AdWords is an advertising program for sponsored ads. Whenever you use Google to search for something, you will notice URLs with colored backgrounds, titled "sponsored links" on the right-hand side or on the top of the page. These include Google AdWords participants. According to Google.com, these URLs are created by advertisers who select a few key terms related to their brands. They also choose how much they want to spend to "buy" these key terms (up to a daily dollar limit). Google uses ranking algorithms to match the advertisers' selected key terms with the searchers' search activities. Typically, if a searcher types in a selected keyword, a banner ad will appear in the sponsored links column. Then, if the searcher clicks on the ad (to go to the advertiser's page), the sponsor vendor is billed according to the agreed upon rate (payments are made from the prepaid budget). For details and success stories, see **adwords.google.com**. Google AdWords is a "pay-per-click" type of advertising. You pay only if people click on your ads. How it works: You create your ads and choose your keywords (you can also target your ads); when someone searches on Google using your keyword, your ad may appear next to the search results; you gain more customers.

Since all advertisers like their ads to appear on the first page of the search results, Google devised a bidding system that determines which ads are shown where and how fees are calculated.

Despite its success, AdWords by itself does not provide the best one-to-one targeting. Better results may be

achieved in many cases through a complementary program—AdSense (both are offered on mobile devices).

Google AdSense

Google's AdSense is an *affiliate program*. In other words, website publishers can earn money by displaying targeted Google ads on their website. In collaboration with Google, participating website owners (publishers) can add search engines to their own sites. Then, when someone is searching for a term related to the content of the affiliated websites, she(he) can see the Google ad and, if interested, will be directed to the advertisers' text, video, or image ads, which are crafted by Google.

The matching of the displayed ad to content of the affiliates is based on Google's proprietary algorithm. This matching algorithm is known to be fairly accurate. The key for success is the quality and appearance of both the affiliate's pages and the ads, as well as the popularity of the affiliate's sites. Hundreds of thousands of companies and individuals participate in the affiliate program. Google provides the affiliates with analytic tools and procedures that help convert visitors to customers (see the information at **google.com/adsense**). Google's affiliates earn money when visitors click on the ads. The advertisers pay Google. Google shares the revenue generated from advertisers with the affiliates.

AdSense has become a popular method of advertising on websites because the advertisements are less intrusive than in other programs, and the content is often better targeted. For an example of a site using AdSense, see **rtcmagazine.com**.

Google's success is attributed to the accuracy of the matches, the large number of advertisers in its network, the ability to use ads in many languages, and the clarity of the ads. Google offers several types of AdSense programs. See details at **webopedia.com/TERM/A/adsense.html**. Competing programs are offered by eBay and Yahoo! (see eBay Partner Network at **partnernetwork.ebay.com**). For an overview on how AdSense works, see **google.com/adsense/start/how-it-works.html**.

Viral Marketing (Advertising)

Viral marketing (viral advertising) refers to electronic *word-of-mouth* (WOM) marketing—the spreading of a word, story, or some media. It is a marketing strategy where a company encourages the spreading of information and opinions from person to person about a product or service. This can be done by e-mails, text messaging, in chat rooms, via instant messaging, by posting messages on social network walls (e.g., Facebook), and in discussion groups or by microblogging (e.g., using Twitter). It is especially popular in social networks. Having people forward messages to friends, telling them about a good product is an example of viral marketing. Viral marketing has been used offline for generations, but now, being online, its speed and reach are multiplied and is done at minimal cost to vendors, because the people who transmit the messages are usually paid nothing. The process is analogous to the spread of computer (or regular) viruses using a self-replication process. Viral messages may take the form of text messages, video clips, or interactive games.

An ad agency supplies Internet users with something of value for free, which encourages them to share with others, so as many people as possible can see the message. For example, advertisers might distribute a small e-game or a video embedded within a sponsor's e-mail sent to thousands of people hoping that they will forward it to tens of thousands of people. Viral marketing also was used at the pioneering of Hotmail (now closed), a free e-mail service that grew from 0 to 12 million subscribers in its initial 18 months, and to more than 50 million subscribers in about 4 years. Each e-mail sent via Hotmail carried an embedded advertisement to the recipient to sign up for a free Hotmail account. Facebook's initial reputation was achieved in a similar way, but much faster. Viral marketing can be effective, efficient, and relatively inexpensive when used properly. eWOM can also influence consumer judgment about products. For further details, see **learnmarketing.net**. For six steps to an effective viral marketing strategy, see Wilson (2012). For a strategy, see Wright (2014).

eWOM constitutes a multitude of activities, which can be divided into specific categories (see Wilde 2013). One category is a "higher degree" of e-word of mouth (e.g., viral marketing, e-referral marketing), and the other is "lower degree" marketing (e.g., social networks, brand communities).

One of the downsides of eWOM marketing is that many customers complain about receiving unsolicited e-mails, comparing them to telemarketing calls. Consumers may use spam blockers to filter out unsolicited e-mails, which may appear to be spam. For a comprehensive review, see Wilde (2013).

The messages circulated in viral marketing may be in different formats and serve different purposes. A typical one is a text message about a product or service sent for persuading consumers. Another format is video ads, a topic we will discuss next. Online videos are also discussed by Scott (2013).

Line and Mobile Activities

Mobile messaging platforms such as LINE and WeChat have created a messaging app featuring cute and funny "chat stickers." These stickers are localized and tailored to the taste

of individual markets. Line generates its revenue from in-app games (60%), followed by sticker purchases (20%), which are essentially big "emoticons" (Q3 2013 data). A sticker is downloaded from Line, which is a free download (available for Android and iPhones), and is attached as part of a text or chat message. Users can get stickers from the Line Store (**store.line.me**), and now the "Line Creators Market" is available for those who wish to design, create, and sell their own stickers in the shop.

Video Advertising

Video advertising refers to the insertion of video ads into advertisements or regular online contents. The Internet Advertising Bureau (IAB) believes in the importance of video ads and created a guide to the topic; see **slideshare.net/hardnoyz/iab-guide-to-video-advertising-online** and the accompanying document transcript. Video ads are common in Internet TV programs.

Video ads are growing rapidly, mainly due to the popularity of YouTube and similar sites. Online video is growing nearly 40% annually while TV viewing continues to fall. For statistics, see **marketingcharts.com**.

Video ads appear all over the Web, both as unsolicited pop-ups and when you give permission to see a demo or information about a product. Video ads have become very popular in the Web 2.0 environment and in social networking. The impact of video ads based on their association with popular content can be seen in Psy's "Gangnam Style" video, which was viewed more than 1.2 billion times within 6 months of its publication on YouTube. Any ad sponsor receives huge exposure in such a case. A 2016 IAB report shows a growth of digital video ads revenue to $10 million in 2016, an 85% increase since 2014. For statistics, see **iab.com/wp-content/uploads/2016/04/2016-IAB-Video-Ad-Spend-Study.pdf**. The major reason for the popularity of videos is that almost everyone who uses the Internet now watches online videos. Videos are also viewed on all mobile devices (e.g., smartphones, tablets), and they can be posted on Twitter. Social media and the accessibility to increased broadband mobile access are also reasons for the growth of online video usage. Watching videos on mobile devices has become very popular on airplanes and other public transportation.

There are primarily two approaches to incorporating videos in Web advertising: (1) per-product videos that are embedded in regular product pages, adding product details; and (2) editorial-style videos that allow consumers to discover such products. Many retailers are adding product-specific videos to their e-commerce sites. For a complete overview of video marketing and advertising, see **webvideo-marketing.org/video-advertising** and Daum et al. (2012).

According to a Cisco survey, most large online retailers are using videos to help sell products. Forrester Research found that most major retailers are making product videos central to their marketing strategies. According to statistics from 2014, 192 million Americans watched video ads in November 2014, and approximately 60% of viewers will visit a brand website sometime after watching a video ad. For details, see **ramp.com/enterprise/video-statistics-2015**.

Some of the leading companies in this area are YouTube, Metacafé, VEVO, and Hulu. Figure 9.4 illustrates the IAB Model of video advertising. For information on Google's video advertising platform, see **google.com/ads/video**.

Almost any video that you click on is preceded by a 10–30 s commercial that can be skipped only some of the time. This kind of "forced view" commercial has been found to be effective because people are used to seeing commercials when watching TV programs. More TV shows are coming to the Internet, frequently with video ads.

Viral Videos

A **viral video** is a video that is spread rapidly through the process of online information sharing. These videos become popular when they are circulated via e-mail, SMSs, blogs, discussion forums, and so forth. This way, people share videos that receive more attention, sometimes drawing millions of viewers in a short time. Popular sites that are used for sharing viral videos include YouTube (**youtube.com**) and Vimeo (**vimeo.com**). For the top viral video ad campaigns, see **www.visiblemeasures.com/insights/charts/adage**.

Viral videos are liked (or disliked) so much that viewers send them to others, spreading the word about them quickly across the Internet. Marketers are using viral videos by inserting ads in videos or by using ads as pop-ups prior to the start of presentations; see **adage.com/section/the-viral-video-chart/674**. Note that, if the reactions to a video are positive, the buzz can be useful, but negative reactions can hurt the brand. *Baseline* magazine periodically provides a list of the 10 best viral marketing videos. For viral video marketing case studies (the best virals of 2013), see **digitalstrategyconsulting.com/intelligence/2013/12/viral_video_marketing_case_studies_the_best_virals_of_2013.php**.

Consumer-Generated Videos

Many companies are utilizing user-generated videos for their online ads and even for their TV commercials.

YouTube is the largest advertising platform for video ads. It has billions of videos and is growing rapidly. YouTube permits selected marketers to upload videos with ads to the site. Google's AdSense ad distribution network also offers ad-supported video clips. Another way for advertisers to use viral video is by creating contests (see **onlinevideocontests.com**).

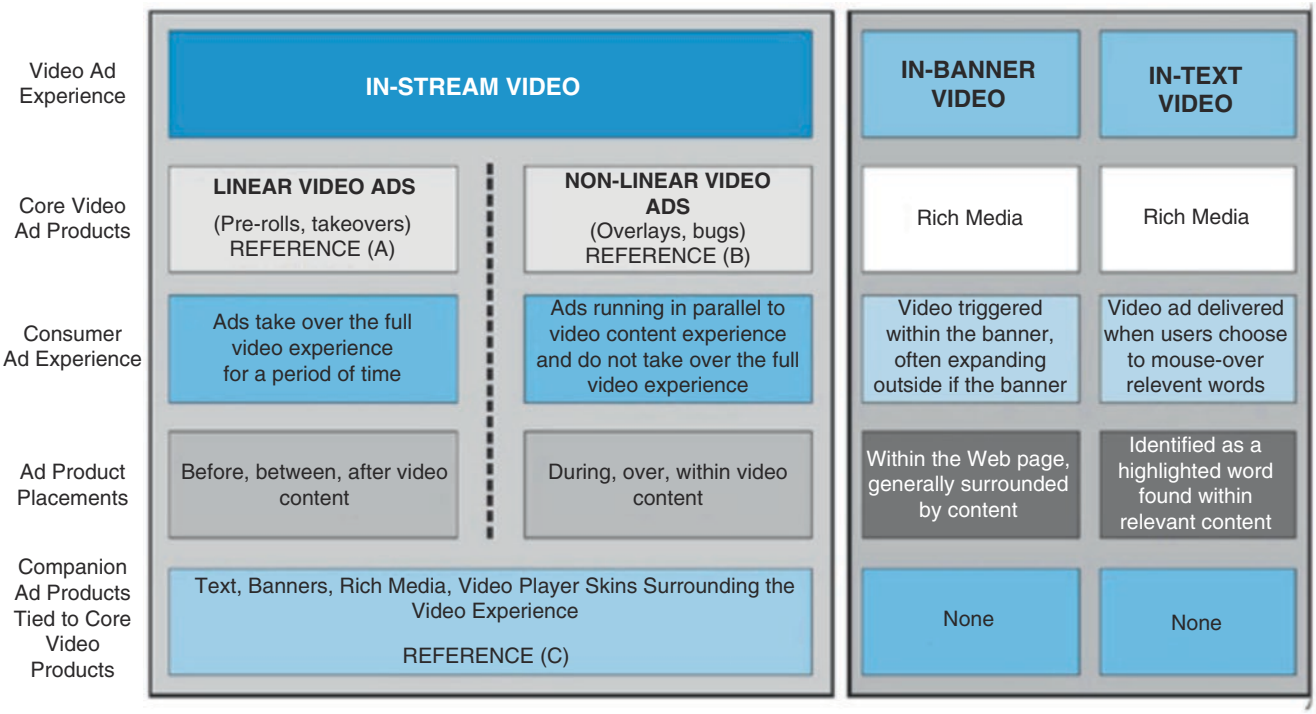

Figure 9.4 IAB model of video advertising. *Source*: Interactive Advertising Bureau. "A Digital Video Advertising Overview." January 2008. **iab.net/media/file/dv-report-v3.pdf** (accessed April 2016). Used with permission

Example: Crash the Super Bowl

Doritos runs an annual online contest, inviting fans to create their own Doritos ads. The winner gets a bonus prize of up to $1 million and their ad airs during that year's Super Bowl. In 2010, Doritos invited Pepsi Max to be a part of their fourth contest, receiving over 3000 entries. In 2013, the contest was moved to Facebook, attracting over 3500 submissions and over 100 million views. In 2013, for the first time, Doritos took its contest global, opening it to fans worldwide. This resulted in a huge advertising effect.

Interactive Videos

The term **interactive video** refers to a technique that is used to mix user interaction with videos. The interaction is controlled by a computer for entertainment, advertisement, or educational activities. Interactive videos are popular because:

- Increased bandwidth enables rapid downloading of videos
- Good search engines find videos that have been developed
- Both the media and advertisers have increased the use of videos
- Incentives such as contests and gifts are offered for the use of interactive videos

The following are representative types of interactive videos:

Video Click-Throughs

VideoClix.tv and Clickthrough.com have developed tools that allow people who watch videos to click on any person, place, banner ad, and so forth in the video.

Live Interactive Videos

In live interactive videos, you can see certain events in real time, and sometimes interact with those in the video. For example, GE presented the company's annual report in a banner ad during a live Webcast of its annual meeting. Viewers were able to interact with the presenters, asking questions or making comments.

Example: Interactive Dressing Room

Metail.com created an interactive online video dressing room. It includes a wide variety of women's fashions and styles. The animated models appear with your selected brands, and you can control their movements (e.g., turn them around). For details, see **metail.com**.

Augmented Reality in Advertising

Augmented reality (*AR*) can be utilized by advertisers and marketers, especially in the fashion industry.

Examples of AR Applications

Several examples of interactive applications are provided at **en.wikipedia.org/wiki/Augmented_reality**. These include real estate and architecture, product and industries design, tourism, and more. Companies such as Nissan, Best Buy, Walt Disney, and Burger King have experimented with using AR in advertising. For more examples, see Russell (2012).

Retailers in the clothing, fashion, and jewelry industries are using this technology, because in their industries, visualization is critical. For example, ClothiaCorp combines AR and with real-time merchandise recommendations. It allows shoppers to "try on" clothing and share the "how they look" with family and friends, in real time.

Advertising in Chat Rooms and Forums

Chat rooms can be used for advertising. For example, Mattel Corp. sells about one-third of its Barbie dolls to collectors. These collectors use chat rooms to make comments or ask questions that are subsequently answered by Mattel's staff. The Xiaomi case in this chapter runs a smartphone forum for its product design and advertising.

Advertisers sometimes use online fantasy sports (e.g., available at Yahoo!, ESPN, and more) to send ads to specific sports fans (e.g., fans of the National Football League or Major League Baseball). Online fantasy sports attract millions of visitors every month.

SECTION 9.5 REVIEW QUESTIONS

1. Define banner ads and describe their benefits and limitations.
2. Describe the difference between banner swapping and banner exchanges.
3. Describe the issues surrounding pop-ups and similar ads.
4. Explain how e-mail is used for advertising.
5. Describe the search engine optimization technique and what it is designed for.
6. Describe Google's AdWords and AdSense.
7. Describe video ads and their growing popularity.
8. Describe augmented reality advertising.

9.6 MOBILE MARKETING AND ADVERTISING

The rapid growth of mobile devices provides another arena for EC marketing and advertising. For example, the ratio of mobile handsets, including smartphones, to desktop and laptop computers is approximately 2–1 and growing. A 2016 estimation by eMarketer indicates that the global annual mobile ad spending has an increase of 105%, reaching US$101 billion in 2016, a 430% growth from 2013. This represents a great opportunity for online mobile marketing and advertising. (See **emarketer.com/Article/Mobile-Ad-Spend-Top-100-Billion-Worldwide-2016-51-of-Digital-Market/1012299**.)

Mobile Marketing and Mobile Commerce

Mobile marketing and advertising are generally considered a subset of both mobile commerce and mobile marketing. Mobile marketing takes several forms, such as using SMS (e.g., Twitter), as well as games and videos. Their major elements are described next.

Defining Mobile Marketing

Mobile marketing is frequently defined as the use of mobile devices and wireless infrastructure as a means of marketing and advertising. The marketer intends to access potential customers through wireless information channels. The Mobile Marketing Association (**mmaglobal.com**) provides definitions of advertising, apps, messaging, m-commerce, and CRM on all mobile devices, including smartphones and tablets.

Mobile marketing includes sales, market research, customer service, and advertising, all supported by mobile computing. Companies can devise contests where customers describe the quality of a new product, and the sellers can post coupons and promotions. You can make ads interactive since mobile computing provides a direct link between vendors and consumers.

Mobile Advertising

Mobile advertising (m-advertising) is defined by the IAB (2014) as "Advertising tailored to and delivered through wireless mobile devices such as smartphones (e.g. Blackberry, iPhone, Android, etc.), feature phones (e.g. lower-end mobile phones capable of accessing mobile content), and media tablets (e.g. iPad, Samsung Galaxy Tablet, etc.)." Mobile advertising ranges from simple text messaging to intelligent interactive messaging on mobile devices. It involves several key players, such as the advertisers, mobile ad networks, mobile apps, and mobile devices.

Figure 9.5 shows how mobile ads work. A company hires a mobile advertiser to create a mobile ad and specifies the promotional criteria. The mobile ad is then sent to a mobile advertising network. The original network forwards these ads to multiple mobile networks and keeps track of the distribution and responses to these ads. The ad will reach the

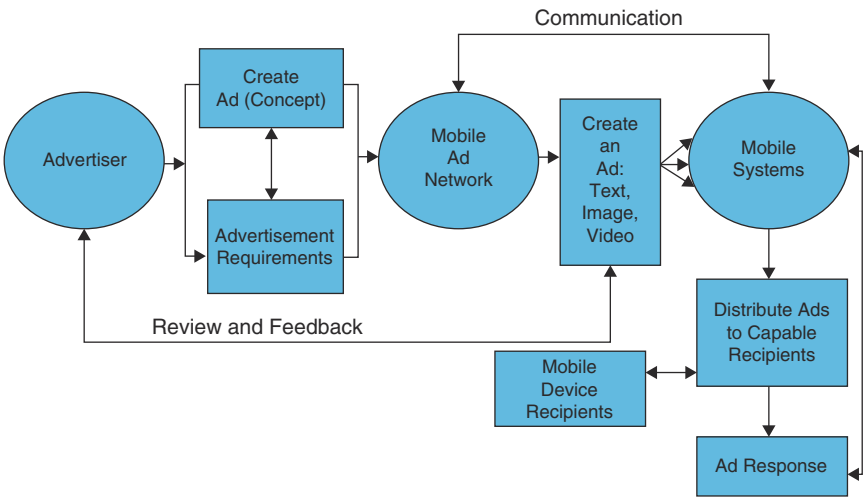

Figure 9.5 The process of mobile advertising

mobile user through proper mobile devices and apps. The user's response is then transmitted to the advertiser and the company through mobile networks.

Interactive Mobile Advertising

Interactive mobile advertising refers to the delivery of interactive marketing contents via mobile devices, mostly tablets and smartphones. The inclusion of the word "interactive" points to the fact that this is a two-way communication that may include a customer response (e.g., placing an order or asking a question). For a comprehensive guideline, see the IAB Mobile Web Advertising Measurement Guidelines at **iab.com/guidelines/iab-measurement-guidelines**.

Types of Mobile Ads

Mobile ads may appear in different forms. The most popular one is short text messages. Other forms include rich media advertising, advergaming, and ads appearing during TV shows and movies on mobile devices.

Short Message Ads

SMS ads are commercial messages sent in the form of short text messages. They are quite popular and SMS mobile banner ads are growing rapidly due to the increased popularity of smartphones and 4G networks. Several major advertising portals have been launched by both private mobile advertisers and portals (e.g., D2 in Japan).

One advantage of SMS is that users can send them quickly and privately from any place and almost any time. A major drawback, however, is that short messages may interrupt and annoy the recipients.

Location-Based Ads

Location-sensitive businesses can take advantage of this feature to deliver location-based ads. A good example is a Google Map that can show nearby convenience stores, gas stations, hotels, and restaurants when a location is searched. Some of these are paid ads.

Viral Mobile Marketing

Viral marketing can also be deployed to the mobile platforms. This is called viral mobile marketing. A typical approach is to develop and distribute apps for mobile devices.

Mobile Marketing and Advertising Campaigns

There are basically four classes of online campaigns: Information, entertainment, raffles, and coupons. These classes focus on one or more of the following six objectives:

1. **Building brand awareness**. Increase customers' ability to recognize and recall a brand.
2. **Changing brand image**. Change the customers' perception of the brand.
3. **Promoting sales**. Stimulate quicker or greater purchase of products or services.
4. **Enhancing brand loyalty**. Increase consumers' commitment to repurchase the brand.
5. **Building customer databases**. Collect data about the mobile device, data network, or profiles of customers.
6. **Stimulating mobile word of mouth**. Encourage customers to share ads with other customers via their mobile devices.

Obviously, these are the same types of campaigns and objectives underlying traditional marketing approaches. Currently, SMS and e-mails are the principal technologies used to deliver advertisements to mobile devices. However, richer content and advertising is expanding with improved bandwidth.

Recent mobile marketing campaigns conducted by retailers have been very successful. For example, the "Singles Day" (November 11, 2014) sales resulted in over $9 billion, with 43% generating from mobile devices. (See **marketwatch.com/story/alibabas-singles-day-bigger-than-black-friday-2014-11-10**.) Of these, over $5 billion were sold at Alibaba companies Tmail and TaoBao.

Mobile Marketing Implementation Guidelines

Although organizations such as the Direct Marketing Association have established codes of practice for Internet marketing, including the use of mobile media, most industry pundits agree that the codes are not well suited for the dynamic nature of mobile commerce. Therefore, the mobile media industry has established a set of guidelines and "best practices" for mobile advertising. The Global Code of Conduct from the Mobile Marketing Association (MMA; **mmaglobal.com**) is indicative of the types of practices promoted by the industry. The basic principles of the code include four sections: Notice, choice and consent, customization and constraints, and enforcement and accountability. For practical tactics by large advertising companies, see Eslinger (2014). See also Rowles (2013).

Tools to Support Mobile Advertisement

A large number of applications, tools, and methods are available to support advertising in m-commerce. There are millions of applications (apps) that have been developed for iPhone and Android-based mobile devices that can be downloaded from app stores (e.g., Google Play and Apple store). Applications include features such as finding products, places, or events. For details and a marketing glossary, see **where2getit.com**.

Mobile Ad Trends

Several positive predictions have been made about the future of mobile ads. According to **entrepreneur.com/slideshow/254425**, the following are the five important trends that advertisers need to watch:

1. Content marketing will improve the mobile marketing experience
2. Instead of BIG data, it's about accurate data on mobile—and this data will be coveted
3. Video on mobile is growing, and targeting by location is key
4. Virtual reality will create new ad formats
5. Beyond cross-screen, mobile marketers will align unified screens with in-store touch points

Example: Innovative Sticker Advertising

In addition to these five trends, we also see the increasing importance of mobile social media, such as **whatsapp.com**, **wechat.com**, and **line.me/en**. Creative advertising methods such as stickers offer new ways of advertising. A funny sticker is a small image (like an "emoticon") that can be used to show certain emotions such as great, love, hate, and so forth. It is very popular for Line users. Line allows a business to develop a set of eight sponsored fun stickers (with company logo or advertising messages) at a fixed cost. Line users can download free chat stickers from Google Play and iTunes. For example, in the case of Tatung Electronics (of Taiwan), its *Boy character stickers and emoticons* generated more than one million active users within 24 h of being introduced online.

Note: For a comprehensive collection of articles about mobile advertising, see **mashable.com/category/mobile-advertising** and Mobile Commerce Daily (**mobilecommercedaily.com**).

SECTION 9.6 REVIEW QUESTIONS

1. Define mobile marketing (provide at least three definitions). Why are there several definitions?
2. What drives mobile advertising?
3. What is the role of SMS in mobile ads?
4. Define interactive mobile advertising.
5. Describe the process of mobile advertising.
6. Define viral mobile marketing.
7. What are the similarities and differences between traditional media and mobile marketing/ad campaigns?
8. What are the trends in mobile advertising in the near future?

9.7 ADVERTISING STRATEGIES AND PROMOTIONS

Several advertising strategies can be used on the Internet. In this section, we present some major strategies and implementation concerns.

Permission Advertising

One solution to the flood of ads that people receive via e-mail that is used by advertisers is **permission advertising** or *permission marketing* (or the *opt-in approach*), in which

users register with vendors and agree to accept advertisements (see **returnpath.com**). For example, one of the authors of this book agreed to receive a number of e-commerce newsletters via e-mail, knowing that some would include ads. This way, the authors of this book, for example, can keep abreast of what is happening in the field. The authors also agreed to accept e-mails from certain research companies, newspapers, travel agencies, and more. These include ads. The vendors publish and send valuable (and usually free) information to us. Note that, some vendors ask permission from consumers to send them other users' recommendations, but they do not ask whether they can use historical purchasing data to create the recommendations.

Other Advertising Strategies

Many advertising strategies exist both for wired and wireless advertisement systems. For examples, see **www.opentracker.net/article/online-advertising-strategies** and **ultracart.com/resources/articles/ecommerce-advertising.**

Affiliate Marketing and Advertising

Affiliate marketing is a type of "performance-based marketing" used mainly as a revenue source for the referring organization and as a marketing tool for the sellers. Earlier in this chapter, we introduced Google's AdSense. This is an example of *affiliate marketing*. However, the fact that the vendor's logo is placed on many other websites is free advertising as well. Consider Amazon.com, whose logo can be seen on more than one million affiliate sites! Moreover, CDNow (a subsidiary of Amazon.com) and Amazon.com both are pioneers in the "get paid to view" or "listen to" commercials also used in affiliate marketing.

Affiliate Networks

A key to successful affiliate advertising is to have a good affiliate partner network. An **affiliate network** is a network created as a marketplace where publishers (affiliates) and merchants (affiliate programs) can collaborate. Examples of affiliate networks are Rakuten LinkShare (**linkshare.com**) and CJ Affiliate by Conversant (**cj.com**). For the Top Affiliate Marketing Networks of 2016, see **mthink.com/best-cps-affiliate-networks**.

Ads as a Commodity: Paying People to Watch Ads

In some cases, people are paid by advertisers (money or discounts) to view ads (also called "*ads as a commodity*"). This approach is used, for example, at Bing Rewards (get rewards for watching videos, playing games) at CreationsRewards searching the Web with Bing and others. The HitBliss app pays you to watch commercials (but you must pay attention!). Consumers usually need to show some personal interest in the material viewed and then they receive targeted ads based on their personal interests. Each banner is labeled with the amount to be paid if the consumer reads the ad. If interested, the consumer clicks the banner to read it, and after he or she passes some tests to assure they read the content, the customer is paid for the effort. Readers can sort and choose what they read, and the advertisers can vary the payments to reflect the frequency and enthusiasm of the readers. Payments may be cash (e.g., 50¢ per banner), credit, or product discounts. This method is used with smartphones, too.

Personalized Ads

Since the Internet contains too many irrelevant ads, customized ads can help. The heart of e-marketing is a customer database, which includes registration data and information gleaned from site visits. Companies use the one-to-one approach to send customized ads to consumers. Using this feature, a marketing manager can customize display ads based on user profiles.

Advertising as a Revenue Model

Many of the dot-com failures from 2000 to 2002 were caused by a revenue model that contained advertising income as the only or the major revenue source. Many small portals failed, but several large ones are dominating the field: Google, Facebook, AOL, and Yahoo!. However, even these heavy-traffic sites only started to show a significant profit after 2004. Too many websites are competing with limited advertising money. Thus, almost all portals are adding other sources of revenue.

However, if careful, a small site can survive by concentrating on a niche area. For example, NFL Rush (**nflrush.com**) is doing it well. It generates millions of dollars in advertising and sponsorship fees by concentrating on NFL fans, mostly kids 6–13 years old. The site attracts millions of visitors by providing comprehensive and interactive content and a chance to win prizes. It directs you to the NFL Shop for each team where sponsors such as Visa and U.S. Bank pay for the free games and the prize.

An important component in a revenue model is the *pay-per-click (PPC)* formula.

Pay per click (PPC) is a popular Internet advertising payment formula where advertisers pay sites only when someone clicks on their ad. Payments are made to search engines and other sites (e.g., affiliates). For tips on how to economize the cost of using PPC, see **advertise.com/ad-solutions/contextual/overview**.

Choose-Your-Own-Ad Format

AdSelector is a format created in 2010, which lets viewers choose their own ads. The AdSelector allows consumers to select what ads they like to view within the video clips (they are presented with two or three options). This model has been in use mostly for online videos with Hulu leadership. Users like this option and, according to research, are twice as likely to click on an ad. Recently the video content streaming service Hulu.com began using a similar system that allows viewers to select the commercial they would like to watch before beginning a program (Hulu LLC 2015).

Live Web Events for Advertising

Live Web events (concerts, shows, interviews, debates, webcasts, videos), if done properly, can generate tremendous public excitement and drive massive traffic to a website. Some of the best practices for successful live Web events are:

- Carefully planning content, audiences, interactivity levels, and schedules
- Including as much rich media as possible
- Conducting appropriate promotions via e-mails, social media sites, and streaming media, as well as conducting proper offline and online advertisements
- Preparing for quality delivery
- Analyzing audience feedback so that improvements can be made

A global event can allow a product to debut in different locations.

Note: Web-based seminars, often called *webinars*, are becoming more popular to promote more knowledge-intensive products.

Localization in Advertising

The reach of Internet marketing is quite broad. An ad may be viewed around the world. This is an advantage, but could also be a drawback because culture differences may cause different interpretations of the same message in different communities. Hence, localization of ad messages is an important consideration for advertisers.

Localization in EC refers to the transformation and adaptation of Web content media products and advertising materials to fit the Web environment of a certain region or country. It is usually done following a set of international guidelines. An important aspect is that of language localization. Web page translation (see **lionbridge.com**) is just one aspect of localization. However, several other aspects, such as culture, are also important. For example, a U.S. jewelry manufacturer that displayed its products on a white background was astonished to find that this display might not appeal to customers in some countries where a blue background is preferred.

If a company aims at the global market where there are millions of potential customers, it must make an effort to localize its Web pages. This may not be a simple task because of the following factors:

- Many countries do business in English, but the English used may differ in terminology, spelling, and culture (e.g., United States versus United Kingdom versus Australia).
- Without a proper translation program, accented characters cannot be converted to English and other languages. Thus, the translation may be inaccurate. If text includes an accented character, the accent will disappear when converted into English, which may result in an incorrect translation.
- Hard-coded text and fonts cannot be changed, so they will stay in their original format in the translated material.
- Graphics and icons look different to viewers in different countries. For example, a U.S. mailbox resembles a European trash can.
- When translating into Asian languages, and so forth, significant cultural issues must be addressed; for example, how to address older adults in a culturally correct manner.
- Date formats that are written as mm/dd/yy (e.g., June 8, 2016) in the United States are written as dd/mm/yy (e.g., 8 June 2016) in many other countries. Therefore, "6/8" would have two meanings (June 8 or August 6), depending on the location of the writer.
- Consistency in document translation in several different documents can be very difficult to achieve.

Developing an Online Advertising Plan

Advertising online is a competitive necessity for most businesses these days. With so many different media and advertising methods available, a challenge is to develop an effective advertising plan within budget constraints. A life cycle process composed of six steps to build and maintain an advertising plan is illustrated in Figure 9.6.

1. **Determine the goal of the advertising project**: The goal needs to be specific—is it for gaining brand awareness, traffic to the website, or higher revenue?

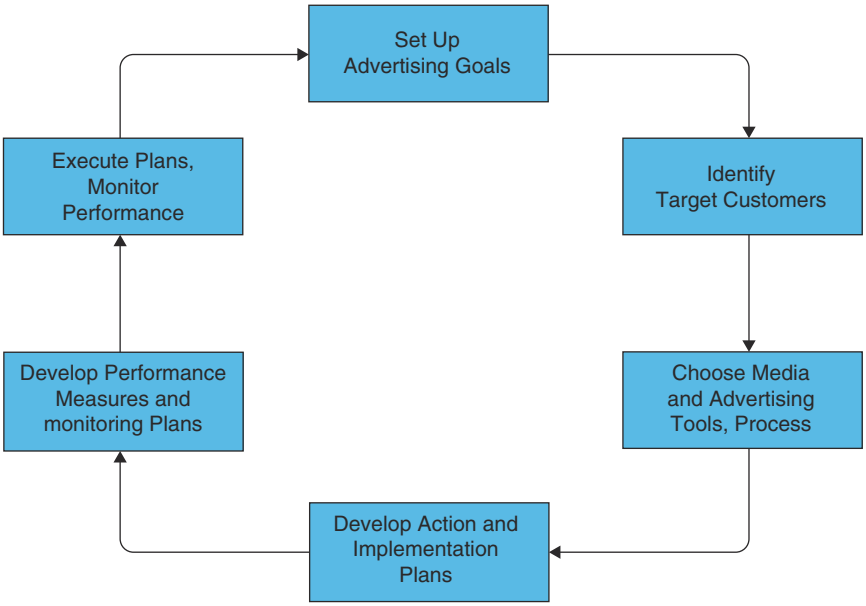

Figure 9.6 Life cycle of advertising plans

2. **Identify the target customers**: A group of target customers must be determined for the advertising plan. As we have discussed in this chapter, customer segmentation is useful for reducing costs and increasing effectiveness. Depending on the nature of the campaign, segmentation may be based on demographics or other criteria.
3. **Choose media and advertising tools**: Once the target customer is chosen, the advertising plan should select proper media and tools that can access the target customers. For instance, many firms use mobile social media to enhance their brand awareness in the younger generation in Taiwan.
4. **Develop action and implementation plans**: After choosing media and tools, a number of implementation issues must be planned, such as budget, time frame for advertising, advertising designs (e.g., video), and so on.
5. **Develop performance measurement and monitoring plans**: In order to ensure that the money spent on advertising is not wasted, performance measurement and monitoring plans must be developed before the plan is put into action. The performance measurement must be clearly defined and objectively measurable.
6. **Execute plans and evaluate performance**: After the advertising plan is approved, attention must be given to its execution, and finally, its performance must be evaluated to see whether the originally planned goals are achieved. For preparing a promotion plan, see Sauer (2013), and for mobile marketing, see Brocato and Fairbrother (2013).

Advertising on Facebook

In 2012, Facebook began generating billions of dollars from advertising. For example, users' "Likes" can appear in ads targeted to friends. For 45 "tips and tricks" see Marrs (2014). Note that other social networking sites such as Google+, Instagram, Twitter, and Pinterest also advertise. Advertising on social media is a trend in online marketing.

SECTION 9.7 REVIEW QUESTIONS

1. Describe permission advertising.
2. Describe video ads and their sudden increase in appearance.
3. Discuss the process and value of affiliate marketing.
4. How does the "ads as a commodity" strategy work?
5. Describe other kinds of online advertising methods.
6. What is localization? What are the major issues in localizing Web pages?
7. Describe choose-your-own-ad format.
8. Describe the six-step process life cycle for an advertising plan.

MANAGERIAL ISSUES

Some managerial issues related to this chapter are as follows:

1. **Do we focus on value-creating customers?** Understanding customers, specifically what they need and how to respond to those needs, is the most critical part of consumer-centered marketing. This was not possible before the solutions for database marketing, one-to-one marketing, and customer relationship marketing became available. What tools do we use to satisfy and retain customers, monitor the entire process of marketing, sales, maintenance, and follow-up services? Do we focus

resources effectively on VIP customers (e.g., giving them high priority)?

2. **Which Internet marketing/advertising channel(s) do we use?** An increasing number of online methods are available from which advertisers can choose. These include banners, search engines, video ads, blogging, social networks, and more.
3. **What metrics do we use to guide advertisers?** A large amount of information has been developed to guide advertisers as to where to advertise, how to design ads, and so on. Specific metrics such as CPM (cost per million impressions), click-through rate, stickiness, and actual purchase rate may be used to assess the effectiveness of advertising and calculate the return on investment from an organization's online advertising campaign. The metrics can be monitored by third-party monitoring companies. For example, the Mobile Marketing Association and IAB developed the industry standards for measuring mobile ad delivery.
4. **What is our commitment to Web advertising?** Once a company has committed to advertising on the Web, it must remember that a successful program requires the collaboration of the marketing, legal, and IT departments. In addition, coordination with non-Web advertising as well as support from top management is needed.
5. **Should we integrate our Internet and non-Internet marketing campaigns?** Many companies are integrating their TV and Internet marketing campaigns. For example, a company's TV or newspaper ads direct the viewers/readers to their website, where short videos and sound ads, known as *rich media*, are used. With click-through ratios of banner ads down to less than 0.5% at many sites, innovations such as the integration of offline and online marketing are needed to increase click-through rates/ratios.
6. **Who will conduct the market research?** B2C requires extensive market research that may be costly and difficult to conduct. Thus, it may be necessary to outsource some or all of the marketing research activities. If a company owns a large-scale customer database, the research on the internal database itself can be an important market research activity, and data mining techniques may be helpful.
7. **Should we use mobile coupons?** Consumers and advertisers are curious about mobile coupons, but current usage is still low. Advertisers do not yet feel pressured to launch a nationwide coupon effort, but they should start to plan for it. Forrester Research Corp. claims that Instagram is the king of social engagement. Mobile coupons are gaining more popularity. The advantage of mobile coupons is that you can see them when you need them. Showing the coupon to a vendor may be sufficient to get the discount (there is no need to print the coupons). In general, the benefits of mobile coupons are larger than their limitations.

   Many large retailers (e.g., Walmart) offer coupons on their websites. Smaller companies may use intermediaries that have coupons of many companies in their database.
8. **What ethical issues should we consider in online marketing?** Several ethical issues relate to online advertising. One issue that receives a great deal of attention is spam. Another issue is the selling of mailing lists and customer information. Some people believe that not only does a company need the consent of customers before selling a list, but that the company should also share the profits derived from the sale of such lists with the customers. Using cookies without an individual's consent is considered by many to be unethical. The negative impacts of advertising need to be considered.

SUMMARY

In this chapter, you learned about the following EC issues as they relate to the chapter's learning objectives.

1. **Factors influencing online consumer behavior**. Consumer behavior in EC is similar to that of any consumer behavior, but it has some unique features. It is described in a stimuli-based decision model that is influenced by factors that include the consumer's personal characteristics, environmental characteristics, product/service features, merchants and intermediaries, and the EC systems (logistics, technology, and customer service). All of these characteristics and systems interact to influence the decision-making process and produce an eventual buyer decision.
2. **Online personalization**. Using personalized Web pages, customers can interact with a company, learn about its products or services in real time, or receive customized products or services. Companies can allow customers to self-configure the products or services they want. Customization also can be done by matching products with customer profiles. Personalization includes the recommendation of products (services) and delivering content that customers want.
3. **EC consumer market research**. Several fast and economical methods of online market research are available. The two major approaches to data collection are (1) soliciting voluntary information from customers, and (2) using cookies, transaction logs, or clickstream data to track customer movements on the Internet and discover their interests. Understanding market segmentation by grouping consumers into categories is also an effective EC market research method. However, online market research has

several limitations, including data accuracy and representation of the statistical population generated by using an incorrect sample.

4. **Objectives and characteristics of Web advertising**. Web advertising attempts to attract surfers to an advertiser's site. Once at the advertiser's site, consumers can receive information, interact with the seller (e.g., chat with an online representative), and in many cases, are given a chance to easily place an order. With Web advertising, ads can be customized to fit groups of people with similar interests (segmentation) or even individuals (one-to-one). In addition, Web advertising can be interactive, is easily updated, can reach millions at a reasonable cost, and offers dynamic presentation and rich multimedia.
5. **Major online advertising methods**. Banners are the most popular online advertising method. Other frequently used methods are pop-ups and similar ads, e-mail (including e-mail sent to mobile devices), classified ads, registration of URLs with search engines, and advertising in chat rooms. Some of these are related to search results obtained through search engines, such as keyword advertising (especially on Google). Social network communities provide new opportunities for marketing by enabling segmentation, viral marketing, user-generated ads, and more. Advertising in videos is gaining popularity as well.
6. **Mobile marketing**. With the increased use of mobile devices comes the opportunity to reach individuals wherever they are at any time. Despite the small screen size, advertisers use clever designs to show not only banners but video ads as well. Mobile ads are designed for the young generation and some of these are interactive. The younger generation is especially active in viral advertising.
7. **Various advertising strategies and types of promotions**. The major advertising strategies are ads associated with search results (text links), affiliate marketing, monetary or other types of incentives for customers to view ads, viral marketing, ads customized on a one-to-one basis, and online events and promotions. Web promotions are similar to offline promotions. They include giveaways, contests, quizzes, entertainment, coupons, and so on. Customization and interactivity distinguish Internet promotions from conventional ones. It is also important that marketing projects are localized to meet the unique needs of different cultures.
8. **Implementation topics**. In permission marketing, customers are willing to accept ads in exchange for special (personalized) information or monetary incentives. Ad management deals with planning, organizing, and controlling ad campaigns and ad use. Ads can be localized to culture, country, and so forth. Market research can be facilitated by feedback from bloggers, chats in social networks, recommendations of friends, reading members' opinions, and so forth. Advertising is enhanced by user-generated ad content, viral marketing, and better segmentation.

KEY TERMS

Ad views
Affiliate marketing
Affiliate network
Banner
Banner exchange
Banner swapping
Behavioral targeting
Biometrics
Button
Click (ad click)
Clickstream behavior
Clickstream data
Click-through rate/ratio (CTR)
Collaborative filtering
Conversion rate
Cookie
CPM (cost per mille, i.e., thousand impressions)
E-mail advertising
E-mail marketing
Hit
Interactive marketing
Interactive video
Landing page
Live banner
Localization
Mobile advertising (m-advertising)
Mobile marketing
Mobile market research
Page
Pay per click (PPC)
Permission advertising
Personalization
Personalized banner
Pop-up ad
Pop-up banner
Random banners
Search advertising
Search engine optimization (SEO)
Spyware
Static banner
Transaction log
User profile
Viral marketing (viral advertising)
Viral video
Web bugs
Web mining

DISCUSSION QUESTIONS

1. How can you describe the buying decision process when the customer is online and looking for an iPhone? What can a webstore do to attract this customer to purchase from their store?
2. Why is personalization becoming an important element in EC? What techniques can be used to learn about consumer behavior? How can personalization be used to facilitate customer service? Give an example.
3. Watch the videos "Wherever You Want to Go" (from BMW; **youtube.com/playlist?list=PL53450A123A3ADCE2**), and Burger King's "Sign and Race" (**youtube.com/watch?v=qab5PH43sok**) and also find articles about them. Write a report on what made these videos so successful.
4. Discuss why banners are popular in Internet advertising. What kinds of products may or may not be suitable for banners?
5. Discuss the advantages and limitations of registering a company's URL with various search engines.
6. Explain why online ad management is critical. What are the major concerns for a company managing its own online ad program?
7. Explain the advantages of using chatterbots. Are there any disadvantages? Find information about their influence on online consumer shopping behavior.
8. Discuss the benefits of using software agents in marketing and advertising. Discuss whether a bargaining agent online (an agent that can interact with potential customers to settle a discount price) can help the webstore's sales.
9. Discuss the advantages and limitations of three methods of data collection about individual online consumer behavior.
10. Discuss the benefits of video ads in the social networking environment.

TOPICS FOR CLASS DISCUSSION AND DEBATES

1. Some say that people come to social networks to socialize and they will disregard, disable, or not accept ads. Others say that people do not mind the ads, but they ignore them. Discuss.
2. What strategic implications do you see for companies that use videos, mobile devices, and social networks as platforms for advertising? Discuss.
3. Debate: Will traditional advertising (TV, newspapers, billboards) disappear in the future?
4. Debate: Netflix.com, Amazon.com, and others view historical purchases as input in their recommendation systems. Some believe that this is an invasion of privacy.
5. Some people claim that they trust traditional media advertising (e.g., newspaper) over online ads (e.g., Richter 2014). Others disagree. Debate the issue.

INTERNET EXERCISES

1. Surf **homedepot.com** and check whether (and how) the company provides service to customers. Look for their virtual designs. Particularly, check the "kitchen and bath design center" and other self-configuration assistance. Relate this to market research.
2. Examine a market research website (e.g., **nielsen.com**). Discuss what might motivate a consumer to provide feedback to market research questions used by this company.
3. Enter **mysimon.com** and share your experiences about how the information you provide might be used by the company for marketing in a specific industry (e.g., clothing).
4. Enter **marketingterms.com** and conduct a search by keywords and by category. Look at their marketing glossary. Check the definitions of any 10 key terms in this chapter.
5. Enter **2020research.com**, **infosurv.com**, and **marketingsherpa.com** and identify areas about market research on consumer behavior. Write a summary of your findings.
6. Enter **yume.com** and find their video ad activities and reports. Write a summary.
7. Enter **selfpromotion.com** and **nielsen-online.com**. What Internet traffic management, Web results, and auditing services are provided? What are the benefits of each service? Compare the services provided and their costs.
8. Enter **adweek.com**, **wdfm.com**, **ad-tech.com**, **adage.com**, and other online advertising websites to find new developments in Internet advertising. Write a report based on your findings.
9. Enter **clickz.com** and find its market research topics. Summarize your findings.
10. Enter **adobe.com/marketing-cloud.html**. How does this product help with site optimization? What other services does it provide?
11. What resources do you find to be most useful at **targetmarketingmag.com**, **clickz.com**, **admedia.org**, **marketresearch.com**, and **wdfm.com**? Describe useful information for online marketing that you have found from these websites.
12. Enter **zoomerang.com** and learn how it facilitates online surveys. Examine the various products, including those that supplement the surveys. Write a report.
13. Enter **pewinternet.org** and **pewresearch.org**. What research do they conduct that is relevant to B2C? To B2B? Write a report.

TEAM ASSIGNMENTS AND PROJECTS

1. **Assignment for the Opening Case**
   Read the opening case and answer the following questions.
   (a) What motivated Del Monte to advertise on social networks?
   (b) Relate the capabilities of the social network sites to the market research activities (be specific on a one-to-one basis).
   (c) Compare the methods used here to both computerized and noncomputerized focus groups.
   (d) How can the data collected be used for EC justification?
2. Apple is encroaching onto Google's turf by buying Quattro Wireless, a mobile advertising company, and by initiating the iAd mobile device platform. Research the reason for Apple's venture into the field and the Apple vs. Google battle. Give a presentation to the class.
3. The field of video ads is growing rapidly, with many companies introducing innovative models and services (e.g., see **yume.com**). The class examines the major models and services available, including mobile ads and video clips on Twitter. Write a report.
4. Each team will choose one advertising method and conduct an in-depth investigation of the major players in that part of the ad industry. For example, direct e-mail is relatively inexpensive. Visit **thedma.org** to learn about direct mail. Also visit **ezinedirector.com** and similar sites. Each team will prepare and present an argument as to why its method is superior.
5. In this exercise, each team member will enter **pogo.com** and a similar site to play games and win prizes. Relate the games to advertising and marketing. Write a report.
6. Enter **autonlab.org** and download tools for conducting data mining analysis (these downloads are free). Write a report about the capabilities of the tools.
7. Watch the video "Beginning Analytics: Interpreting and Acting on Your Data" at **youtube.com/watch?v=Hdsb_uH2yPU** and answer the following questions:
   (a) To what metrics does the video refer?
   (b) How can Google Analytics be used?
   (c) What can analytics contribute to competitive intelligence?
   (d) Why is the average time spent on a site so important?
   (e) What decisions can be supported by analytics?
   (f) What have you learned from this video?
   (g) Compare Bing's Content Ads with Google's AdSense. Give a presentation.

CLOSING CASE: JOHNSON & JOHNSON USES NEW MEDIA MARKETING

The Problem

Johnson & Johnson is the world's largest medical and health care product company. In 2016, the company has more than 126,500 employees worldwide. A major problem facing the company is that their production and marketing must comply with strict global government regulations. In the Internet age, it is important for the company to use online communication tools to reach and support its customers. Moreover, the company has about 30,000 Internet domains. In the past several years, Johnson & Johnson has applied Internet media (called "new media" by the company) extensively and, as a result, achieved significant performance improvement.

Using New Media Channels

Using new media, Johnson & Johnson (**jnj.com**) has grown in online activities and strategies over the years. Some of their strategies are introduced next:

- **Web 1.0 Stage**.
  In 1996, Johnson & Johnson had its first presence on the Internet and presented its products as a static brochure format. This grew to include about 30,000 domains in 2014.
- **Web 2.0 Stage**.
  1. *Kilmer House* (**kilmerhouse.com**; *Johnson & Johnson's First Blog*). In 2006, the company introduced its first Web 2.0 adverting tools after using Web 1.0 for over 10 years. The blog was a natural way for the company to enter the Web 2.0 era.
  2. *JNJ BTW (Second Blog Web 2.0).* In 2007, the company launched its second blog a year after launching Kilmer House. This blog promised to become "the voice for the company." JNJ BTW became a place for conversation about subjects related to Johnson & Johnson. It also offers public education about health care and JNJ's products.
  3. *JNJ Health Channel on YouTube.* Johnson & Johnson is producing videos about health. In May 2008, the company launched two JNJ health test videos: "Ask Dr. Nancy – Prostate Cancer" and "Obesity and Gastric Bypass Options," which were watched by hundreds of thousands of viewers. Several hundred viewers posted their comments. For Johnson & Johnson, the site has turned out to be a great tool for interacting with consumers.

4. *Twitter and Facebook.* In March 2009, the company started a Twitter channel. In April 2009, the company created its first Facebook page. The page contains biographical information about the company. Twitter and Facebook also serve as a "bridging communicative tool" to integrate viewers into *JNJ BTW* for more detailed information about Johnson & Johnson.

- **Mobile Advertising Campaigns**.
  As of 2007, Johnson & Johnson has integrated several mobile advertising campaigns.
  1. *The company created a game called "Saving Momo"* for IM users working with Microsoft Digital Advertising Solutions.
  2. *Johnson & Johnson's Zyrtec and iPhone 2.0.* Zyrtec is a popular over-the-counter allergy medication. According to Butcher (2009), Zyrtec generated $315.9 million in sales in 2008. In 2009, Johnson & Johnson conducted a mobile advertising campaign together with The Weather Channel (TWC), putting an interactive Zyrtec banner ad on the TWC mobile app. Johnson & Johnson then extended to a new platform, TWC's upgraded iPhone application.
  3. *Strategic tactic in emerging markets.* To tap into growing markets where mobile devices may be the customers' only access to the Internet, Johnson & Johnson is deploying a variety of mobile information and marketing campaigns to gain customer trust (Johnson 2012).
- **Social Media**.
  Johnson & Johnson is very active in the use of social media. For example, on the company's main Facebook page (**facebook.com/jnj**), the company provides a link to health information (on the J&J Channel). There are over 625,000 million "Likes" in English and the most engaged city is Sao Paulo, Brazil (August 2014 data). J&J most active account on Twitter is its @JNNews. Finally, J&J is using social media to save lives (see Olenski 2013).

Results

The intensive campaigns that used various new media have resulted in significant performance improvements financially and managerially.

1. According to Ploof (2009) and Johnson (2012), the company's reputation is one factor in figuring the ROI (return on investment) of using new media. YouTube provides usability metrics, such as views over time, trends, and viewer retention rates, which has helped the management team make better decisions.
2. Mobile advertising has shown to be very effective. In 2007, ACUVUE's one-month campaign promoted a new product by creating a shared game, called "Saving Momo," for Windows Live Messenger. The game was played 200,000 times, while approximately 300,000 personal expressions (for IM) were downloaded. The campaign drove sales, improved the target markets' connection to the brand, and had a positive viral impact on the brand. Johnson & Johnson used the In-Call Network as another option to engage consumers, which made it easier for users to get a free trial of ACUVUE.

Sources: Based on Butcher (2009), Johnson (2012), Microsoft Advertising (2009), and Ploof (2009).

Questions

1. Identify the online advertising actions adopted by Johnson & Johnson and relate them to the methods described in the chapter.
2. Search the Internet to find more details about Johnson & Johnson's marketing activities on YouTube.
3. Search the Internet to find more details about Johnson & Johnson's marketing activities on Facebook and Twitter.
4. Search the Internet to find more details about Johnson & Johnson's marketing activities on mobile devices.
5. Outline the major benefits from Johnson & Johnson's online marketing activities.

ONLINE FILES

Available at **ecommerce-introduction-textbook.com**
No Online Files are available for this chapter.

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E-Commerce Security and Fraud Issues and Protections

10

Contents

Learning Objectives

Upon completion of this chapter, you will be able to:

1. Understand the importance and scope of security of information systems for EC.
2. Describe the major concepts and terminology of EC security.
3. Understand about the major EC security threats, vulnerabilities, and technical attacks.
4. Understand Internet fraud, phishing, and spam.
5. Describe the information assurance security principles.
6. Describe the major technologies for protection of EC networks, including access control.
7. Describe various types of controls and special defense mechanisms.
8. Describe consumer and seller protection from fraud.
9. Discuss enterprisewide implementation issues for EC security.
10. Understand why it is so difficult to stop computer crimes.
11. Discuss the future of EC.

OPENING CASE: HOW STATE UNIVERSITY OF NEW YORK COLLEGE AT OLD WESTBURY CONTROLS ITS INTERNET USE

The State University of New York (SUNY) College at Old Westbury (**oldwestbury.edu**) is a relatively small U.S. university located in Long Island, New York. The college has 3300 students and 122 full-time faculty. Internet access is essential for both faculty and students.

The Problem

The College does not regulate the types of devices people use in its network, such as laptops, tablets, and smartphones, nor the purposes for which the devices are used. Thus, students,

Electronic supplementary material: The online version of this chapter (doi:10.1007/978-3-319-50091-1_10) contains supplementary material, which is available to authorized users.

E. Turban et al., *Introduction to Electronic Commerce and Social Commerce*,
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faculty, and networks are vulnerable to a variety of security issues, many of which originate from social media websites such as Facebook and YouTube. The College encourages the use of social media as a collaborative, sharing, and learning environment.

Social media is also a leading target for malware writers. With the large number of downloads, social media has become an ideal place for cybercriminals to insert viruses and hack into systems. Phishers use social engineering techniques to deceive users into clicking on, or downloading malware.

Because of the various devices used by the students and faculty, the College's attempts to manage network security were unsuccessful. Specifically, the attempt to use intelligent agents (which some students objected to having on their computers) as guards failed.

The College had computer-use policies in place, but these were established in the past for older computing environments. Since the old policies were not effective, the university decided to rewrite its old usage policy to meet the needs of current technology.

Bandwidth usage was a problem due to the extensive downloading of videos by faculty and students. The high level usage for noneducational related activities sometimes interfered with classroom or research needs.

The Solution

All students, faculty, and staff received a user ID for computer utilization. Next, a new usage policy was implemented. This policy was communicated to all users and was enforced by monitoring the usage for each ID, watching network traffic, and performing behavioral analysis.

The policy covered all users, all devices, and all types of usage, including mobile devices and the Internet. According to SUNY College at Old Westbury (2014), the policy states that users should not expect full privacy when it comes to their e-mail messages or other online private information, including Internet usage records, and sets forth what information is collected by the university. Given that the IDs identify the type of users (e.g., student or faculty), management was able to set priorities in allocating bandwidth.

Old Westbury is not alone in utilizing a policy to control Internet usage. Social Media Governance (**socialmediagovernance.com**) is a website that provides tools and instructions regarding the control of computing resources where social media is concerned.

The Results

The modified system monitors performance and automatically sends alerts to management when deviations from the policy occur (e.g., excessive usage). Also, it conducts behavioral analysis and reports behavioral changes of users.

The users are contacted via e-mail and alerted to the problem. The system may even block the user's access. In such an event, the user can go to the student computer lab for problem resolution.

Bandwidth is controlled only when classes are in session.

Sources: Based on Goodchild (2011), SUNY (2014), and **oldwestbury.edu** (accessed April 2016).

LESSONS LEARNED FROM THE CASE

This case demonstrates two problems: possible malware attacks and insufficient bandwidth. Both problems can reduce the effectiveness of SUNY's computerized system, interfering with students' learning and faculty teaching and research. The solution, in which the university can monitor when users are on the university network, look for any unusual activity, and take appropriate action if needed, demonstrates one of the defense mechanisms used by an organization. The new polices conflict with student privacy—a typical situation in security systems: the tighter the security, the less privacy and flexibility people have. In this chapter, we introduce the broad battlefield between attacks on information systems and the defense of those systems. We also present the issues of fraud in e-commerce and strategies and policies available to organizations for deploying security measures.

10.1 THE INFORMATION SECURITY PROBLEM

Information security refers to a variety of activities and methods that protect information systems, data, and procedures from any action designed to destroy, modify, or degrade the systems and their operations. In this chapter, we provide an overview of the generic information security problems and solutions as they relate to EC and IT. In this section, we look at the nature of the security problems, the magnitude of the problems, and introduce some essential terminology of information security. For an overview, see John (2016) and Smith (2015).

What Is EC Security?

Computer security in general refers to the protection of data, networks, computer programs, computer power, and other elements of computerized information systems. It is a very broad field due to the many methods of attack as well as the many modes of defense. The attacks on and defenses for computers can affect individuals, organizations, countries, or the

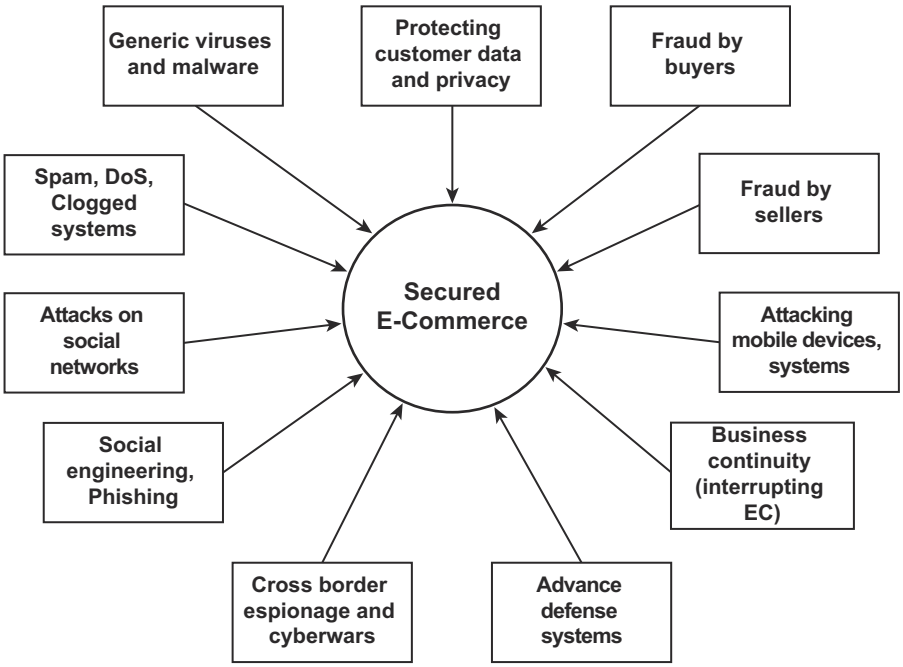

Figure 10.1 Major EC security management concerns

entire Web. Computer security aims to prevent, repair, or at least minimize the attacks.

Information security has been ranked consistently as one of the top management concerns in the United States and many other countries. Figure 10.1 illustrates the major topics cited in various studies as being the most important in information security.

The Status of Computer Security in the United States

Several private and government organizations try to assess the status of computer security in the United States annually. Notable is the annual CSI report, which is described next.

Comprehensive annual security surveys are published periodically by IBM, Symantec, and other organizations.

In addition to organizational security issues, there is also the issue of personal security.

Personal Security

Fraud on the Web is aimed mostly at individuals. In addition, loose security may mean danger to personal safety due to sex offenders who find their victims on the Internet.

National Security

Protection of U.S. computer networks is handled by the Department of Homeland Security (DHS). It includes the following programs:

- **Cyber Security Preparedness and the National Cyber Alert System**. Computer users can stay up-to-date on cyberthreats through this program.
- **United States Computer Emergency Readiness Team (U.S.-CERT Operations)**. Provides information about vulnerabilities and threats, proactively manages cyber risks to the nation, and operates a database to provide technical descriptions of vulnerabilities.
- **National Cyber Response Coordination Group (NCRCG)**. Comprised of representatives from 13 federal agencies, it reviews threat assessments and recommends actions to incidents, including allocation of federal resources.
- **CyberCop Portal**. A portal designed for law enforcement and government officials to use the Internet to collaborate and share sensitive information with one another in a secure environment.

According to Goldman (2013), hackers are increasingly attacking the most critical infrastructures of the United States (e.g., power, nuclear, and water facilities). In 2012, a group of unidentified hackers broke into the corporate systems of some natural gas pipeline companies and stole data on how their control systems work. Goldman also states that according to industry researchers, many companies choose not to report cyberattacks.

On February 17, 2013, President Obama issued an executive order for combating cyberwars. This order gave "federal agencies greater authority to share 'cyber threat' information with the public sector."

Security Risks for 2014 and 2015

The major security risks for the near future are:

- Cyberespionage and cyberwars (discussed below) are growing threats.
- Attacks are now also against mobile assets, including on smartphones, tablets, and other mobile devices. Enterprise mobile devices are a particular target.
- Attacks on social networks and social software tools. User-generated content is a major source of malware.
- Attacks on BYOD ("Bring Your Own Device").
- Identity theft is exploding, increasing the criminal use of the stolen identities.
- Profit motive—as long as cybercriminals can make money, security threats and phishing attacks will continue to grow.
- Social engineering tools such as phishing via e-mail are growing rapidly.
- Cybergang consolidation—underground groups are multiplying and getting bigger, especially in Internet fraud and cyberwars.
- Business-oriented spam (including image-based spam).
- Attacks using spyware tools (e.g., using Denial-of-Service method).
- Attacks on new technologies such as cloud computing, IoT, and virtualization.
- Attacks on Web and mobile applications (apps).

We cover all the major topics on the above list in the rest of this chapter. According to Lawinski (2012), the major attacks on corporations are on executives (25%), shared mailboxes (23%), and sales (12%). While most of the attacks are against large enterprises (50%), hackers attack medium (32%) and small companies (48%) as well. Additionally, 93% of companies affected are in the health care or IT industries. We assume the 2015–2016 data are similar.

For more information, see **sans.org**, **baselinemag.com/security**, **enisa.europa.eu/activities/risk-management**, and the Information Systems Security Certification Consortium (**isc2.org**).

Security Risks in Mobile Devices

The major mobile devices security concerns are loss of devices that include sensitive information (66%); mobile devices infected by malware (60%); theft of data from the device (44%); users downloading malicious apps (33%); identity theft and other user personal loss (30%).

Cyberwars and Cyberespionage Across Borders

Using computers as a tool to attack information systems and computers is growing rapidly and becoming more and more dangerous.

Cyberwarfare

According to the UN Crime and Justice Research Institute (Unicri), *Cyberwarfare* or (*Cyberwar*) refers to any action by a nation, state, or international organization to penetrate another nation's computer networks for the purpose of causing damage or disruption. However, broader definitions claim that cyberwarfare also includes acts of "cyberhooliganism," cybervandalism, or cyberterrorism. The attack usually is done through viruses, DoS, or botnets.

- Cyberwarfare, which is an illegal activity in most countries, includes the following major threats: Online acts of espionage and security breaches—which are done to obtain national material and information of a sensitive or classified nature through the exploitation of the Internet (e.g., exploitation of network flaws through malicious software).
- Sabotage—the use of the Internet to disrupt online communications with the intent to cause damage.
- Attacks on SCADA (Supervisory Control and Data Acquisition) network and NCIs (National Computational Infrastructure). For example, in 2015, hackers attacked the German Parliament's computer network (Troinovski 2015).

For an overview, see Singer and Friedman (2014).

Cyberespionage

Cyberespionage refers to unauthorized spying using a computer system. Espionage involves obtaining secrets without the permission of the holder of the information (individual, group, or organization). Cyberespionage is an illegal activity in most countries. For cyberspying on U.S. firms by the Chinese, see Yan (2016).

Attacking Information Systems

The GhostNet attack was not an isolated case of cross-border cyberattacks. The U.S. Congress is working on legislation to protect the country from what some call the "Cyber Pearl Harbor" attack or a digital 9/11. In May 2014, the U.S. government named five military people in China as responsible for stealing data and spying on several thousand companies in the United States stealing trade secrets (Kravets 2014).

Types of Attacks

Cyberattacks can be classified into two major interrelated categories:

1. **Corporate espionage**. Many attacks target energy-related companies because their inside information is valuable. Almost half of all power plants and other infrastructures surveyed have been infiltrated by "sophisticated adversaries," with extortion being a common motive. Foreign hackers targeted a water plant control system in Illinois, causing the pump to fail. The attackers also gained unauthorized access to the system database. The attackers' Internet address used was tracked back to Russia. According to the *Wall Street Journal* of April 23, 2012, there were suspected cyberattacks against Iranian oil production and refineries. Cyberattackers hacked into 30,000 of Saudi Aramco's computers in 2012, and crippled the national oil company's networks, but failed to disrupt gas or oil output.

   In 2011, cyber thieves (known as the "Rove group") based in Eastern Europe hijacked at least four million computers in more than 100 countries before they were caught. The attackers used malware and rerouted Internet traffic illegally. The cyber thieves stole $14 million before they were captured. The hackers also attacked U.S. government agencies and large corporations.

   In 2013, Chinese hackers allegedly attacked the *New York Times*' computers to intimidate the American news media into not reporting on China's negative image and the journalists' sources of this information.
2. **Political espionage and warfare**. Political espionage and cyberwars are increasing in magnitude. Sometimes, these are related to corporate espionage. In 2014, U.S. hackers in Illinois used DDoS malware to attack the official website of the Crimean referendum. A few days later, major Russian government Web resources and state media websites were also attacked by DDoS malware.

Example 1

In December 2010, the Iranian nuclear program was attacked via computer programs rumored to have been created by the United States and Israel. The attack was successful, causing major physical damage to the nuclear program, delaying it by months or possibly even years. The attack was perpetrated using a sophisticated computer worm named Stuxnet. This is an example of a weapon created by a country to achieve a goal that otherwise may have been achieved only by physical weapons. In apparent retaliation, Iranians and pro-Palestinian hackers attacked El-Al (Israel's national airline) and the country's stock exchange. Iran is believed to have been behind a November 2012 attack on U.S. banks.

Example 2

A suspected cyberespionage network known as GhostNet compromised computer systems in 103 countries, including computer systems belonging to the Dalai Lama's exile network, embassies, and foreign ministries. The attacks allegedly came from China. For more, see Wagstaff (2014).

Example 3

One of the most complex cyberespionage incidents that has ever occurred (2014) is the suspected Russian spyware Turla, which was used to attack hundreds of government computers in the United States and Western Europe (see Apps and Finkle 2014).

The above incidents illustrate the ineffectiveness of some information security systems. For an overview of how cyberwarfare works, see **forbes.com/sites/quora/2013/07/18/how-does-cyber-warfare-work**.

The Drivers of EC Security Problems

There are many drivers (and inhibitors) that can cause security problems to EC. Here, we describe several major ones: the *Internet's vulnerable design*, the *shift to profit-induced crimes*, the *wireless revolution*, the *Internet underground economy*, the *dynamic nature of EC systems, and the role of insiders*, and the *sophistication of the attacks.*

The Internet's Vulnerable Design

The Internet and its network protocols were never intended to protect against cybercriminals. They were designed to accommodate computer-based communications in a *trusted community*. However, the Internet is now a global place for communication, search, and trading. Furthermore, the Internet was designed for maximum efficiency without regard for security. Despite improvements, the Internet is still fundamentally insecure.

The Spread of Computerized Medical Data

With the requirements to computerize medical and health care data came the danger of breaches, see Greengard (2016).

The Shift to Profit-Induced Crimes

There is a clear shift in the nature of the operation of computer criminals. In the early days of e-commerce, many hackers simply wanted to gain fame or notoriety by defacing websites. Online File W10.1 illustrates a case of a criminal who did not attack systems to make a profit. There are many more criminals today, and they are more sophisticated. Most popular is the theft of personal information such as credit card numbers, bank accounts, Internet IDs, and passwords. According to Privacy Rights Clearinghouse (**privacyrights.org**), millions of records containing personal information are breached every year. Criminals today are even holding data for ransom and trying to extort payments from their victims. An illustrative CNN video (2:30 min) titled "Hackers Are Holding Data for Ransom" is available at **money.cnn.com/video/technology/2012/10/08/t-ransomware-hackers.cnnmoney**. In 2016, a hospital was forced to pay a ransom (with Bitcoins) to get back its data, which were not backed up (see Winton 2016). CryptoLocker is a new ransomware Trojan used for such crimes (see **usatoday.com/story/news/nation/2014/05/14/ransom-ware-computer-dark-web-criminal/8843633**).

Lemos (2016) provides a slide show that illustrates the 2016 top secret trends that includes ransomware and cyberspying.

Note that laptop computers, tablets, and smartphones are stolen for two reasons: selling them (e.g., to pawn shops, and on eBay) and trying to find the owners' personal information (e.g., social security number, driver's license details, and so forth). In January 2014, a former Coca-Cola employee stole laptops containing information on 74,000 individuals belonging to current and past employees of the company. The company did not have a data loss prevention program in place, nor were the laptops encrypted.

A major driver of data theft and other crimes is the ability to profit from the theft. Today, stolen data are sold on the black market, which is described next.

Computers Everywhere

As described in Chapter 6, computers are everywhere, from your home to your work, in study places, entertainment areas etc. Even your car can be hacked (see Pagliery 2014b).

The Increased Volume of Wireless Activities and the Number of Mobile Devices

Wireless networks are more difficult to protect than wireline. For example, many smartphones are equipped with near-field communication (NFC) chips, which are necessary for mobile payments. Additionally, BYOD (Chapter 6) may create security problems. Hackers can exploit the features of smartphones and related devices (e.g., Bluetooth) with relative ease.

The Globalization of the Attackers

Many countries have cyberattackers (e.g., China, Russia, Nigeria, Iran, and India). For an example of Iranian attacks on U.S. banks, see Nakashima and Zapotosky (2016).

The Darknet and the Underground Economy

The **darknet** can be viewed as a separate Internet that can be accessed via the regular Internet and a connection to the TOR network (TOR is a network of VPNs that allows privacy and security on the Internet). The darknet has restricted access to trusted people ("friends") by using nonstandard protocols (IP addresses are not listed). Darknet allows anonymous surfing. The darknet's contents are not accessible through Google or other search engines. The TOR technology is used in file sharing (e.g., in the well-known Pirate Bay). The darknet is often used for political dissent and conducting illegal transactions, such as selling drugs and pirating intellectual property via file sharing. The latter activity is known as the *Internet underground economy*. In November 2014, law enforcement authorities in Europe and the United States shut down many of TOR websites. But it seems they have not cracked TOR encryptions yet. In 2015, the U.S. government shut down a market for stolen personal data called Darkode. See Victor (2015).

The Internet Underground Economy

The **Internet underground economy** refers to the e-markets for stolen information made up of thousands of websites that sell credit card numbers, social security numbers, e-mail addresses, bank account numbers, social network IDs, passwords, and much more. Stolen data are sold to spammers or criminals for less than a dollar a piece to several hundred dollars each. The purchasers use them to send spam or conduct illegal financial transactions such as transferring other people's money into their own accounts or paying the spammers' credit card bills. It is estimated that about 30% of all the transactions in the underground market are made with stolen credit cards. Symantec estimates the potential worth of just the credit cards and banking information for sale is about a billion annually. Forty-one percent of the underground economy is in the United States, while 13% is in Romania. For a discussion of the digital underground, see Goodman (2016).

The Internet Silk Road

This is one of the underground sites where hundreds of drug dealers and other "black market" merchants conduct their business. In October 2013, law enforcement authorities in the United States shut down the site and arrested its founder, who

was sentenced to more than 20 years in jail. However, shortly thereafter, Silk Road was "resurrected" as Silk Road 2.0.

Transactions on Silk Road are paid only by *bitcoins* (Chapter 11). In February 2014, hackers stole over 4400 bitcoins that were held in escrow (between buyers and sellers); over $2.7 million value of bitcoins are gone forever (see Pagliery 2014a). The owner of the Silk Road site declared bankruptcy. However, by May 2014 the site was back in business.

Keystroke Logging in the Underground Economy

Keystroke logging (keylogging) is the process of using a device or software program that tracks and records the activity of a user in real time (without the user's knowledge or consent) by the keyboard keys they press. Since personal information such as passwords and user names are entered on a keyboard, the keylogger can use the keystrokes to obtain them.

The Explosion of Social Networking

The huge growth of social networking and the proliferation of platforms and tools make it difficult to protect against hackers. Social networks are easy targets for phishing and other social engineering attacks.

The Dynamic Nature of EC Systems and the Acts of Insiders

EC systems are changing all the time due to a stream of innovations. Security problems often accompany change. In recent years, we have experienced many security problems in the new areas of social networks and wireless systems (some will be explored later in this book). Note that insiders (people who work for the attacked organizations) are responsible for almost half of the security problems. New employees are being added frequently to organizations, and they may bring security threats with them.

The Sophistication of the Attacks

Cybercriminals are sharpening their weapons continuously, using technological innovations. In addition, criminals are getting organized in very powerful groups, such as LulzSec and Anonymous. Cybercriminals change their tactics because of improved security (i.e., they are adapting quickly to a changing environment).

The Cost of Cybercrime

It is not clear how much cybercrime costs. Many companies do not disclose their losses. However, HP Enterprise Security's "2013 Cost of Cyber Crime Study: Global Report" found that the average annualized cost of cybercrime per company surveyed was $7.2 million per year, which is an increase of 30% from the previous year's global cyber cost study. Data breaches can be very costly to organizations. For how organizations can be devastated by cyberattacks, see Kavilanz (2013). For an infographic regarding the cost of cyberattacks, see Alto (2016).

SECTION 10.1 REVIEW QUESTIONS

1. Define computer security.
2. List the major findings of the CSI most recent survey.
3. Describe the vulnerable design of the Internet.
4. Describe some profit-induced computer crimes.
5. Describe the Internet underground economy and the darknet.
6. Describe the dynamic nature of EC systems.

10.2 BASIC E-COMMERCE SECURITY ISSUES AND LANDSCAPE

In order to understand security problems better, we need to understand some basic concepts in EC and IT security. We begin with some basic terminology frequently related to security issues.

Basic Security Terminology

In Section 10.1, we introduced some key concepts and security terms. We begin this section by introducing alphabetically the major terms needed to understand EC security issues:

Business continuity plan: A plan that keeps the business running after a disaster occurs. Each function in the business should have a valid recovery capability plan.

Cybercrime: Intentional crimes carried out on the Internet.

Cybercriminal: A person who intentionally carries out crimes over the Internet.

Exposure: The estimated cost, loss, or damage that can result if a threat exploits a vulnerability.

Fraud: Any business activity that uses deceitful practices or devices to deprive another of property or other rights.

Malware (malicious software): A generic term for malicious software.

Phishing: A fraudulent process of attempting to acquire sensitive information by masquerading as a trustworthy entity.

Risk: The probability that a vulnerability will be known and used.

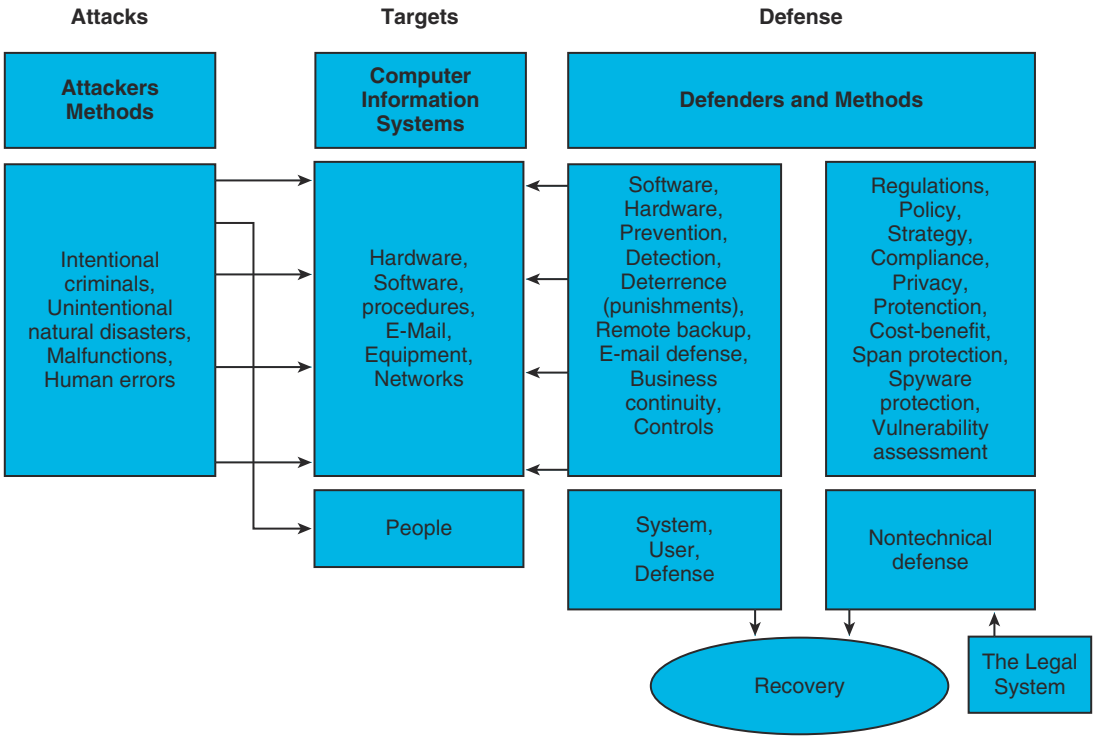

Figure 10.2 The EC security battleground

Social engineering: A type of nontechnical attack that uses some ruse to trick users into revealing information or performing an action that compromises a computer or network.

Spam: The electronic equivalent of junk mail.

Vulnerability: Weakness in software or other mechanism that threatens the confidentiality, integrity, or availability of an asset (recall the CIA model). It can be directly used by a hacker to gain access to a system or network.

Zombie: Computers infected with malware that are under the control of a spammer, hacker, or other criminal.

Definitions of these terms are provided at **webopedia.com/TERM**.

The EC Security Battleground

The essence of EC security can be viewed as a battleground between attackers and defenders and the defenders' security requirements. This battleground includes the following components, as shown in Figure 10.2:

- The attacks, the attackers, and their strategies
- The assets that are being attacked (the targets) in vulnerable areas
- The security defense, the defenders, and their methods and strategy

The Threats, Attacks, and Attackers

Information systems, including EC, are vulnerable to both unintentional and intentional threats.

Unintentional Threats

Unintentional threats fall into three major categories: human error, environmental hazards, and malfunctions in the computer system.

Human Error
Human errors can occur in the design of the hardware, software, or information systems. It can also occur in programming (e.g., forgetting to factor in leap year), testing, data collection, data entry, authorization, system operation, and instructions. Errors can occur because of negligence, outdated security procedures or inadequate employee training, or because passwords are not changed or are shared with others.

Environmental Hazards
These include natural disasters and other environmental conditions outside of human control (e.g., Acts of God, large-scale acts of nature and accidents such as earthquakes, severe storms, hurricanes, blizzards, or sand storms), floods, power failures or strong fluctuations, fires (the most common hazard), explosions, radioactive fallout, and water-cooling system failures. Computer resources also can be damaged by side effects such as smoke and water.

Malfunctions in the Computer System
Defects can be the result of poor manufacturing, defective materials, memory leaks, and outdated or poorly maintained networks. Unintentional malfunctions can also happen for other causes, ranging from lack of user experience to inadequate testing. Another example is Amazon's Cloud (EC2), which hosts many major websites (e.g., Reddit, Airbnb, Foursquare). In June and October 2012, the cloud hosting service crashed due to problems with the company's data centers. The system also crashed in July 2012, taking down Netflix, Foursquare, Dropbox, Instagram, and Pinterest due to severe weather hitting the North Virginia data center.

Intentional Attacks and Crimes

Intentional attacks are committed by cybercriminals. Types of intentional attacks include theft of data; inappropriate use of data (e.g., changing it or presenting it for fraudulent purposes); theft of laptops and other devices and equipment and/or computer programs to steal data; vandalism or sabotage directed toward the computer or its information system; damaging computer resources; losses from malware attacks; creating and distributing viruses; and causing monetary losses due to Internet fraud. Most of these are described in Sections 10.3 and 10.4.

The Criminals and Methods

Intentional crimes carried out using computers and the Internet are called *cybercrimes*, which are done by *cybercriminals* (*criminals* for short), that includes *hackers and crackers*. A **hacker** describes someone who gains unauthorized access to a computer system. A **cracker** (also known as a *"black hat" hacker*) is a *malicious hacker* with extensive computer experience who may be more damaging. Some hacker groups (such as the international group Anonymous) are considered unstoppable in penetrating organizations of all kinds (many U.S. government agencies, including the U.S. Army and the Department of Energy). The danger is that some companies may not take even minimal precautions to protect their customer information if they can place the blame for the attacks on the cybercriminals.

Criminals use a variety of methods for the attacks. Some use computers as a weapon; some attack computing assets depending on the targets. For a short history of hacking (with an infographic) see **i-programmer.info/news/149-security/3972-a-short-history-of-hacking.html**.

Hackers and crackers may recruit unsuspecting people, including company insiders, to assist in their crimes. For example, according to Malware Bytes Unpacked, a "money mule" is a person who is local to the compromised account, who can receive money transfers with a lesser chance of alerting the banking authorities.

"These money mules retrieve the funds and then transfer them to the cyber criminal." Since the mules are used to transfer stolen money, they can face criminal charges and become victims of identity theft. Notorious hacker Kevin Mitnick, who served jail time for hacking, used social engineering as his primary method to gain access to computer systems.

For ten tips to keeping your EC website protected against hacking and fraud, see **tweakyourbiz.com/technology/2014/01/20/10-tips-to-protect-an-ecommerce-website-against-hacking-and-fraud**.

Example: The Bangladesh Bank
Some hackers installed malware in the Bangladesh Central Bank computer systems that enable them to watch, for weeks, how funds are being withdrawn from the bank's U.S. account. The hackers then attempted to steal about $1 billion, but were stopped after stealing $80 million from the Bangladesh at the Federal Bank of New York. For details see Reuters (2016).

The Targets of the Attacks in Vulnerable Areas

As seen in Figure 10.2, the targets can be people, computers, or information systems. Fraud usually aims to steal money or other assets such as real estate. Computers are also used to harass people (e.g., cyberbullying), damage their reputation, violate their privacy, and so forth.

Vulnerable Areas Are Being Attacked

Any part of an information system can be attacked. PCs, tablets, or smartphones can easily be stolen or attacked by viruses and/or malware. Users can become victims of a variety of fraudulent actions. Databases can be attacked by unauthorized intruders, and data are very vulnerable in many places in a computerized system. For example, data can be copied, altered, or stolen. Networks can be attacked, and information flow can be stopped or altered. Computer terminals, printers, and any other pieces of equipment can be damaged in different

ways. Software programs can be manipulated. Procedures and policies may be altered, and much more. *Vulnerable* areas are frequently attacked.

Vulnerability Information

A *vulnerability* is where an attacker finds a weakness in the system and then exploits that weakness. Vulnerability creates opportunities for attackers to damage information systems. MITRE Corporation publishes a dictionary of publicly known security vulnerabilities called *common vulnerabilities and exposures (CVE)* (**cve.mitre.org**). *Exposure* can result when a cybercriminal exploits a vulnerability. See Microsoft's guide to threats and vulnerabilities at **technet.microsoft.com/en-us/library/dd159785.aspx**.

Attacking E-Mail

One of the easiest places to attack is a user's e-mail, since it travels via the unsecured Internet.

Attacking Smartphones and Wireless Systems

Since mobile devices are more vulnerable than wired systems, attacking smartphones and tablets is becoming popular due to the explosive growth of mobile computing. According to Fink (2014), hackers can steal your phone password wearing digital glasses.

The Vulnerability of RFID Chips

These chips are embedded everywhere, including in credit cards and U.S. passports. Cards are designed to be read from some distance (contactless), which also creates a vulnerability. When you carry a credit card in your wallet or pocket, anyone with an RFID reader that gets close enough to you may be able to read the RFID information on your card. For a presentation, watch the video "How to Hack RFID-Enabled Credit Cards for $8 (BBtv)" at **youtube.com/watch?v=vmajlKJlT3U**.

The Vulnerabilities in Business IT and EC Systems

Vulnerabilities can be of *technical nature* (e.g., unencrypted communications; insufficient use of security programs and firewalls) or they can possess *organizational weaknesses* (e.g., lack of user training and security awareness, and an insider who steals data and engages in inappropriate use of business computers).

Pirated Videos, Music, and Other Copyrighted Material

It is relatively easy to illegally download, copy, or distribute music, videos, books, software, and other intellectual property when it is on the Web. Online piracy occurs when illegal software is downloaded from a peer-to-peer network. An example is the pirating of live sports events. At stake are millions of dollars in lost revenue to sports leagues and media companies. These institutions are joining forces in lobbying for stronger copyright legislation and by filing lawsuits against violators. For facts and statistics about online piracy, see **articles.latimes.com/2013/sep/17/business/la-fi-ct-piracy-bandwith-20130917**.

EC Security Requirements

Good security is a key success factor in EC.

The following set of security requirements are used to assure success and to minimize EC transaction risks:

- **Authentication**. **Authentication** is a process used to verify (assure) the real identity of an EC entity, which could be an individual, software agent, computer program, or EC website. For electronic messages, authentication verifies that the sender/receiver of the message is who the person or organization claims to be. (The ability to detect the identity of a person/entity with whom you are doing business.)
- **Authorization**. **Authorization** is the provision of permission to an authenticated person to access systems and perform certain operations in those specific systems.
- **Auditing**. When a person or program accesses a website or queries a database, various pieces of information are recorded or logged into a file. The process of maintaining or revisiting the sequence of events during the transaction, when, and by whom, is known as *auditing*.
- **Availability**. Assuring that systems and information are available to the user when needed and that the site continues to function. Appropriate hardware, software, and procedures ensure availability.
- **Nonrepudiation**. Closely associated with authentication is **nonrepudiation**, which is the assurance that online customers or trading partners will not be able to falsely deny (repudiate) their purchase, transaction, sale, or other obligation. Nonrepudiation involves several assurances, including providing proof of delivery from the sender and proof of sender and recipient identities and the identity of the delivery company.

Authentication and nonrepudiation are potential defenses against phishing and identity theft. To protect and ensure trust in EC transactions, *digital signatures*, or *digital certificates*, are often added to validate the senders and the times of the transactions so buyers are not able to deny that they authorized a transaction or that it never occurred.

The Defense: Defenders, Strategy, and Methods

Everybody should be concerned about security. However, in a company, the information systems department and security vendors provide the technical side, while management provides the administrative aspects. Such activities are done via security and strategy procedures that users need to follow.

EC Defense Programs and Strategy

An **EC security strategy** consists of multiple layers of defense that includes several methods. This defense aims to deter, prevent, and detect unauthorized entry into an organization's computer and information systems. **Deterrent methods** are countermeasures that make criminals abandon their idea of attacking a specific system (e.g., a possible deterrent is a realistic expectation of being caught and punished). **Prevention measures** help stop unauthorized people from accessing the EC system (e.g., by using authentication devices and firewalls or by using *intrusion prevention* which is, according to TechTarget, "a preemptive approach to network security used to identify potential threats and respond to them swiftly"). **Detection measures** help find security breaches in computer systems. Usually this means to find out whether intruders are attempting (or have attempted) to break into the EC system, whether they were successful, whether they are still damaging the system, and what damage they may have done.

Information Assurance

Making sure that a customer is safe and secure while shopping online is a crucial part of improving the online buyer's experience. **Information assurance (IA)** is measures taken to protect information systems and their processes against all risks.

Possible Punishment

A part of the defense is to deter criminals by punishing them heavily if they are caught. Judges now are giving more and harsher punishments than a decade ago. For example, in March 2010, a federal judge sentenced 28-year-old TJX hacker Albert Gonzalez to 20 years in prison for his role in stealing millions of credit and debit card numbers and selling them. Such severe sentences send a powerful message to hackers and help the defense. Unfortunately, in many cases the punishment is too light to deter the cybercriminals.

Defense Methods and Technologies

There are hundreds of security defense methods, technologies, and vendors and these can be classified in different ways so their analyses and selection may be difficult. We introduce only some of them later in this chapter.

Recovery

In security battles, there are winners and losers in each security episode, but it is difficult to win the security war. There are many reasons for this. On the other hand, organizations and individuals usually recover after a security breach. Recovery is especially critical in cases of a disaster or a major attack, and it must be speedy. Organizations need to continue their business until the information systems are fully restored, and they need to restore them fast. This is accomplished by activating *business continuity and disaster recovery plans.*

Because of the complexity of EC and network security, comprehensive coverage requires an entire book, or even several books. Here we cover only selected topics. Those readers interested in a more comprehensive discussion should see the *Pearson/Prentice Hall Security Series* of security books and also conduct a Google search.

SECTION 10.2 REVIEW QUESTIONS

1. List five major EC security terms.
2. Describe the major unintentional security hazards.
3. List five examples of intentional EC security crimes.
4. Describe the security battleground, who participates, and how. What are the possible results?
5. Define hacker and cracker.
6. List all security requirements and define authentication and authorization requirements.
7. What is nonrepudiation?
8. Describe vulnerability and provide some examples of potential attacks.
9. Describe deterring, preventing, and detecting in EC security systems.
10. What is a security strategy, and why it is needed?

10.3 TECHNICAL MALWARE ATTACK METHODS: FROM VIRUSES TO DENIAL OF SERVICE

There are many ways criminals attack information systems and users. Here, we cover only major representative methods.

It is helpful to distinguish between two common types of attacks—*technical* (which we discuss in this section)

and *nontechnical* (or *organizational*), which we discuss in Section 10.4.

Technical and Nontechnical Attacks: An Overview

Software and systems knowledge are used to perpetrate *technical attacks.* Insufficient use of antivirus and personal firewalls and unencrypted communication are the major reasons for technical vulnerabilities.

Organizational attacks are those where the security of a network or the computer is compromised (e.g., lack of proper security awareness training). We consider *financial fraud*, *spam*, *social engineering*, which includes *phishing,* and other fraud methods as nontechnical. The goals of social engineering are to gain unauthorized access to systems or information by persuading unsuspecting people to disclose personal information that is used by criminals to conduct fraud and other crimes. The major nontechnical methods are described in Section 10.4.

The Major Technical Attack Methods

Hackers often use several software tools (which unfortunately are readily and freely available over the Internet together with tutorials on how to use them) in order to learn about vulnerabilities as well as attack procedures. The major technical attack methods are illustrated in Figure 10.3 and are briefly described next. Note that there are many other methods such as "Mass SQL Injection" attacks that can be very damaging.

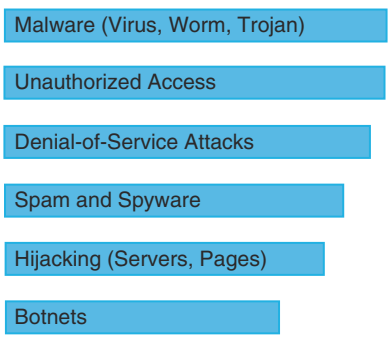

Figure 10.3 The major technical security attack methods (in descending order of importance)

Malware (Malicious Code): Viruses, Worms, and Trojan Horses

Malware (or *malicious software*) is software code that, when spread, is designed to infect, alter, damage, delete, or replace data or an information system without the owner's knowledge or consent. Malware is a comprehensive term that describes any malicious code or software (e.g., a virus is a "subset" of malware). Malware attacks are the most frequent security breaches. Computer systems infected by malware take orders from the criminals and do things such as send spam or steal the user's stored passwords.

Malware includes computer viruses, worms, botnets, Trojan horses, phishing tools, spyware tools, and other malicious and unwanted software. According to Harrison and Pagliery (2015), nearly one million new malware threats are released every day.

Viruses

A **virus** is programmed software inserted by criminals into a computer to damage the system; running the infected host program activates the virus. A virus has two basic capabilities. First, it has a mechanism by which it spreads. Second, it can carry out damaging activities once it is activated. Sometimes a particular event triggers the virus's execution. For instance, Michelangelo's birth date triggered the infamous Michelangelo virus. On April 1, 2009, the entire world was waiting for a virus named Conficker. In 2014, a virus by the name of "Pony" infected hundreds of thousands of computers to steal bitcoins and other currencies (see Finkle 2014). Finally, Finkle reports that a virus named Agent BTZ attacked over 400,000 computers in Russia, the United States, and Europe. This big attack was not successful, but viruses continue to spread all the time. For how computer viruses work, see **computer.howstuffworks.com/virus.htm**.

Web-based malware is very popular today. Virus attacks are the most frequent computer attacks. The process of a virus attack is illustrated in Figure 10.4.

Viruses are dangerous, especially for small companies. In 2013, the CryptoLocker virus was used to blackmail companies after seizing their computer files and threatening to erase their content.

For tutorials on, and information about, viruses, see Scott (2014) and Dawn Ontario (n.d.). For the scariest viruses of 2001–2015, see Van Allen (2016). Note that in Microsoft tutorials, you will learn how to identify a computer virus, how to know if you are infected, and how to protect yourself against viruses (see the Microsoft Safety and Security Center at **microsoft.com/security/default.aspx**).

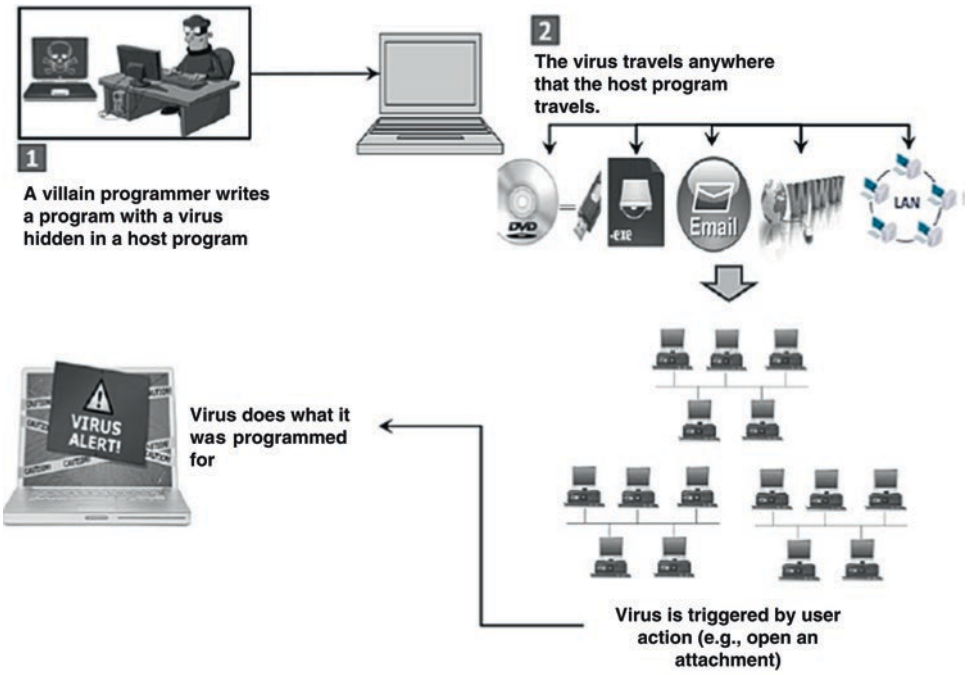

Figure 10.4 How a computer virus can spread

Worms

Unlike a virus, a **worm** can replicate itself automatically (as a "standalone"—without any host or human activation). Worms use networks to propagate and infect a computer or handheld device and can even spread via instant messages or e-mail. In addition, unlike viruses that generally are confined within a target computer, a worm can infect many devices in a network as well as degrade the network's performance. According to Cisco, "worms either exploit a vulnerability on the target system or use some kind of social engineering to trick users into executing them." Because worms spread much more rapidly than viruses, they may be more dangerous.

Macro Viruses and Microworms

A **macro virus (macro worm)** is a malware code that is attached to a data file rather than to an executable program (e.g., a Word file). According to Microsoft, macro viruses can attack Word files as well as any other application that uses a programming language. When the document is opened or closed, the virus can spread to other documents on the computer's system. For information about Word macro viruses, see Microsoft Support at **support.microsoft.com/kb/187243/en**. Computer programs that are very similar to viruses are worms and Trojan horses.

Trojan Horse

A **Trojan horse** is a program that seems to be harmless or even looks useful but actually contains a hidden malicious code. Users are tricked into executing an infected file, where it attacks the host, anywhere from inserting pop-up windows to damaging the host by deleting files, spreading malware, and so forth. The name is derived from the Trojan horse in Greek mythology. Legend has it that during the Trojan War, the city of Troy was presented with a large wooden horse as a gift to the goddess Athena. The Trojans hauled the horse inside the city gates. During the night, Greek soldiers who were hiding in the hollow horse opened the gates of Troy and let in the Greek army. The army was able to take the city and win the war.

Trojans spread only by user interaction (e.g., such as opening an under the guise of an e-mail allegedly sent by Verizon), and there are many variants of Trojans (e.g., Zeus, W32).

Example 1: Trojan-Phisher-Rebery

In 2006, a variant of a Trojan horse program named *Trojan-Phisher-Rebery* was used to steal tens of thousands of identities from people in 125 different countries. The Rebery malicious software is an example of a **banking Trojan**, which is programmed to create damage when users visit certain online banking or e-commerce sites. For an infographic describing the state of financial Trojans see Symantec (2014).

Example 2: The DDOS Attacks on WordPress

In March 2014, hackers used a botnet to attack more than 162,000 WordPress sites. Given that WordPress powers about 17% of the world's blogging websites, any attack can be devastating.

Some Security Bugs: Heartbleed and Crytolocker

Two dangerous computer bugs were discovered in 2013 and 2014.

Heartbleed

According to Russell (2014) "Heartbleed is a flaw in OpenSSL, the open-source encryption standard used by the majority of websites that need to transmit the data that users want to keep secure. It basically gives you a secure line when you're sending an e-mail or chatting on IM."

The potential damage may be large. In theory, any data kept in the active memory can be pulled out by the bug. Hackers can even steal encryption keys that enable them to read encrypted messages. About 650 million websites may be affected. The only advice provided by experts is to change the online passwords.

Cryptolocker

Discovered in September 2013, Cryptolocker is a ransomware Trojan bug. This malware can come from many sources including e-mail attachments; can encrypt files on your computer, so that you cannot read these files. The malware owner then offers to decrypt the data in exchange for a bitcoin or similar untraceable payment system.

For information on what to do if you are being blackmailed and how to protect yourself see Cannell (2013).

Denial of Service

According to Incapsula, Inc., a **denial-of-service (DoS) attack** is "a malicious attempt to make a server or network resource unavailable to users, usually by temporarily interrupting or suspending the services of a host connected to the Internet." This causes the system to crash or become unable to respond in time, so the site becomes unavailable. One of the most popular types of DoS attacks occurs when a hacker "floods" the system by overloading the system with "useless traffic" so a user is prevented from accessing their e-mail, websites, etc.

Note: A DoS attack is a malicious attack caused by one computer and one Internet connection as opposed to a DDos attack, which involves many devices and multiple Internet connections (to be discussed later). An attacker can also use spam e-mail messages to launch a similar attack on your e-mail account. A common method of launching DoS attacks is by using *zombie (hijacked) computers*, which enable the hijacked computer to be controlled remotely by a hacker without the knowledge of the computer's owner. The zombie computer (also known as a "botnet") launches an overwhelming number of requests toward an attacked website, creating the DoS. For example, DoS attackers target social networks, especially Facebook and Twitter. An example of such an attack is described in Online File W10.1.

DoS attacks can be difficult to stop. Fortunately, the security community has developed tools for combating them. For comprehensive coverage, see **us-cert.gov/ncas/tips/ST04-015**.

Note: In 2014, a hacking group called Lizard Stresser offered to take down any website by employing DoS, for a fee of $3 (see Goldman 2014b).

Botnets

According to the Microsoft Safety and Security Center, a **botnet** (also known as "zombie army") is malicious software that criminals distribute to infect a large number of hijacked Internet connected computers controlled by hackers. These infected computers then form a "botnet," causing the personal computer to "perform unauthorized attacks over the Internet" without the user's knowledge. Unauthorized tasks include sending spam and e-mail messages, attacking computers and servers, and committing other kinds of fraud, causing the user's computer to slow down (**microsoft.com/security/resources/botnet-whatis.aspx**).

Each attacking computer is considered *computer robot.* A botnet made up of 75,000 systems infected, in 2010, with Zeus Trojan contaminated computers. Botnets are used in scams, spams, frauds, or just to damage systems (as in the hospital case described in Online File W10.1). Botnets appear in different forms and can include worms or viruses. Famous botnets include Zeus, Srizbi, Pushdo/Cutwail, Torpig, and Conficker.

Example: Rustock

Rustock was a botnet made up of about one million hijacked PCs, which evaded discovery for years. The botnet, which sent out up to 30 billion spam messages per day, placed "booby trapped" advertisements and links on websites visited by the victims. The spammers camouflaged the updates to PCs to look like comments in discussion boards, which made them hard to find by security software. Microsoft was one of the companies that helped shut down Rustock. In 2013, Microsoft and the FBI "disrupted" over 1000 botnets used to steal banking information and identities. Both Microsoft and the FBI had been trying to take down the malware "Citadel," which affected millions of people located in more than 90 countries. For an analysis of malicious botnet attacks, see Katz (2014).

Home Appliance "Botnet"

The Internet of Things (IoT) can also be hacked. Since participating home appliances have a connection to the Internet, they can become computers that can be hacked and controlled. The first home attack, which involved television sets

and at least one refrigerator, occurred between December 2013 and January 2014, and was referred to as "the first home appliance 'botnet' and the first cyberattack from the Internet of Things." Hackers broke into more than 100,000 home appliances and used them to send over 750,000 malicious e-mails to enterprises and individuals worldwide (see Bort 2014).

Malvertising

According to Techopedia, *malvertising* is "a malicious form of Internet advertising used to spread malware." Malvertising is accomplished by hiding malicious code within relatively safe online advertisements (see **techopedia.com/definition/4016/malvertising**).

Note that hackers are targeting ads at accelerating rates. For example, in 2013, Google disabled ads from over 400,000 sites that were hiding malware (see Yadron 2014). A final word: If you get an e-mail that congratulates you on winning a large amount of money and asks you to "Please view the attachment," don't!

SECTION 10.3 REVIEW QUESTIONS

1. Describe the difference between a nontechnical and a technical cyberattack.
2. What are the major forms of malicious code?
3. What factors account for the increase in malicious code?
4. Define a virus and explain how it works.
5. Define worm and Trojan horse.
6. Define DoS. How are DoS attacks perpetrated?
7. Define server.
8. Describe botnet attacks.

10.4 NONTECHNICAL METHODS: FROM PHISHING TO SPAM AND FRAUD

As discussed in Section 10.1, there has been a shift to profit-related Internet crimes. These crimes are conducted with the help of both technical methods, such as malicious code that can access confidential information that may be used to steal money from your online bank account, and nontechnical methods, such as social engineering.

Social Engineering and Fraud

Social engineering refers to a collection of methods where criminals use human psychology to persuade or manipulate people into revealing their confidential information, or their employment information so they can collect information for illegal activities. The hacker may also attempt to get access to the user's computer in order to install malicious software that will give hackers control over the person's computer. The major social engineering attacks are *phishing* (several submethods; typically, a phisher sends an e-mail that appears to come from a legitimate source), *pretexting* (e.g., an e-mail allegedly sent from a friend asking for money), and *diversion theft* (when a social engineer convinces a courier company that he is the real recipient of the package but it should be "rerouted" to another address, whereupon the social engineer accepts the package). Once information is obtained from a victim (e.g., via phishing), it is used for committing crimes, mostly for financial gain, as shown in Figure 10.5. The growth rate of unpatched vulnerabilities and the volume of e-mail scam/phishing activities are increasing rapidly.

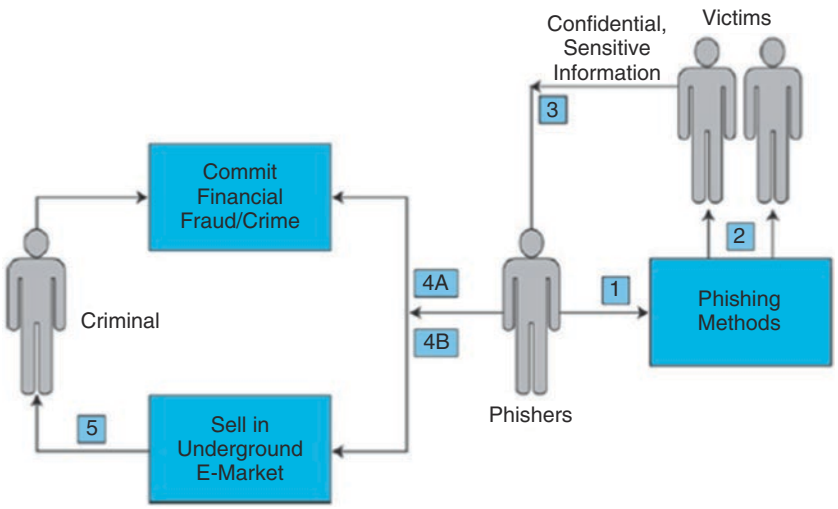

Figure 10.5 Social engineering: from phishing to financial fraud and crime

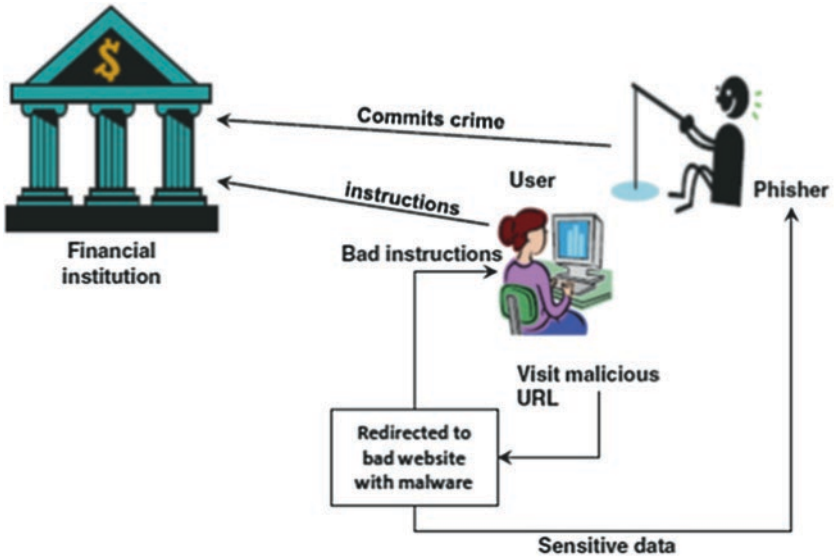

Figure 10.6 How phishing is accomplished

As you can see in the figure, phishers (or other criminals) obtain confidential information by using methods ranging from social engineering to physical theft. The stolen information (e.g., credit card numbers, users' identity) is used by the thieves to commit fraud for financial gain, or it is sold in the underground Internet marketplace to another set of criminals, who then use the information to conduct financial crimes themselves. For details see Wollen (2016). In this section, we will describe how phishing, which is a subset of social engineering, is used.

Social Phishing

In the field of computer security, *phishing* is a fraudulent process of acquiring confidential information, such as credit card or banking details, from unsuspecting computer users. A phisher sends an e-mail, IM, comment, or text message that appears to come from a legitimate, well-known, popular company, bank, school, or public institution. The user is instructed to enter a corrupted website, where he or she may be tricked into submitting confidential information (e.g., being asked to "update" information). Sometimes phishers install malware to facilitate the extraction of information. For an interesting novel that "cries out an alarm about cyber security," read "*Marlins Cry A Phishing Story*" by Swann (2012). The process of Web-based phishing is illustrated in Figure 10.6.

For a discussion of what phishing is and how to recognize it, see **ehow.com/how_7350964_recognize-phishing.html**. Also see **phishing.org/phishing-techniques** for how phishing works. EMC/RSA (2014) provides a comprehensive coverage of phishing with statistics and forecasts. Casti (2014a) describes a phishing scam on Netflix where users were tricked into contacting phony customer service representatives and handing over personal account data. Scammers have now targeted other companies, such as AT&T and Comcast, by drawing users to fake websites via phony sponsored ads (Casti 2014b). For 2015 phishing attacks, see Lemos (2016). Also see Forrest (2016) for why phishing gets more dangerous.

Selling stolen information, like selling any stolen goods, can be profitable and unstoppable. Unfortunately, potential e-commerce customers list "the potential risk of fraud," and "the mistrust of online merchants that you do not know" as their primary reasons for not shopping online.

Example: The Target Security Breach

The Target Corp. 2013 security breach, where millions of customers had their debit and credit card data stolen, started as a phishing attack (see Schwartz 2014). Hackers used the credentials of an employee of one of Target's vendors to gain access to Target's security system and install malware for the purpose of accessing the data of every card used. A Target employee would swipe the customer's card and the installed malware would capture the shopper's credit card number. Once the hackers gained access to the data, they were able to steal 40 million credit and debit card numbers—and 70 million addresses, phone numbers, and other pieces of personal information. To see an infographic of how the hackers broke in, and how Target could have prevented the hack, see Smith (2014).

Fraud and Scams on the Internet

Phishing is the first step that leads to many fraud schemes. The EC environment where buyers and sellers cannot see each other facilitates fraud. There are many types of fraud on the

Internet (see **fbi.gov/scams-safety/fraud/internet_fraud**). Fraud is a problem for online retailers and customers alike. Fortunately, even though actual losses per incident increase, there are fewer incidents; and thus the total monetary damage may be declining. Visit **dmoz.org/Society/Issues/Fraud/Internet** for a comprehensive collection of fraud resources. For a discussion, see Section 10.7.

Examples of Typical Online Fraud Attacks

The following are some characteristic fraud attacks perpetrated on the Internet.

- When one of the authors of this book advertised online that he had a house to rent, several "doctors" and "nurses" pretending to be from the United Kingdom and South America applied. They agreed to pay a premium price for a short-term lease and said they would pay with a cashier's check. They asked if the author would accept a check from $6000 to $10,000 and send them back the balance of $4000 to $8000. When advised that this would be fine, but that the difference would be returned only after their check had cleared, none of the would-be renters followed up.
- Extortion rings in the United Kingdom and Russia have extorted hundreds of thousands of dollars from online sports betting websites. Any site refusing to pay "protection fees" has been threatened with DoS attacks.

For a video titled "How Hackers Can Invade Your Home" (2:26 min), see **money.cnn.com/video/technology/2013/08/14/t-hack-my-baby-monitor-and-house.cnnmoney**. For a comprehensive discussion of fraud, see CyberSource (2013).

For a discussion on social engineering, phishing, and other methods of fraudulently obtaining confidential information online, see Pontrioli (2013).

Types of Scams

The following are some representative types of scams (per Spamlaws see **spamlaws.com/scams.html**): Literary scams, jury duty scams, banking scams, e-mail scams, lottery scams, Nigerian scams (or "419" fraud), credit cards scams (several types), work at/from home scams, IRS e-mail scams, and free vacation scams. Many more can be found at **fbi.gov/scams-safety/fraud/internet_fraud**.

E-Mail Scams

E-mail scams are the most popular type of scam since they are so easy to commit. Dog Breed Info Center (**dogbreedinfo.com**; n.d.) posts common examples at (**dogbreedinfo.com/internetfraud/scamemailexamples.htm**). The examples are both educational and entertaining. The most dangerous are e-mail scams that look like they come from well-known organizations (banks, telecommunication companies) that tell you that you must provide information in order to keep your account active. An example of an e-mail purportedly sent by Yahoo! is provided below.

Yahoo Account

Verification Alert!!! (KMM69467VL55834KM)

Dear Valued Member,
Due to the congestion in all Yahoo Accounts, Yahoo would be shutting down all unused Accounts. You will have to confirm your E-mail by filling out your Login Information below after clicking the reply button, or your account will be suspended within 24 h for security reasons.

Yahoo! ID Card

Name:.....

Yahoo! ID:.....

Yahoo! Mail Address:.....

Password:.....

Member Information

Gender:.....

Birth Date:.....

Occupation:.....

Country:.....

If you are a Yahoo! Account Premium subscriber, we will refund the unused portion of your Premium subscription. The refund will appear as a credit via the billing method we have on file for you. So please make sure that your billing information is correct and up-to-date. For more information, please visit **payments.mail.yahoo.com**.

After following the instruction on this sheet your account will not be interrupted and will continue as normal.

We appreciate your being a Yahoo! Account user.

Sincerely,

Yahoo! Customer Support

Any e-mail you receive asking for personal details is most likely a scam or phishing attempt since a legitimate organization will already have all your personal information. For tips from Yahoo! on how to protect yourself online, see Yahoo! Safety (**safety.yahoo.com**).

Top Ten Attacks and Remedies

IT security site Secpoint.com provides a list of the top ten security-related attacks on the following topics: Top viruses, spyware, spam, worms, phishing, hacker attacks, and hackers and social engineering tactics. In addition, the site provides related pages on IT security resources such as the top ten hackers; top ten security tips and tools; pages relating to Anti phishing, Anti DoS, Anti spam, and more. For SecPoint IT resources for top ten spam attacks, see **secpoint.com/Top-10-Spam-Attacks.html**.

Identity Theft and Identify Fraud

Identity theft, according to the United States Department of Justice website, is a crime. It refers to wrongfully obtaining and using the identity of another person in some way to commit crimes that involve fraud or deception (e.g., for economic gain). Victims can suffer serious damages. In many countries, it is a crime to assume another person's identity. According to the U.S. Federal Trade Commission (**ftc.gov**), identity theft is one of the major concerns of EC shoppers. According to the FTC statistics, identity theft affects over 12 million Americans each year, for a loss of over $55 billion, and is growing about 20% annually. For an entertaining comedy, see the 2013 movie "Identity Thief."

Example

According to Constantin (2016), identity thieves stole 100,000 social security numbers and other personal data from the U.S. IRS files.

Identity Fraud

Identity fraud refers to assuming the identity of another person or creating a fictitious person and then unlawfully using that identity to commit a crime. Typical activities include:

- Opening a credit card account in the victim's name
- Making a purchase using a false identity (e.g., using another's identity to buy goods)
- Business identity theft is using another's business name to obtain credit or to get into a partnership
- Posing as another to commit a crime
- Conducting money laundering (e.g., organized crime) using a fake identity

For information and protection, see **idtheftcenter.org** and **fdic.gov/consumers/theft**.

Cyber Bank Robberies

Cyberattacks can happen to individuals and organizations, including banks.

Example: Secureworks.com

Secureworks.com uncovered the following check fraud operations: Russian cybercriminals used "money mules" (people who thought they were signing up for a legitimate job), 2000 computers, and sophisticated hacking methods to steal archived check images from five companies, and wire the collected money overseas.

Next, the scammers printed counterfeit checks, which the money mules deposited in their own accounts. Then, the mules were ordered to wire (transfer) the money to a bank in Russia. The "mules," as usual, were innocent people who were hired and paid to do the transfer. Some of the mules became suspicious and reported the scam to the authorities.

Spam Attacks

E-mail spam, also known as *junk e-mail* or just *spam*, occurs when almost identical messages are e-mailed to many recipients in bulk (sometimes millions of unsolicited e-mails). According to Symantec, in April 2009, over 90% of messages on corporate networks were e-mail spam. Nearly 58% of spam came from botnets, the worst called *Dotnet*. The situation is better today (2016) due to improved filtering of junk mail. Spammers can purchase millions of e-mail addresses, and then format the addresses, cut and paste the messages and press "send." Mass e-mail software that generates, sends, and automates spam e-mail sending is called *Ratware*. The messages can be advertisements (to buy a product), fraud-based, or just annoying viruses. For current statistics on spam, see **securelist.com/statistics**. Securelist is a comprehensive site that also provides descriptions of spam and viruses, a glossary, and information on threats. More than 130 billion spam e-mails are sent each day as of 2013, but this growth rate has stabilized. Note that approximately 80% of all spam is sent by fewer than 200 spammers. These spammers are using spyware and other tools mostly for sending unsolicited advertising. The spammers are getting more and more sophisticated (e.g., see Kaiser 2014).

Typical Examples of Spamming

Each month Symantec provides a report titled "The State of Spam: A Monthly Report." The report provides examples of

current popular scams, categories of spam, originating countries, volume, and much more.

Spyware

Spyware is tracking software that is installed by criminals, without the user's consent, in order to gather information about the user and direct it to advertisers or other third parties. Once installed the spyware program tracks and records the user's movements on the Internet. Spyware may contain malicious code redirecting Web browser activity. Spyware can also slow surfing speeds and damage a program's functionality. Spyware usually is installed when you download freeware or shareware. For news and a video titled "Ethiopian Government Spying on U.S.-Based Journalists" (2:23 min) of how some regimes use spyware against journalists, see Timberg (2014).

Social Networking Makes Social Engineering Easy

Social networking sites are a vulnerable and fertile area for hackers and con artists to gain a user's trust, according to a study by Danish-owned IT security company CSIS.

How Hackers Are Attacking Social Networks

Hackers are exploiting the trusted environment of social networks that contain personal information (especially Facebook) to launch different social engineering attacks. Unfortunately, many social network sites have poor track records for security controls. There is a growing trend to use social networking sites as platforms for stealing users' personal data.

Examples

Here are some examples of security problems in social networking:

- Users may unknowingly insert malicious code into their profile page, or even their list of friends.
- Most anti-spam solutions cannot differentiate between real and criminal requests to connect to a network. This enables criminals to obtain personal information about the members in a network.
- Facebook and other popular social networking sites offer free, useful, attractive applications. These applications may have been built by developers who used weak security.
- Scammers may create a fake profile and use it in a phishing scam.

Spam in Social Networks and in the Web 2.0 Environment

Social networks attract spammers due to the large number of potential recipients and the less secure Internet and social network platforms. Spammers like to attack Facebook in particular. Another problem area is blog spam.

Automated Blog Spam

Bloggers are spammed by automatically generated commercials (some real and some fake) for items ranging from herbal Viagra to gambling vendors. Blog writers can use tools to ensure that a human, and not an automated system, posts comments on their blogs.

Search Engine Spam and Splogs

Search engine spam is technology that enables the creation of pages called **spam sites** that trick search engines into offering biased search results so that the ranking of certain pages is inflated. A similar tactic involves the use of **splogs** (short for *spam blog sites*), which are blogs created by spammers solely for advertising. The spammer creates many splogs and links them to the sites of those that pay him (her) to increase certain page ranking. As you may recall from Chapter 9, companies are looking for search engine optimization (SEO), which is conducted unethically by the above techniques.

Examples

Some examples of spam attacks in social networks (social spam) are:

- Instant messaging in social networks is frequently vulnerable to spam attacks.
- Cluley (2014) describes how Twitter users are attacked by phishing attacks and spammers.

Data Breach (Leak)

A **data breach** (also known as *data leak* or *data loss*) is a security incident in which data are obtained illegally and then published or processed. There are many purposes for data breaches. For instance, one person in the U.S. military used a USB to download classified information and then posted the stolen information on the Internet. For drivers of data breaches and how to protect yourself, see Goldman (2014a). For the most frightening data breaches, see TechRepublic Staff (2015).

The discussion so far has concentrated on attacks. Defense mechanisms, including those related to spam and other cybercrimes, are provided in Section 10.6. First, let us examine what is involved in assuring information security.

SECTION 10.4 REVIEW QUESTIONS

1. Define phishing.
2. Describe the relationship of phishing to financial fraud.
3. Briefly describe some phishing tactics.
4. Describe spam and its methods.
5. Define splogs and explain how sploggers make money.
6. Why and how are social networks being attacked?
7. Describe data breaches (data leaks).

10.5 THE INFORMATION ASSURANCE MODEL AND DEFENSE STRATEGY

The *Information Assurance (IA) model*, known as the **CIA security triad**, is a point of reference used to identify problem areas and evaluate the information security of an organization. The use of the model includes three necessary attributes: *confidentiality*, *integrity*, and *availability*. This model is described next. (For a discussion, see **whatis.techtarget.com/definition/Confidentiality-integrity-and-availability-CIA**.)

Note: The assurance model can be adapted to several EC applications. For example, securing the supply chain is critical.

Confidentiality, Integrity, and Availability

The success and security of EC can be measured by these attributes:

1. **Confidentiality** is the assurance of data secrecy and privacy. Namely, the data is disclosed only to authorized people. Confidentiality is achieved by using several methods, such as encryption and passwords.
2. **Integrity** is the assurance that data are accurate and that they cannot be altered. The integrity attribute needs to be able to detect and prevent the unauthorized creation, modification, or deletion of data or messages in transit.
3. **Availability** is the assurance that access to any relevant data, information websites, or other EC services and their use is available in real time, whenever and wherever needed. The information must be reliable.

Authentication, Authorization, and Nonrepudiation

Three concepts are related to the IA model: *authentication, authorization*, and *nonrepudiation.* These important concepts are:

- *Authentication* is a security measure making sure that data information, ECD participants and transactions, and all other EC related objects are valid. *Authentication* requires verification. For example, a person can be authenticated by something he knows (e.g., a password), something he possesses (e.g., an entry token), or something unique to that person (e.g., a fingerprint).
- *Authorization* requires comparing information provided by a person or a program during a login with stored information associated with the access requested.
- *Nonrepudiation* is the concept of ensuring that a party in an EC transaction cannot repudiate (or refute) the validity of an EC contract and that she or he will fulfill their obligation in the transactions. According to the National Information Systems Security (INFOSEC)'s glossary, nonrepudiation is the "[a]ssurance the sender of data is provided with proof of delivery and the recipient is provided with proof of the sender's identity, so that neither can later deny having processed the data."

Note: See the list of Key Terms in Section 10.2. Some sources list more concepts (e.g., Techopedia).

To assure these attributes, e-commerce applies technologies such as encryption, digital signature, and certification. For example, the use of a *digital signature* makes it difficult for people to deny their involvement in an EC transaction.

In e-commerce, new or improved methods to ensure the confidentiality of credit card numbers, the integrity of transaction-related messages, the authentication of buyers and sellers, and nonrepudiation of transactions need to be constantly updated as older methods become obsolete.

E-Commerce Security Strategy

EC security needs to address the IA model and its components. In Figure 10.7, an EC security framework that defines the high-

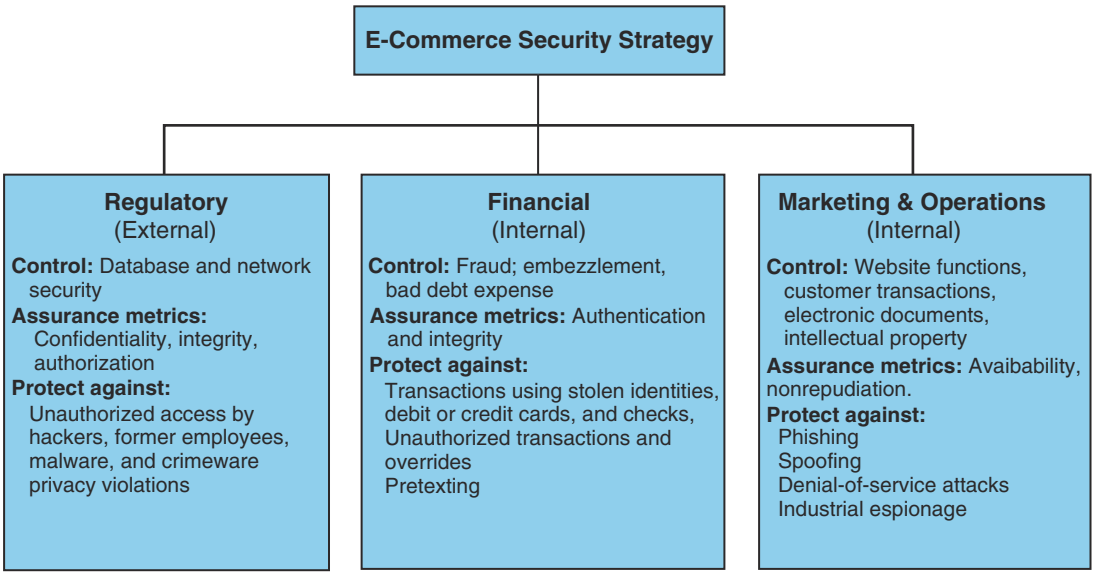

Figure 10.7 E-commerce security strategy framework

level categories of assurance and their controls is presented. The major categories are regulatory, financial, and marketing operations. Only the key areas are listed in the figure.

The Defense Side EC Systems

We organize the defense into eight categories:

1. **Defending access to computing systems, data flow, and EC transactions**. This includes three topics: Access control (including biometrics), encryption of contents, and public key infrastructure (PKI).

   This line of defense provides comprehensive protection when applied together. Intruders that circumvent the access control will face encrypted material even if they pass a firewall.
2. **Defending EC networks**. This includes mainly protection by firewalls. The firewall isolates the corporate network and computing devices from the Internet that are poorly secured. To make the Internet more secure, we can use virtual private networks. In addition to these measures, it is wise to use intrusion-detecting systems. A protected network means securing the incoming e-mail, which is usually unencrypted. It is also necessary to protect against viruses and other malware that are transmitted via the networks.
3. **General, administrative, and application controls**. These are a variety of safeguards that are intended to protect computing assets by establishing guidelines, checking procedures, and so forth.
4. **Protection against social engineering and fraud**. Several defense methods are used against spam, phishing, and spyware.
5. **Disaster preparation, business continuity, and risk management**. These topics are managerial issues that are supported by software.
6. **Implementing enterprisewide security programs**. To deploy the above mentioned defense methods, one needs to use appropriate implementation strategy.
7. **Conduct a vulnerability assessment and a penetration test**. (See the following text.)
8. **Back up the data**.

For a comprehensive coverage of all aspects of information protection, see Harwood (2015).

To implement the above defense, first conduct some assessment and then plan and execute. Two possible activities are *vulnerability assessments* and *penetration tests*.

Assessing Vulnerabilities and Security Needs

A key task in security strategy is to find the weaknesses and strengths of the existing security strategies and solutions. This is part of a risk assessment and can be accomplished in different ways. Here are two representative suggestions:

1. Conduct a *vulnerability assessment* of your EC systems. A **vulnerability assessment** is a process of identifying and evaluating problem areas that are vulnerable to attack on a computerized system. The EC system includes online ordering, communication networks, payment gates, product database, fraud protection, and so forth. The most critical vulnerabilities are those that can interrupt or shut down the business. For example, a DoS can prevent order taking; a virus attack can prevent communication. The assessment will determine the need for, and priority of, the defense mechanisms. For an overview of vulnerability assessment including the process, see **searchmidmarketsecurity.techtarget.com/definition/vulnerability-analysis**.
2. Conduct *penetration (pen) tests* (possibly implemented by hiring ex-hackers) to find the vulnerabilities and security weaknesses of a system. These tests are designed to simulate outside (external) attacks. This is also called "black-box" testing. In contrast, software development companies conduct intensive "white-hat" testing, which involves a careful inspection of the system—both hardware and software. Other types of pen testing include targeted texting, blind testing, and double blind testing.

For more information, see **searchsoftwarequality.techtarget.com/definition/penetration-testing**.

Penetration Test

A **penetration test (pen test)** is a method of assessing the vulnerability of a computer system. It can be done manually, by allowing experts to act as hackers to simulate malicious attacks. The process checks the weak (vulnerable) points that an attacker may find and exploit. Any weakness that is discovered is presented to management, together with the potential impact and a proposed solution. A pen test can be one step in a comprehensive security audit.

Several methods can be used to execute pen tests (e.g., automated process). In addition, many software tools are available for this purpose. For a review and a tutorial, see **pen-tests.com** and **coresecurity.com/penetration-testing-overview**. For more on penetration tests, see Maxwell (2016).

SECTION 10.5 REVIEW QUESTIONS

1. What is Information Assurance? List its major components.
2. Define confidentiality, integrity, and availability.
3. Define authentication, authorization, and nonrepudiation.
4. List the objectives of EC strategy.
5. List the eight categories of defense in EC systems.
6. Describe vulnerability assessment.
7. What is a penetration test?

10.6 DEFENDING INFORMATION SYSTEMS AND E-COMMERCE

Defending information systems regardless of their nature are similar and are described in many books (e.g., by Andress 2014).

We provide only highlights of this security, dividing it into three categories: (1) Access control, encryption, and PKI, (2) Security in e-commerce networks, and (3) General controls, spam, pop ups, and social engineering. In Section 10.7 we describe fraud protection.

A comprehensive coverage of cybersecurity threats and defense is provided by Scott in several volumes titled *Cybersecurity 101*. Volume 1 (Scott 2016a) covers mostly nontechnical areas, while Volume 2 (Scott 2016b) covers mostly technical areas. A comprehensive book regarding defense against attacks on the Web is provided by Harwood (2015).

The Defense I: Access Control, Encryption, and PKI

In this section, we describe the following topics: Access control methods, biometric systems, encryption, and PKI encryption. For an overview of the defense, see Cloud (2015).

Access Control

Access control determines who (person, program, or machine) can legitimately use the organization's computing resources (which resources, when, and how).

Authorization and Authentication

Access control involves *authorization* (having the right to access) and *authentication*, which is also called *user identification* (user ID), i.e., proving that the user is who he or she claims to be. Each user has a distinctive identification that differentiates it from other users. Typically, user identification is used together with a password.

Authentication

After a user has been *identified*, the user must be *authenticated. Authentication* is the process of verifying the user's identity and access rights. Verification of the user's identity usually is based on one or more characteristics that distinguish one individual from another.

Biometric Systems

A **biometric authentication** is a technology that measures and analyzes the identity of people based on measurable biological or behavioral characteristics or physiological signals.

Biometric systems can *identify* a previously registered person by searching through a database for a possible *match* based on the person's observed physical, biological, or behavioral traits, or the system can *verify* a person's identity by matching an individual's measured biometric traits against a previously stored version.

Examples of biometric features include fingerprints, facial recognition, DNA, palm print, hand geometry, iris recognition, and even odor/scent. Behavioral traits include voice ID, typing rhythm (keystroke dynamics), and signature verification. A brief description of some of these follows:

- **Thumbprint or fingerprint**. A thumb- or fingerprint (finger scan) of users requesting access is matched against a template containing the fingerprints of authorized people (e.g., used by Apple Pay).
- **Retinal scan**. A match is sought between the patterns of the blood vessels in the retina of the access seekers against the retinal images of authorized people stored in a source database.
- **Voice ID (voice authentication)**. A match is sought between the voice pattern of the access seekers and the stored voice patterns of the authorized people.
- **Facial recognition**. Computer software that views an image or video of a person and compares it to an image stored in a database (used by Amazon.com and Alibaba).
- **Signature recognition**. Signatures of access seekers are matched against stored authentic signatures.

Note that Alibaba is using facial recognition for online payments. You scan your face in front of the camera in your smartphone (see Kan 2015 for details). Amazon is using a similar system (Hinckley 2016).

Other biometrics types are thermal infrared face recognition, hand geometry, and hand veins. For details, comparisons with regard to human characteristics, and cost–benefit analyses, see **findbiometrics.com/solutions**.

Encryption and the One-Key (Symmetric) System

Encryption is the process of encoding data into a form (called a *ciphertext*) that will be difficult, expensive, or time-consuming for an unauthorized person to understand. All encryption methods have five basic components: *plaintext, ciphertext*, an *encryption algorithm*, the *key*, and *key space*. **Plaintext** is a human-readable text or message. **Ciphertext** is an encrypted plaintext. The **encryption algorithm** is the set of procedures or mathematical algorithms used to encrypt or decrypt a message. Typically, the algorithm is not the secret piece of the encryption process. The **key (key value)** is the secret piece used with the algorithm to encrypt (or decrypt) the message. For how encryption works, see **computer.howstuffworks.com/encryption.htm**.

The major benefits of encryption are as follows:

- Allows users to carry data on their laptops, mobile devices, and storage devices (e.g., USB flash drives).
- Protects backup media while people and data are offsite.
- Allows for highly secure virtual private networks (VPNs; see Section 10.7).
- Enforces policies regarding who is authorized to handle specific corporate data.
- Ensures compliance with privacy laws and government regulations, and reduces the risk of lawsuits.
- Protects the organization's reputation and secrets.

Encryption has two basic options: the *symmetric system*, with one secret key, and the *asymmetric system*, with two keys.

Symmetric (Private) Key Encryption

In a **symmetric (private) key encryption**, the same key is used to encrypt and decrypt the plaintext (see Figure 10.8). The sender and receiver of the text must share the same key without revealing it to anyone else—making it a so-called *private* system.

A strong key is only one requirement. Transferring the key between individuals and organizations may make it insecure. Therefore, in EC, a PKI system is used.

Public Key Infrastructure

A **public key infrastructure (PKI)** is a comprehensive framework for securing data flow and information exchange that overcomes some of the shortcomings of the one-key system. For example, the symmetric one-key encryption requires the writer of a message to reveal the key to the message's recipient. A person that is sending a message (e.g., vendor) may need to distribute the key to thousands of recipients (e.g., buyers), and then the key probably would not remain secret. The PKI solution is using two keys, public and private, as well as additional features that create a highly secured system. In addition to the keys, PKI includes digital signatures, hash digests (function), and digital certificates.

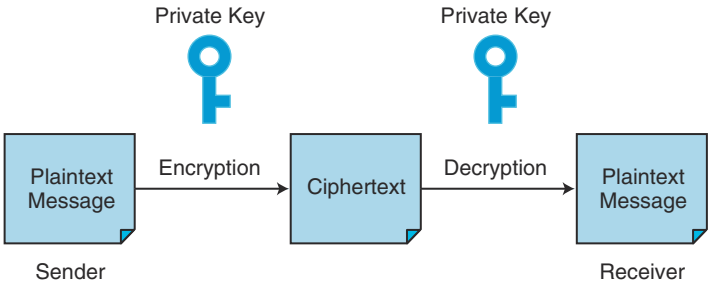

Figure 10.8 Symmetric (private) key encryption

Public (Asymmetric) Key Encryption

Public (asymmetric) key encryption uses two keys—a **public key** that is known to all and a **private key** that only its owner knows. The two keys must be used together. If a message is encrypted with a public key, then only the associated private key can decrypt the message (and vice versa). If, for example, a person wants to send a purchase order to a vendor and have the contents remain private, the sender encrypts the message with the buyer's public key. When the vendor, who is the *only one able* to read the purchase order, receives the order, the vendor decrypts it with the associated private key.

The PKI Process: Digital Signatures and Certificate Authorities

Digital signatures are the electronic equivalent of personal signatures on paper. They are difficult to forge since they authenticate the identity of the sender that uses the public key. Digital signatures are legally treated as signatures on paper. To see how a digital signature works, go to **searchsecurity.techtarget.com/definition/digital-signature**.

Certificate Authority

Independent agencies called **certificate authorities (CAs)** issue digital certificates or SSL certificates, which are electronic files that uniquely identify individuals and websites and enable encrypted communication. The certificate contains personal information and other information related to the public key and the encryption method, as well as a signed hash of the certificate data.

Secure Socket Layer

PKI systems are further secured with SSL—a protocol for e-commerce. The PKI with SSL makes e-commerce very secure but cumbersome for users. One of the major protocols in use today is Secure Socket Layer (SSL). SSL has been succeeded by Transport Layer Security (TLS), which is based on SSL. For further details, see **searchsecurity.techtarget.com/definition/Transport-Layer-Security-TLS**.

In the next section, the focus is on the company's digital perimeters—the networks.

The Defense II: Securing E-Commerce Networks

Several technologies exist that ensure that an organization's network boundaries are secure from cyberattack or intrusion, and that if the organization's boundaries are compromised, the intrusion is detected quickly and combated.

Firewalls

Firewalls are barriers between an internal trusted network (or a PC) and the untrustworthy Internet. A firewall is designed to prevent unauthorized access to and from private networks, such as intranets. Technically, a firewall is composed of hardware and a software package that separates a private computer network (e.g., your LAN) from a public network (the Internet). Firewalls are designed mainly to protect against any remote login, access by intruders via backdoors, spam, and different types of malware (e.g., viruses or macros). Firewalls come in several shapes and formats. A popular defense system is a DMZ. The DMZ can be designed in two different ways, using a single firewall or with dual firewalls. For intelligent firewalls, see Teo (2016).

The Dual Firewall Architecture: The DMZ

In the DMZ architecture (DMZ stands for demilitarized zone), there are two firewalls between the Internet and the internal users. One firewall is between the Internet and the DMZ (border firewall) and another one is between the DMZ and the internal network (see Figure 10.9). All public servers are placed in the DMZ (i.e., between the two firewalls). With this setup, it is possible to have firewall rules that allow trusted partners access to the public servers, but the interior firewall can restrict all incoming connections.

Virtual Private Networks (VPNs)

Suppose a company wants to establish a B2B application, providing suppliers, partners, and others access not only to data residing on its internal website, but also to data contained in other files (e.g., Word documents) or in legacy

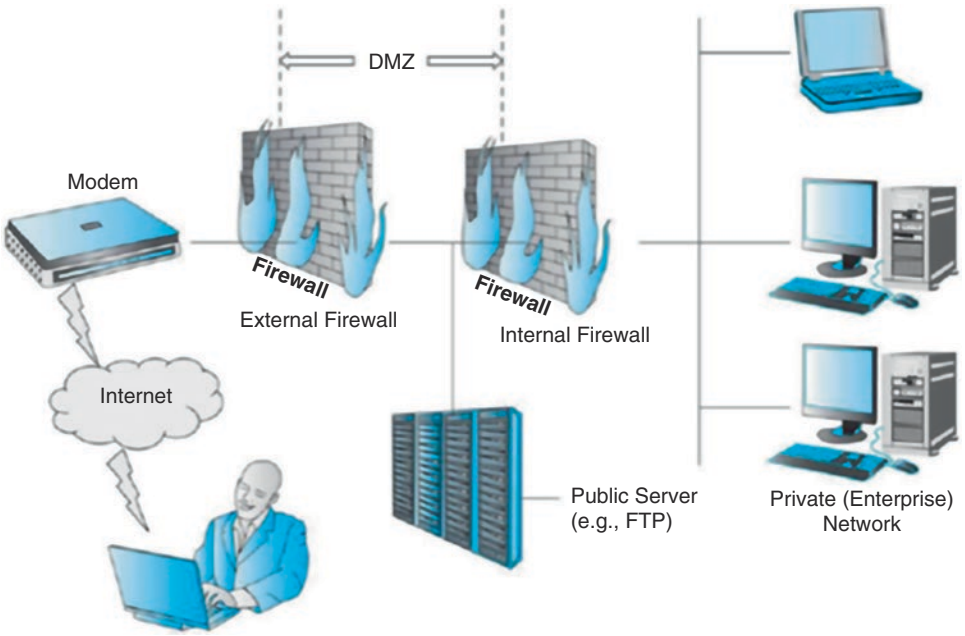

Figure 10.9 The two firewalls: DMZ architecture

systems (e.g., large relational databases). Traditionally, communications with the company would have taken place over a secure but expensive *value-added private leased line* or through a dial-up line connected to modems or a remote access server (RAS). Unfortunately, using the Internet instead, which is free, may not be secure. A more secure use of the Internet is provided by using a VPN.

A **virtual private network (VPN)** refers to the use of the Internet to transfer information, but in a more secure manner. A VPN behaves like a private network by using encryption and other security features to keep the information secure. For example, a VPN verifies the identity of anyone using the network.

For details on VPNs, see **searchenterprisewan.techtarget.com/definition/virtual-private-network**.

Intrusion Detection Systems (IDS)

No matter how protected an organization is, it still can be a target for attempted security attacks. For example, most organizations have antivirus software, yet they are subjected to virus attacks by new viruses. This is why an organization must continually monitor for attempted, as well as actual, security breaches. The monitoring can be done by using intrusion detectors.

An **intrusion detection system (IDS)** is a device composed of software and/or hardware designed to monitor the activities of computer networks and computer systems in order to detect and define unauthorized and malicious attempts to access, manipulate, and/or disable these networks and systems. For details, the technology, benefits, and limitations, see **searchsecurity.techtarget.com/guides/Introduction-to-IDS-IPS-Network-intrusion-detection-system-basics**.

Dealing with DoS Attacks

DoS attacks, as described earlier, are designed to bombard websites with all types of useless information, which clogs the sites. The faster a DoS attack is discovered, the easier is the defense. DoS attacks grow rapidly. Therefore, detecting an intrusion early can help. Since there are several types of DoS attacks (e.g., DDoS), there are several defense methods. For examples, see **learn-networking.com/network-security/how-to-prevent-denial-of-service-attacks**. Intrusion detecting software also identifies the DoS type, which makes the defense easier and faster.

The Defense III: General Controls, Spam, Pop Ups, and Social Engineering Controls

The objective of IT security management practices is to defend information systems. A defense strategy requires several *controls*.

The major types of controls are: (1) **General controls**, which are designed to protect all system applications. (2) **Application controls** guard applications. In this and the following sections, we discuss representative types of these two groups of information system controls. Later in the section, we cover spam and fraud mitigation.

General, Administrative, and Other Controls

The major categories of general controls are physical controls, administrative controls, and other controls. A brief description of general controls is provided next.

Physical Controls

Physical controls protect computer facilities and resources, including the physical area where computing facilities are located. The controls provide protection against natural hazards, criminal attacks, and some human error.

Network access control software is offered by all major security vendors (e.g., see **symantec.com/endpoint-protection**).

Administrative Controls

Administrative controls are defined by management and cover guidelines and compliance issuing and monitoring.

Protecting Against Spam

Sending spam that includes a sales pitch and looks like personal, legitimate e-mail and may bypass filters is a violation of the U.S. Controlling the Assault of Non-Solicited Pornography and Marketing (CAN-SPAM) Act of 2003. However, many spammers hide their identity by using hijacked PCs or spam zombies to avoid detection and identification. For protecting your system against botnet attacks, which also spread a huge volume.

Protecting Your Computer from Pop-Up Ads

The use of pop-ups and similar advertising methods is growing rapidly. Sometimes it is even difficult to close these ads when they appear on the screen. Some of these ads may be part of a consumer's permitted marketing agreement, but most are unsolicited. What can a user do about unsolicited pop-up ads? Here are some resources:

Panicware, Inc.'s Pop-Up Stopper Free Edition (**pop-up-stopper-free-edition.software.informer.com**), Softonic's Pop up Blocker (**pop-up-blocker.en.softonic.com/download**), and AdFender (**adfender.com**); others are available for a fee. For a list, see **snapfiles.com**; and for a list of blocker software for Windows, see **download.cnet.com/windows/popup-blocker-software**. Many ISPs and major browser makers (e.g., Google, Microsoft, Yahoo!, Mozilla) offer tools to stop pop-ups.

Protecting Against Other Social Engineering Attacks

With the increasing number of social engineering attacks via websites and in social networks comes the need for better protection. The open-source environment and the interactive nature of the technology also create risks. Thus, EC security becomes a necessity for any successful social networking initiative.

Social networking spans many different applications and services. Therefore, many methods and tools are available to defend such systems. Many of the solutions are technical in nature and are outside the scope of this book.

Protecting Against Phishing

Because there are many phishing methods, there are many defense methods as well. Illustrative examples are provided by Symantec (2009) and the FTC Consumer Information at **consumer.ftc.gov/articles/0003-phishing**. For risk and fraud insights, see **sas.com/en_us/insights/risk-fraud.html**.

Protecting Against Malvertising

According to TechTarget, *malvertising (malicious advertising)* "is an advertisement on the Internet that is capable of infecting the viewer's computer with malware." Microsoft combats malvertising by taking legal action against malvertisers.

Protecting Against Spyware

In response to the emergence of spyware, a large variety of antispyware software exists. Antispyware laws, available in many jurisdictions, usually target any malicious software that is installed without the knowledge of users. The U.S. Federal Trade Commission advises consumers about spyware infections. For details and resources, see **ftc.gov/news-events/media-resources/identity-theft-and-data-security/spyware-and-malware**.

Protecting Against Cyberwars

This is a difficult task since these attacks usually come from foreign countries. The U.S. government is developing tools that will mine social media sites to predict cyberattacks. The tools will monitor all Facebook, Twitter, and other social networks sites to interpret content. The idea is to automate the process.

Business Continuity and Disaster Recovery

Disasters may occur without warning. A prudent defense is to have a *business continuity plan*, mainly consisting of a *disaster recovery* plan. Such a plan describes the details of the recovery process from major disasters such as loss of all (or most) of the computing facilities or the data.

Example: Hospital Paid Ransom after Malware Attack

Hollywood Presbyterian Medical Center paid a ransom of $17,000 in Britain (so the) blackmailer-hacker cannot be

identified (see Chapter 11 for bitcoins). The hacker encrypted the data that were not backed up. The hospital failed with its disaster recovery plan, so there was no choice (per the hospital management), but paying the ransom. For details see Jennings (2016).

SECTION 10.6 REVIEW QUESTIONS

1. Define access control.
2. What are the basic elements of an authentication system?
3. Define biometric systems and list five of their methods.
4. Define a symmetric (one-key) encryption.
5. List some of the disadvantages of the symmetric system.
6. What are the key components of PKI?
7. Describe the PKI process.
8. How does a digital signature work?
9. Describe digital certification.
10. List the basic types of firewalls and briefly describe each.
11. How does a VPN work and how does it benefit users?
12. Briefly describe the major types of IDSs.
13. What are general controls? List the various types.
14. How does one protect against spam?
15. How does one protect against pop-ups?
16. How does one protect against phishing, spyware, and malvertising?

10.7 CONSUMER AND SELLER PROTECTION FROM ONLINE FRAUD

Internet fraud is a major problem in e-commerce and it is growing rapidly. The fraud is mostly against consumers, but there is some against sellers and merchants. Governments are especially eager to educate the public about the many types of fraud, which target senior citizens in particular. General information on what are common frauds is provided by agencies such as the FBI (see **fbi.gov/scams-safety/fraud/internet_fraud**). The FBI also operates the Internet Crime Complaint Center, IC3 at **ic3.gov**. Internet fraud is growing problem (about 25% of all consumers are victims). The problem is growing due to the blending of social commerce and e-commerce and the increased use of m-commerce (see Frenkel 2016). For an overview, see **paypal.com/c2/webapps/mpp/paypal-safety-and-security**.

It is necessary to protect EC consumers, which the IC3 attempts to do, by informing the public about Internet scams and by publishing public service announcements.

Consumer (Buyer) Protection

Consumer protection is critical to the success of any commerce, especially electronic ones, where transactions between buyers and sellers are not face-to-face. The Federal Trade Commission (FTC) enforces consumer protection laws in the United States. The FTC provides a list of common online scams (see **onguardonline.gov/articles/0002-common-online-scams**). In addition, the European Union and the United States are attempting to develop joint consumer protection policies. For details, see the Trans Atlantic Consumer Dialogue website at **tacd.org**.

Representative Tips and Sources for Your Protection

A representative list follows:

- Users should make sure that they enter the real website of well-known companies, such as Walmart, Disney, and Amazon.com, by going directly to the site, rather than through a link.
- Check any unfamiliar site for an address and telephone and fax numbers. Call and quiz a salesperson about the company and the products.
- Investigate sellers with the local chamber of commerce, Better Business Bureau (**bbb.org**), or TRUSTe (**truste.com**).
- Investigate how secure the seller's site is and how well it is organized.
- Examine the money-back guarantees, warranties, and service agreements before making a purchase.
- Compare prices online with those in regular stores—prices that are too low may be too good to be true.
- Ask friends what they know about the websites. Find testimonials and endorsements (be careful, some may be biased).
- Find out what remedy is available in case of a dispute.
- Consult the National Consumers League Fraud Center (**fraud.org**).
- Check the resources available at **consumerworld.org**.
- Amazon.com provides comprehensive protection. See **payments.amazon.com/merchant**.

In addition to these tips, consumers and shoppers also have rights on the Internet, as described in the following list of sources:

- The Federal Trade Commission (**ftc.gov**): Protecting America's Consumers. Abusive e-mail should be forwarded to spam@uce.go. For tips and advice see **ftc.gov/tips-advice**.
- The Federal Government Safety Online (**usa.gov/online-safety**)
- National Consumers League Fraud Center (**fraud.org**).
- Federal Citizen Information Center (**gsa.gov/portal/category/101011**).
- U.S. Department of Justice (**justice.gov**).
- Internet Crime Complaint Center (**ic3.gov**).
- The American Bar Association provides online shopping tips at **safeshopping.org**.
- The Better Business Bureau (**bbb.org**).
- The U.S. Food and Drug Administration provides information on buying medicine and medical products online (**www.fda.gov/drugs/resourcesforyou/ucm077266.htm**).
- The Direct Marketing Association (**thedma.org**).

For specific tips on how to spot fake sites and products, see Horowitz and Horowitz (2015).

Disclaimer: This is general information on consumer rights. It is not legal advice on how any particular individual should proceed. If you require specific legal advice, consult an attorney.

Third-Party Assurance Services

Several public organizations and private companies also attempt to protect consumers. The following are just a few examples.

Protection by a Third-Party Intermediary

Intermediaries who manage electronic markets try to protect buyers and sellers. A good example is eBay, which provides an extensive protection program (see eBay Money Back Guarantee (**pages.ebay.com/coverage/index.html**) and a Dispute Resolution Center).

TRUSTe's "Trustmark"

TRUSTe (**truste.com**) is a for-profit company whose mission is to ensure that "businesses adhere to best practices regarding the collection and use of personal information on their website" (see **truste.com/about-TRUSTe**).

The TRUSTe program is voluntary. The licensing fee for use of the Trustmark is paid by sellers, depending on the size of the online business.

Better Business Bureau

The Better Business Bureau (BBB; **bbb.org**), a nonprofit organization supported largely by membership, collects and provides reports on businesses that consumers can review before making a purchase. The BBB responds to millions of inquiries each year. The BBB also handles customer disputes against businesses.

Which?

Supported by the European Union, Which? (**which.co.uk**) gives consumers protection by ensuring that online traders under its Which? Web Trader scheme abide by a code of proactive guidelines. These guidelines outline issues such as product information, advertising, ordering methods, prices, delivery of goods, consumer privacy, receipting, dispute resolution, and security.

WebTrust Seal

The WebTrust seal program is similar to TRUSTe. The American Institute of Certified Public Accountants (**cpawebtrust.com**) sponsors it.

Evaluation by Consumers

A large number of sites include product and vendor evaluations offered by consumers. For example, on Yelp!, community members rate and comment on businesses.

The Computer Fraud and Abuse Act (CFAA)

The **Computer Fraud and Abuse Act (CFAA)**, passed in 1984 and amended several times, is an important milestone in EC legislation. Initially, the scope and intent of CFAA was to protect government computers and financial industry computers from criminal theft by outsiders. In 1986, the CFAA was amended to include stiffer penalties for violations, but it still only protected computers used by the federal government or financial institutions. As the Internet expanded in scope, so did the CFAA.

Seller Protection

The Internet makes it easier for buyers and sellers engaging in EC to commit fraud. Sellers must be protected against:

- Customers who deny that they placed an order.
- Customers who download copyrighted software and sell it to others.
- Customers who give fraudulent payment information (false credit card or a bad check) for products and services that they buy.

- Imposters—sellers using the name of another seller (see the CyberSource Annual Reports).
- Other sellers using the original seller's names, trademarks, and other unique features, and even their Web addresses (or similar to it).
- Payment fraud by consumers and by criminals.

Sellers also can be attacked illegally or unethically by competitors.

Example

A class action lawsuit was filed against McAfee in the United States District Court for the Northern District of California (Case No. 10-1455-HRL) alleging that after the plaintiffs purchased McAfee software from McAfee's website, a deceptive pop-up ad (from one of McAfee's partners) that looks like a McAfee page appeared, and thanked the plaintiffs for their software purchase. The pop-up ad asked them to click on a "Try it Now" button, which they assumed would download the software they had just purchased, but unbeknownst to them, they received a 30-day trial subscription to Arpu, Inc. (a non-McAfee product). They found out later that McAfee transmits customer credit/debit card and billing information to Arpu (customers are charged $4.95 per month after the trial period) and collects an undisclosed fee for each customer who "tries" Arpu via the McAfee website. See also **courthousenews.com/2010/04/08/McAfee.pdf**.

What Can Sellers Do?

Companies like Chargeback Stopper (**chargebackstopper.com**) and Chargeback Protection (**chargebackprotection.org**) provide merchants with a database of credit card numbers that have had "chargeback orders" recorded against them. Sellers who have access to the database can use this information to decide whether to proceed with a sale. In the future, the credit card industry is planning to use biometrics to manage electronic shoplifting. In addition, sellers can use PKI and digital certificates, especially the SET protocol, to help prevent fraud.

Other possible solutions include the following:

- Use intelligent software to identify questionable customers (or in small companies, do this identification manually). One technique, for example, involves comparing credit card billing and requested shipping addresses.
- Identify warning signals—i.e., red flags—for possible fraudulent transactions.
- Ask customers whose billing address is different from the shipping address to call their bank and have the alternate address added to their bank account. Retailers will agree to ship the goods to the alternate address only if this is done.
- Ask the customer to disclose the credit card verification code.
- Delay shipment until money is received.

For further discussion of what merchants can do to protect themselves from fraud, see CyberSource. For ten measures to reduce credit card fraud for Internet Merchants (a FraudLabs.com White Paper), see **fraudlabs.com/docs/fraudlabs_white_paper.pdf**.

Protecting Marketplaces and Social Network Services

Marketplaces such as eBay, Yahoo!, Amazon.com, and Alibaba face a problem of sellers that try to sell counterfeit products online. The problem is especially acute for Alibaba whose business model is to connect sellers and buyers (in contrast with Amazon.com) that mostly buys products and retails them to consumers. Marketplaces try to crack down on the counterfeiter, but it is not an easy job.

Facebook and other social networks that move to commercialization are facing the problem of fake accounts. For the problem and solutions, see Jones (2016).

Protecting Both Buyers and Sellers: Using Electronic Signatures and Other Security Features

One method to help distinguish between legitimate and fraudulent transactions is electronic signatures.

An **electronic signature** is "the electronic equivalent of a handwritten signature" (per **pcmag.com/encyclopedia/term/42500/electronic-signature**). Electronic signatures provide high level of security and are recognized by most legal entities as being equivalent to handwritten signatures. All electronic signatures are represented digitally. Signed electronic documents and contracts are as legally binding as paper-based documents and contracts.

Authentication

In the online environment where consumers and merchants do not have physical contact with one another, proving the authenticity of each person is necessary since buyers and sellers do not see each other. However, if one can be sure of the identity of the person on the other end of the line, there could be more e-commerce applications. For example, students would be able to take exams online from anywhere without the need for proctors. Fraud among recipients of government payments would be minimized. Buyers would be assured who the sellers are, and sellers would know, with a very high degree of confidence, who the buyers really are. Online job interviews would be accurate because it would be

almost impossible for an applicant to impersonate another person. Overall, trust in online transactions and in EC in general would increase significantly. Authentication can be achieved in several ways, including the use of biometrics.

Fraud Detecting Systems

There are a large number of fraud detection systems such as the use of data mining for credit card fraud. CyberSource also has developed several tools for detecting fraud. For details, see Cyber Source periodic reports and **authorize.net/resources/files/fdswhitepaper.pdf**.

SECTION 10.7 REVIEW QUESTIONS

1. Describe consumer protection measures.
2. Describe assurance services.
3. What must a seller do to protect itself against fraud? How?
4. Describe types of electronic signatures. Who is protected? Why?
5. Describe authentication.

10.8 IMPLEMENTING ENTERPRISEWIDE E-COMMERCE SECURITY

Now that you have learned about both the threats and the defenses, we can discuss some implementation issues starting with the reasons why it is difficult, or even impossible, to stop computer crimes and the malfunction of information systems.

The Drivers of EC Security Management

The explosive growth of EC and SC, together with an increase in the ever-changing strategies of cybercriminals, combined with regulatory requirements and demands by insurance companies, drives the need for comprehensive EC security management. Additional drivers are:

- The laws and regulations with which organizations must comply.
- The conduct of global EC. More protection is needed when doing business with a foreign country.
- Information assets have become critical to the operation of many businesses.
- New and faster information technologies are shared throughout organizations. Organizational collaboration is needed.
- The complexity of both the attacks and the defense requires an organization-wide collaboration approach.

Senior Management Commitment and Support

The success of an EC security strategy and program depends on the commitment and involvement of senior management. Many forms of security are unpopular because they are inconvenient, restrictive, time-consuming, and expensive. Security practices may not be a top organizational priority unless they are mandated.

Therefore, an EC security and privacy model for effective enterprisewide security should begin with senior management's commitment and support, as shown in Figure 10.10. The model views EC security (as well as the broader IT security) as a combination of commitment and support, policies and training, procedures and enforcement, and tools, all executed as a continuous process.

EC Security Policies and Training

An important security task is developing an organizational EC security policy, as well as procedures for specific security and EC activities such as access control and protecting customer data. Customers should:

- Know that data is being collected, and when it is done.
- Give their permission for the data to be collected.
- Have knowledge and some control over how the data is controlled and used.
- Be informed that the information collected is not to be shared with other organizations.

To protect against criminal use of social media, you can:

- Develop policies and procedures to exploit opportunities but provide customer protection.
- Educate employees and others about what is acceptable and what is not acceptable.

According to **sans.org**, cyberintelligence is an important defense tool.

EC Risk Analysis and Ethical Issues

EC security procedures require an evaluation of the digital and financial assets at risk—including cost and operational considerations.

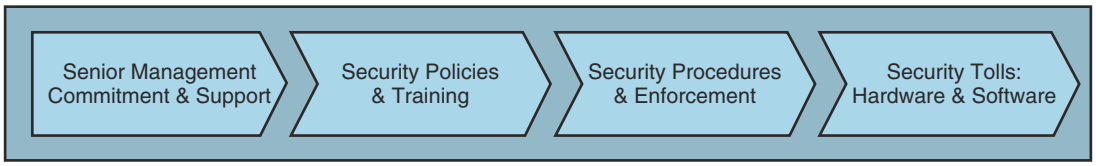

Figure 10.10 Enterprisewide EC security and privacy process

A related assessment is the *business impact analysis.* **Business impact analysis (BIA)** refers to an analysis of the impact of losing the functionality of an EC activity (e.g., e-procurement, e-ordering) to an organization. Once such risks are computed, the organization should focus its defense strategy on the largest risks.

Ethical Issues

Implementing security programs raises several ethical issues. First, some people are against the monitoring of any individual's activities. Imposing certain controls is seen by some as a violation of freedom of speech or other civil rights. A survey by the Gartner Group found that even after the terrorist attacks of September 11, 2001, only 26% of Americans approved a national ID database. Many even consider using biometrics to be a violation of privacy.

Handling the privacy versus security dilemma is difficult. There are other ethical and legal obligations that may require companies to "invade the privacy" of employees and monitor their actions. In particular, IT security measures are needed to protect against loss, liability, and litigation.

Why Is It Difficult to Stop Internet Crime?

The following are the major reasons Internet crime is so difficult to stop.

Making Shopping Inconvenient

Strong EC security may make online shopping inconvenient and may slow shopping time as well. Therefore, shoppers may not like some security measures.

Lack of Cooperation by Business Partners

There is a potential lack of cooperation from credit card issuers, suppliers, local and especially foreign ISPs, and other business partners. If the source ISP would cooperate and suspend the hacker's access, it would be very difficult for hackers to gain access to the systems.

Shoppers' Negligence

Many online shoppers are not taking the necessary (but inconvenient) precautions to avoid becoming victims of identity theft or fraud.

Ignoring EC Security Best Practices

Many companies do not have prudent IT security management or employee security awareness. Many widespread threats in the United States stem from the lack of user awareness of malware and hacking attacks.

Design and Architecture Issues

It is well known that preventing vulnerability during the EC design and pre-implementation stage is far less expensive than mitigating problems later; unfortunately, such prevention is not always made. Even minor design errors can increase hacking.

Lack of Due Care in Business Practices

Another reason for the difficulty is the lack of due care in conducting many business processes (e.g., in crowdsourcing). The **standard of due care** is the minimum and customary practice that a company is reasonably expected to take to protect the company and its resources from possible risks. For a major survey see PWC (2013).

Protecting Mobile Devices, Networks, and Applications

With the explosive growth of mobility and m-commerce comes the task of protecting these systems from the security problems described earlier in this chapter and from some new ones.

Mobile Security Issues

Typical security issues range from wireless transmissions not being encrypted, to lack of firewalls or passwords on mobile devices, or connecting to an unsecured WiFi network.

Reisinger (2014) lists additional security issues such as data theft and unlocked jailbreaking devices. The proliferation of BYOD also brings threat to the enterprise (see Westervelt 2013).

The Defense

To defend mobile systems it is necessary to implement tools and procedures such as those described in Section 10.6, and modify them for the mobile environment. A practical checklist for reducing security risks is offered by Lenovo (2013). Finally, a major problem is the theft of mobile devices. Two solutions are at work: First, automatic security that enables only the owners to use their devices and, second, make a kill switch a mandatory feature in all smartphones (scheduled for 2015). In 2016, this feature was still only available in California.

SECTION 10.8 REVIEW QUESTIONS

1. If senior management is not committed to EC security, how might that impact the e-business?
2. What is a benefit of using the risk exposure method for EC security planning?
3. Why should every company implement an acceptable use policy?
4. Why is training required?
5. List the major reasons why it is difficult to stop computer crimes.

MANAGERIAL ISSUES

Some managerial issues related to this chapter are as follows.

1. **What steps should businesses follow in establishing a security plan?** Security management is an ongoing process involving three phases: asset identification, risk assessment, and implementation. By actively monitoring existing security policies and procedures, companies can determine which of them are successful or unsuccessful and, in turn, which should be modified or eliminated. However, it also is important to monitor changes in business processes and business environments and adjust the plans accordingly. In this way, an organization can keep its security policies and measures up-to-date.
2. **Should organizations be concerned with internal security threats?** Except for malware, breaches committed by insiders may be much more frequent than those done by outsiders. This is true for both B2C and B2B sites. Security policies and measures for EC sites need to address the insider threats. In addition, insiders can be victims of security crimes. Therefore, companies should educate employees, especially new hires, about such threats.
3. **What is the key to establishing strong e-commerce security?** Most discussions about security focus on technology, with statements like, "all messages should be encrypted." Although technologies are important, no security solution is useful unless it is adopted by the employees. Determining business requirements is the first step in creating a security solution. Business requirements, in turn, determine information requirements.

SUMMARY

In this chapter, you learned about the following EC issues as they relate to the chapter's learning objectives.

1. **The importance and scope of EC information security**. For EC to succeed, it must be secure. Unfortunately, this is not an easy task due to many unintentional and intentional hazards. Security incidents and breaches interrupt EC transactions and increase the cost of doing business online. Internet design is vulnerable, and the temptation to commit computer crime is increasing with the increased applications and volume of EC. Criminals are expanding operations, creating an underground economy of valuable information that was stolen. A strategy is needed to handle the costly defense technology and operation, which includes training, education, project management, and the ability to enforce security policy. EC security will remain an evolving discipline because threats are changing continuously. Therefore, e-business needs to adapt. An EC security strategy is needed to optimize EC security programs for efficiency and effectiveness.
2. **Basic EC security issues**. The security issue can be viewed as a battleground between attackers and attacks and defenders and defense. There are many variations on both sides and many possible collision scenarios. Owners of EC sites need to be concerned with multiple security issues: authentication, verifying the identity of the participants in a transaction; authorization, ensuring that a person or process has access rights to particular systems or data; and auditing, being able to determine whether particular actions have been taken and by whom.
3. **Threats, vulnerabilities, and technical attacks**. EC sites are exposed to a wide range of attacks. Attacks may be nontechnical (social engineering), in which a criminal lures people into revealing sensitive personal information. Alternatively, attacks may be technical, whereby

software and systems expertise are used to attack networks, databases, or programs. DoS attacks bring operations to a halt by sending a flood of data to target specific computers and websites. Malicious code attacks include viruses, worms, Trojan horses, or some combination of these. Over the past few years, new malware trends have emerged, such as Blackhole and ZeroAccess (see Wang 2013). The new trends include an increase in the speed and volume of new attack methods; and the shorter time between the discovery of a vulnerability and the release of an attack (to exploit the vulnerability). Finally, the new trends include the growing use of bots to launch attacks; an increase in attacks on mobile systems, social networks, and Web applications; and a shift to profit-motivated attacks.

4. **Internet fraud, phishing, and spam**. A large variety of Internet crimes exist. Notable are identify theft and misuse, stock market frauds, get-rich-quick scams, and phishing. Phishing attempts to obtain valuable information from people by masquerading as a trustworthy entity. Personal information is extracted from people (or stolen) and sold to criminals, who use it to commit financial crimes such as transferring money to their own accounts. A related area is the use of unsolicited advertising or sales via spam.
5. **Information assurance**. The information assurance model represents a process for managing the protection of data and computer systems by ensuring their confidentiality, integrity, and availability. Confidentiality is the assurance of data privacy. Integrity is the assurance that data is accurate or that a message has not been altered. Availability is the assurance that access to data, the website, or EC systems and applications is available, reliable, and restricted to authorized users whenever they need it.
6. **Securing EC access control and communications**. In EC, issues of communication among trading partners are paramount. In many cases, EC partners do not know their counterparts, so they need secured communication and trust building. Trust starts with the authentication of the parties involved in a transaction; that is, identifying the parties in a transaction along with the actions they are authorized to perform. Authentication can be established with something one knows (e.g., a password), something one has (e.g., an entry card), or some physical characteristic (e.g., a fingerprint). Biometric systems can confirm a person's identity. Fingerprint scanners, iris scanners, facial recognition, and voice recognition are examples of biometric systems.
7. **The different controls and special defense mechanisms**. The major controls are general (including physical, access controls, biometrics, administrative controls, application controls, and internal controls for security and compliance). Each type has several variations.
8. **Fraud on the Internet and how to protect consumers and sellers against it**. Protection is needed because there is no face-to-face contact between buyers and sellers; there is a great possibility of fraud; there are insufficient legal constraints; and new issues and scams appear constantly. Several organizations, private and public, attempt to provide the protection needed to build the trust that is essential for the success of widespread EC. Of note are electronic contracts (including digital signatures), the control of gambling, and what taxes should be paid to whom on interstate, intrastate, and international transactions. The practice of no sales tax on the Internet is changing. States are starting to collect sales tax on Internet transactions.

   Many procedures are used to protect consumers. In addition to legislation, the FTC tries to educate consumers so they know the major scams. The use of seals on sites (such as TRUSTe) can help, as well as tips and measures taken by vendors. Sellers can be cheated by buyers, by other sellers, or by criminals. Protective measures include using contacts and encryption (PKI) keeping databases of past criminals, sharing information with other sellers, educating employees, and using artificial intelligence software.

   Given the large number of ways to commit Internet fraud, it is difficult to protect against all of them. Fraud protection is done by companies, security vendors, government regulations, and perhaps most important, consumer education. Knowing the most common methods used by criminals is the first step of defense. Remember, most criminals are very experienced. They are able to invest in new and clever attack methods.
9. **Enterprisewide EC security**. EC security procedures are inconvenient, expensive, tedious, and never ending. Implementing a defensive in-depth model that views EC security as a combination of commitment, people, processes, and technology is essential. An effective program starts with senior management's commitment and budgeting support. This sets the tone that EC security is important to the organization. Other components are security policies and training. Security procedures must be clearly defined. Positive incentives for compliance can help, and negative consequences need to be enforced for violations. The last stage is the deployment of hardware and software tools based on the policies and procedures defined by the management team.
10. **Why is it so difficult to stop computer crimes?** Responsibility or blame for cybercrimes can be placed on criminals, victimized people, and organizations. Online shoppers fail to take necessary precautions to avoid becoming victims. Security system designs and architectures are still incredibly vulnerable. Organizations may fail to exercise due care in business or hiring and practices, opening the

doors to security attacks. Every EC business knows that there are threats of stolen credit cards, data breaches, phishing, malware, and viruses that never end—and that these threats must be addressed comprehensively and strategically.

11. **The future of EC**. EC is growing steadily and rapidly, expanding to include new products, services, business models, and countries. The most notable areas of growth are the integration of online and offline commerce, mobile commerce (mostly due to smartphone apps), video-based marketing, and social media and networks. Several emerging technologies, ranging from intelligent applications to wearable devices, are facilitating the growth of EC. On the other hand, several factors are slowing down the spread of EC such as security and privacy concerns, limited bandwidth, and lack of standards in some areas of EC.

KEY TERMS

Access control
Application controls
Authentication
Authorization
Availability
Banking Trojan
Biometric authentication
Biometric systems
Botnet
Business continuity plan
Business impact analysis (BIA)
Certificate authorities (CAs)
CIA security triad (CIA triad)
Ciphertext
Computer Fraud and Abuse Act (CFAA)
Confidentiality
Cracker
Cybercrime
Cybercriminal
Darknet
Data breach
Denial-of-service (DoS) attack
Detection measures
Deterrent methods
Digital signature
EC security strategy
Electronic signature
E-mail spam
Encryption
Encryption algorithm
Exposure
Firewall
Fraud
General controls
Hacker
Identity theft
Information assurance (IA)
Information security
Integrity
Internet underground economy
Intrusion detection system (IDS)
Key (key value)
Keystroke logging (keylogging)
Macro virus (macro worm)
Malware (malicious software)
Nonrepudiation
Penetration test (pen test)
Phishing
Plaintext
Prevention measures
Private key
Public key
Public (asymmetric) key encryption
Public key infrastructure (PKI)
Risk
Search engine spam
Social engineering
Spam
Spam site
Splog
Spyware
Standard of due care
Symmetric (private) key encryption
Trojan horse
Virtual private network (VPN)
Virus
Vulnerability
Vulnerability assessment
Worm
Zombies

DISCUSSION QUESTIONS

1. Consider how a hacker might trick people into divulging their user IDs and passwords to their Amazon.com accounts. What are some of the specific ways that a hacker might accomplish this? What crimes can be performed with such information?
2. B2C EC sites and social networks continue to experience DoS and DDoS attacks. How are these attacks executed? Why is it so difficult to safeguard against them? What are some of the things a site can do to mitigate such attacks?

3. How are botnets, identity theft, DoS attacks, and website hijackings perpetrated? Why are they so dangerous to e-commerce?
4. Discuss some of the difficulties of eliminating online financial fraud.
5. Enter **zvetcobiometrics.com**. Discuss the benefits of these products over other biometrics.
6. Find information about the Zeus Trojan virus. Discuss why it is so effective at stealing financial data. Why is it so difficult to protect against this Trojan?
7. Visit the National Vulnerability Database (**nvd.nist.gov**) and review 5 recent CVE vulnerabilities. For each vulnerability list its published date, CVSS severity, impact type, and the operating system or software with the vulnerability.
8. Report on the status of using biometrics in mobile commerce. (Start **nxt-id.com**.)
9. Find several definitions of "information warfare" and discuss the major attributes of the definitions.
10. What contribution does TRUSTe make to e-commerce?

TOPICS FOR CLASS DISCUSSION AND DEBATES

1. A business wants to share its customer data with a trading partner and provide its business customers with access to marketing data. What types of security components (e.g., firewalls, VPNs) could be used to ensure that the partners and customers have access to the account information while those who are unauthorized do not? What types of network administrative procedures will provide the appropriate security?
2. Why is it so difficult to fight computer criminals? What strategies can be implemented by financial institutions, airlines, and other heavy users of EC?
3. All EC sites share common security threats and vulnerabilities. Do you think that B2C websites face different threats and vulnerabilities than do B2B sites? Explain.
4. Why is phishing so difficult to control? What can be done? Discuss.
5. Debate this statement: "The best strategy is to invest very little and only in proven technologies such as encryption and firewalls."
6. Debate: Can the underground Internet marketplace be controlled? Why or why not?
7. Debate: Is taking your fingerprints or other biometrics to assure EC security a violation of your privacy?
8. Body scans at airports have created controversy. Debate both points of this issue and relate it to EC security.
9. Discuss the issue of providing credit card details on Facebook. Would you do it?
10. Discuss the recent security trends pointed out by Lemos (2016).
11. Examine the identity theft and identity crime topics from the FBI site **fbi.gov/about-us/investigate/cyber/identity_theft**. Report the highlights.

INTERNET EXERCISES

1. Your B2C site has been hacked with a new, innovative method. List two organizations where you would report this incident so that they can alert other sites. How do you do this and what type of information do you have to provide?
2. Determine the IP address of your computer by visiting at least two websites that provide that feature. You can use a search engine to locate websites or visit **ip-adress.com** or **whatismyipaddress.com**. What other information does the search reveal about your connections? Based on this finding, how could a hacker use that information?
3. Conduct a Google search for "Institutional Identity Theft." Compare institutional identity theft with personal identity theft. How can a company protect itself against identity theft? Write a report.
4. The Symantec Annual Internet Security Threat Report provides details about the trends in attacks and vulnerabilities in Internet security. Obtain a copy of the latest report and summarize the major findings of the report for both attacks and vulnerabilities.
5. Conduct a Google search for examples of underground Internet activities in 5 different countries. Prepare a summary.
6. Enter **verisign.com** (a Symantec company) and find information about PKI and encryption. Write a report.
7. Enter **hijackthis.com**. What is offered in the site? Write a report.
8. Enter **blackhat.com**. Find out what the site is about. Describe some of the site's activities.
9. Enter **ftc.gov** and identify some of the typical types of fraud and scams on the Internet. List 10 of them.
10. Enter **scambusters.org** and identify and list its anti-fraud and anti-scam activities.

TEAM ASSIGNMENTS AND PROJECTS

1. **Assignment for the Opening Case**
   Read the opening case and answer the following questions:
   (a) Why did the college have security problems? What types of problems?

(b) What is the security problem concerning social media applications?
(c) Why was the automation (agent-based) solution unsuccessful?
(d) Why were the computer-use policies ineffective?
(e) What was the problem with the bandwidth?
(f) Describe the new security policy. Why does it work?
(g) Discuss the issue of privacy as it applies to this case.

2. Assign teams to report on the latest major spam and scam threats. Look at examples provided by **ftc.gov**, the latest Symantec report on the State of Spam, and white papers from IBM, VeriSign, McAfee, and other security firms.
3. Watch the video "Cyberattacks and Extortion" (13:55 min) at **searchsecurity.techtarget.com/video/Cyberattacks-and-extortion**. Answer the following questions:
   (a) Why are there more extortions online today? How are they accomplished?
   (b) What is involved in targeted e-mail attacks?
   (c) What is an SQL injection attack?
4. Data leaks can be a major problem. Find some major defense methods. Check some major security vendors (e.g., Symantec). Find white papers and Webinars on the subject. Write a report.
5. Each team is assigned one method of fighting against online fraud. Each method should involve a different type of fraud (e.g., in banking). Identify suspicious e-mails, dealing with cookies in Web browsers, credit card protection, securing wireless networks, installing anti-phishing protection for your browser with a phishing filter, and so forth.

CLOSING CASE: HOW ONE BANK STOPPED SCAMS, SPAMS, AND CYBERCRIMINALS

Some say that as many as 90% of phishers are targeting financial institutions. Let us see how one bank is protecting its customers.

BankWest of South Dakota (bankwest-sd.com)

As a privately owned entity, a bank can disregard short-term profit. Instead, a bank provides the utmost in customer care and employee educational programs. However, one problem is challenging: the increasing number of incidents of social engineering experienced by customers. A few examples of scams that were noticed by the BankWest staff reported by Kitten (2010) are:

- **Sweetheart schemes**. There may be long-term online relationship between a bank's customer and an overseas user. The overseas user tries to convince the customer to wire funds, share bank account information, and open joint accounts.
- **Letters, postal service, or e-mail**. A bank customer is notified by an e-mail that he or she has won a large amount of money (e.g., a sweepstakes). Hackers ask for some processing money to release the prize money to the customer.
- **Telephone scams**. A customer is asked to provide personal information from a government check and receives repeated telephone calls, each asking for different personal information (e.g., Social Security Number). Phone scams usually target elderly customers and depend on the social engineer's ability to develop a rapport with the customer.
- **Cell phone scams**. A customer is told that his or her debit card has been compromised and the customer is asked to provide card details for replacement.

The bank now provides information about social engineering schemes on its website (see **bankwest-sd.com/etc.htm**). Employees direct customers to the site and provide information about fraudulent schemes when the customers come into a branch. The bank also instituted an "Employee Rewards Program" (to be described later).

It is critical to combat social engineering attempts in order to increase customer confidence in Internet security. According to Kitten (2010), "the bank's information security team regularly attend workshops and participate in forums related to social engineering and other fraud schemes. The information collected is immediately shared with the staff in order to keep the entire bank team abreast of new and emerging fraud threats. All staff members also are required to complete online training in scheme detection that is designed by the bank."

Also according to Kitten (2010), the training program includes:

- Ability to identify phone scams, especially automated ones (e.g., *vishing attempts*) that lure customers into divulging sensitive information.
- Ability to identify *phishing e-mails* and use caution when clicking on links or opening file attachments.
- Conduct monthly training and employee-oriented demonstrations on face-to-face personal social engineering schemes.

Employee Rewards

Employees who identify scams are rewarded with certificates and small monetary rewards; their manager is notified and employees can take pride in the acknowledgement.

The Results

According to the bank's information security administrator, although the number of schemes has not decreased, the number of employees reporting such schemes has increased significantly.

To read BankWest's tips on how to protect yourself against identity theft, phishing, and so forth, see **bankwest-sd.com/etc.htm**.

Sources: Based on Kitten (2010) and BankWest (2016).

Questions

1. List the major security problems faced by BankWest and relate them to the attack methods described in Sections 10.2, 10.3, and 10.4.
2. In what ways is BankWest helping to stop scams before they cause damage?
3. Given the problems of BankWest and its solutions, can you suggest an even better defense mechanism?

ONLINE FILES

Available at **ecommerce-introduction-textbook.com**

W10.1 Application Case: How Seattle's Hospital Survived a Bot Attack.

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Electronic Commerce Payment Systems and Order Fulfillment

11

Contents

Learning Objectives

Upon completion of this chapter, you will be able to:

1. Describe cross-border EC and the issues that arise in EC payments and fulfillment.
2. Describe the major changes in retail and their impacts on EC payments.
3. Discuss the different payment cards used online and processing methods.
4. Discuss the different categories and potential uses of smart cards.
5. Describe the issues with and solutions to online micropayments.
6. Understand PayPal and third-party payment gateways.
7. Understand the major types and methods of mobile payments.
8. Describe the differences and key characteristics of digital and virtual currencies.
9. Define EC order fulfillment and describe the EC order fulfillment process.
10. Describe the major problems of EC order fulfillment.
11. Describe various solutions to EC order fulfillment problems.

OPENING CASE: CROSS-BORDER EC—PARTNERING WITH TMALL GLOBAL

The Problem

In EC, "the world is your oyster." It can transcend borders, opening product lines and services to a growing international market. The problem is that like the original line from Shakespeare's "The Merry Wives of Windsor" it may take a substantial sword to open it.

When a buyer makes an online purchase from a merchant or seller in another country it's called international e-commerce or **cross-border e-commerce**, the two concepts are

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synonymous. Sometimes, researchers and practitioners refine the definition to exclude EC trade between countries that share a common language, border, and currencies (Goodale 2014). For example, trade between the USA and Canada is treated as international because their currencies and financial regulations differ and the free-flow of goods is restricted by law, while trade between many of the neighbors in the European Union are considered domestic because they share a common currency (the Euro), common payment resolution (SEPA—see Section 11.3), and open borders. Because of the polyglot nature of many of these countries, they often share one or more languages in common. When countries share common geography, language, payment systems, and currencies, a number of the key barriers to cross-border commerce are eliminated.

According to a recent report (Alizilia 2015) by Accenture and AliResearch (the research arm of the Chinese Alibaba Group), in 2015 there were approximately 300 billion global cross-border B2C transactions which represented around 16% of all B2C transactions. These transactions were the combined result of the purchases of 360 million B2C shoppers worldwide which was only 25% of all online buyers that year. So, only one out of every seven transactions was cross-border and only one out of every four buyers made cross-border purchases.

Based on additional figures from a survey of 24,000 adult consumers in 29 countries across the globe (PayPal 2015), in virtually every region of the world the USA and China are by far the most popular online cross-border purchase destinations. The only exception is in Western Europe where cross-border purchases tend to be made within the region. From the buyer's standpoint, the countries with the strong proclivities for cross-border purchasing (i.e., those with more than 70% of their online purchases being cross-border) are scattered across the globe and include Canada, Ireland, Austria, Israel, Nigeria, Singapore, and Australia. Those with the weakest proclivities include the USA, UK, Germany, Netherlands, Poland, Turkey, Japan, South Korea, and China.

By 2020 (Alizilia 2015), the outlook for cross-border transactions is predicted to change substantially. The volume of cross-border transactions is projected to have a compound growth rate of close to 30% between now and then, so that cross-border transactions will reach around 1 trillion. This will represent about 30% of the estimated total for that year. At that time, close to one out of every two of the estimated two billion shoppers will make cross-border purchases. For merchants and sellers these estimates paint a picture of massive opportunity—the "oyster." It also represents a substantial opportunity for banks and payment service providers, So, where's the "sword?" What's needed to take advantage of the opportunity?

The Solution

Suppose a merchant wants to expand his or her online B2C specialty clothing and apparel business to handle overseas buyers. Point of fact, there are more cross-border purchases for clothing and apparel than any other product category by a wide margin. Given this fact, how hard could it be to sell clothing on the international market? With English and credit cards being de facto standards on the Internet, it seems like most merchants could engage in cross-border EC by simply adding support for international credit cards and delivery. While this might work for a handful of transactions in some parts of the world, experience tells us it would not work for even the average number of sales transactions handled by most EC retailers.

A recent study of a sample of 180 online B2C merchants in ten countries by Pymnts (2015) assessed the characteristics of those already successfully engaged in international B2C, as well as the readiness of the sample to participate in cross-border transactions. Based on their analysis of 60 features, the number one key finding was that the top ten merchants "think local." They treat international customers as if they were domestic. They offer multiple languages, multiple currencies, and multiple payment systems. They customize pages to the customer's country (e.g., simple things like address and phone fields). They support access through a variety of devices, especially mobile. They simplify the checkout process, eliminating the need for extensive user profiles. They also offer free shipping and rewards to encourage repeat business.

The second key finding of the study (Pymnts 2015) was that the vast majority of businesses in the sample were far from ready to engage in cross-border transactions. It's understandable given that there are currently 195 countries in the world with a combined total of 6500 spoken languages and 180 currencies, not to mention differing customs procedures, logistics, physical infrastructures, and other regulatory and legal systems.

Treating potential cross-border customers as if they were all "local" is almost an impossible task. Because the barriers and issues that need to be addressed in cross-border sales are so intertwined, it is hard to do it in a phased approach or piecemeal fashion. This is why most businesses start by offering a small segment of their product or service listings to a handful of countries. Also, instead of setting up local legal entities within the countries of interest or creating on their own with fully localized features for each of the countries to be served, many companies start by working with a partner who is conversant in the world of cross-border

commerce and who has a site or portal that is already serving a broad spectrum of cross-border consumers.

This was the approached used by Costco when they decided to offer some of their products to the burgeoning B2C market in China.

Costco's 2015 annual report provides an overview of the company and the general strategy and operating principles (Costo 2015). Costco Wholesale Corporation began operations in 1983 in Seattle, Washington. From the beginning they have focused on operating membership warehouses in the USA and Canada, as well as a handful of foreign countries including the UK, Mexico, Japan, Australia, Spain, Taiwan, and Korea. Worldwide there are 686 warehouses, the bulk (569) of which are located in the USA and Canada. These warehouses, which average about 144,000 sq.ft., are run by 200,000 employees and service 81 million cardholders. Cardholders pay annual fees that vary by country, although they are around $55 in the USA.

Their basic strategy is to offer lower priced, high quality, nationally branded, and Costco private-label (Kirkland Signature) products across a range of categories including food, sundries, hardlines, softlines, fresh foods, and ancillary products (e.g., gas stations and pharmacy). Given the low price strategy, the profits come from selling focused inventory (3700 SKUs) with high sales volumes and rapid turnover coupled with "operating efficiencies achieved by volume purchasing, efficient distribution and reduced handling of merchandise in no-frills, self-service warehouse facilities." They also come from membership fees.

In 2015, Costco total sales were $114B with an annual growth rate of 20% annual. The overwhelming majority (97%) of these sales were in-store. Costco was late getting to EC and, as a consequence, they lag behind their competitors. Their anemic EC sales are also a consequence of their expressed strategy. EC sales don't generate memberships, nor do they encourage much foot traffic along with in-store impulse buying.

While Costco's international presence is limited, it was hard for Costco to ignore China's astounding retail growth, especially from online sales. In order to test the retail market in China, Costco decided in 2014 to enter the market by setting up shop on Alibaba's Tmall Global site without capital investments in Chinese real estate.

In recent years, the Alibaba Group (see Section 11.9) has made a concerted effort to encourage cross-border online B2C imports. Toward this end, in 2014 they launched a new cross-border EC website called Tmall Global. It's a platform that enables foreign companies to sell to Chinese consumers without having a physical presence in China. This was particularly attractive to Costco because they were wary of following the same path of the big box stores.

Tmall has a number of key features supporting cross-border EC, but two of the more important are Alipay and Tmall's bonded warehouses and logistics-partner network (Tran 2015). Alipay is Alibaba's payment platform (sort of like PayPal). It is the largest payment system in China, used much more than credit or debit cards which Tmall also supports. The platform automatically handles currency conversion so that Chinese buyers pay in Yuan and retailers are paid in their home currency (once a buyer has received their goods). Basically, once a merchant is hooked up to Alipay, it provides entfee to China's 300 M online buyers. The other key feature revolves around a set of bonded warehouses located in five major cities (Shanghai, Guangzhou, Hangzhou, Zhengzhou, and Ningo) where merchants can pre-ship products in large quantities. The warehouses are in duty-free zones dedicated to handling imports and delivery for international merchandise purchased online. They not only enable faster shipping times to customers but also lower fees on customs and duties. Technically, the warehouses are operated by customs, but in reality the actual goods are the responsibility of Alibaba's logistics subsidiary, Cainiao, who uses a network of third-party logistics providers (3PLs) to perform the necessary warehouse activities including the sorting, picking, delivery, and customs clearance.

In exchange for these types of key services, which aren't free, retailers must meet certain criteria. Among other things they have to (Tran 2015):

- Have a retail or trading license.
- Prove they own the brands or have rights to distribute them.
- Provide their Tmall site in Chinese.
- Have products manufactured outside China inspected and approved by Tmall.
- Provide customer service including Chinese language service support.
- Support customer returns and provide a return location in China.
- Provide shipping direct to the consumer in China.

Many of the required services can be and are often outsourced to third-party providers, who are preapproved and endorsed by Tmall Global.

The Results

Today, Costco's Tmall Global site sells around 200 items from its food, healthcare, and private-label Kirkland Signature product offerings. They also used their base in

Taiwan to help support operations and rely on Tmall's inventory storage and 20 day delivery to limit operating expenses.

Unlike some of the other 5400 Tmall Global customers, Costco has enjoyed a modicum of success. While there are no official annual statistics provided by Costco or Tmall, Tmall did report that Costco sold over $6.4 million in the first month of operation and that during the 2014 Single's Day Sale Costco sold $3.5 million in merchandise.

Because of Costco's razor thin margins, whatever revenues are made have to be weighed against the benefits and costs accrued from the site and partnership. On the benefit side, the operation (Mahajan 2015):

- Enables them to test the market without having to invest in real estate, this was the mistake that many big box retailers (e.g., Home Depot and Best Buy) made when they entered the Chinese market.
- Allows them to experiment with the market to determine those products that will sell, the features that are important to Chinese customers, the prices they can charge, and the general spending patterns of Chinese consumers with respect to their offerings.
- Alleviates the need for a local business license to establish an online store. This can be a complex, lengthy, and costly endeavor.
- Eliminates many of the typical interchange costs associated with card-based payment systems and reduces overall logistical costs by speeding transit time.

In terms of limitations, the operation:

- Restricts them from advertising on Tmall Mainland and Taobow which accounts for 80% for China's online sales. They have to rely on company name and brand recognition to drive business.
- Charges merchants a deposit fee ($25,000), an annual fee (somewhere between $5000 and $10,000), a sales commission fee of 2–5% of the product price and logistics fees, and an Alipay fee of 1% of the product price and logistics fees.
- Eliminates a key element of their business strategy—membership fees.

There's no assurance that Costco will succeed in the Chinese online B2C market. There is tremendous competitive pressure coming from leading Chinese retailers and from other cross-border retailers and manufacturers. If they are successful, eventually they will probably have to go the local route, establish an independent online presence in China in order to reduce their overall costs.

Sources: Alizilia (2015), Goodale (2014), Mahajan (2015), PayPal (2015), Pymnts (2015), and Tran (2015) (all accessed May 2016).

LESSONS LEARNED FROM THE CASE

From the consumer's point of view, the world of online retail is pretty simple—select, pay, confirm, and wait for delivery. From the merchant's point of view, online life is anything but simple. Regardless of whether a merchant is running a domestic or international operation, there are a large number of complex issues that need to be addressed in making a business successful. A major difference between the two types of operations is that when a merchant tries to expand hers or his online business by going international the problems are exacerbated—almost like running separate, local businesses in the different countries.

As the open case highlighted, among the litany of issues that have to be addressed by merchants, some of the key issues revolve around: (1) handling electronic currencies and payments; (2) managing and fulfilling orders once payment has been made; and (3) ensuring that the linkage between the financial side and the logistical side appears seamless to customers. This chapter focuses on these issues.

Almost since the inception of e-commerce, the world of e-payments has been dominated by credit cards, debit cards, and third-party surrogates like PayPal tied directly to cards or bank accounts. Today, this world is in flux. While the traditional e-payment methods still dominate worldwide, this is changing rapidly. The changes are being driven by the rise of omnichannel retail, the expanding use of mobile devices, innovations in the world of digital or virtual currencies, as the changing demographics of B2C consumers.

The first part of this chapter deals with this changing payment world. First, it examines the underlying shifts driving the changes. Next, it looks at the major forms of payment worldwide including cards, third-party systems, mobile payments, and virtual currencies. The chapter also explores the players and processes associated with the various payment alternatives along with the underlying reasons why some have been widely adopted while others have not.

The latter sections of the chapter delve into the second of these issues—order fulfillment and logistics. Order fulfillment and logistics are part of the larger arena of supply chain management and execution. Their importance was recently highlighted by Tong Wenhong, the CEO of Cainao (discussed in the opening case), when he stated, "If e-commerce was the focus of China's economy in the past 10 years, logistics will be the focus for the next 10." In this chapter, we will describe the role that fulfillment and logistics play in EC along with some of the major logistics problems that are encountered and the solutions designed to alleviate those problems.

11.1 CHANGING RETAIL LANDSCAPE

"Retail stores will completely die." "Cash is King no more." "The PC is dead." It's easy to find any number of pundits proclaiming the imminent demise of some historical pillar of off-line or online retail. However, as the writer Mark Twain was once quoted as saying "…the report of my death has been grossly exaggerated." Clearly, online shopping, digital payments, and mobile devices are all growing at substantial rates relative to their historical counterparts, but as Bill Gates has said "we always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten." None of these are in immediate danger of passing, especially when they are viewed from a global perspective.

Omni-Channel Retail

Overall, worldwide retail sales are growing, but EC retail sales are growing faster (eMarketer 2015). In 2015, global retail sales were close to $24 trillion. By 2019, they will be around $29 trillion, a growth rate of 6% annually. In contrast, EC retail sales were estimated at $1.7 trillion in 2015 which was 7% of the total figure. This online segment of sales is projected to grow at over 8% annually for the next few years and will reach $3.6 trillion in 2019. By that time, they will be 12% of the total. Loosely translated, this means that for every $1 of EC sales there are $9 sold elsewhere (primarily in stores).

In todays world of omni-channel retail, it's misleading to look at in-store versus online as a zero sum game. Online and offline activities are intertwined. If I spend time in a store looking at some item of interest, check out its features or fit, go online to check competitive prices and reviews and availability elsewhere, and then decide to go home and order it online, is this an online sale or an in-store sale. What if I don't go home, but instead order it from a web kiosk in the store? In-store or online sale? Technically, these "showrooming" sales would probably end up in the EC column. Now, what about the reverse. Suppose, I'm at home and spend time on my smartphone checking on the prices, reviews, and availability of some product, then decide to go to the store and buy it. The store will get the credit, but the sale was really the result of my "web-rooming" activities.

While these and other combinations aren't possible with every product and every retailer, they are rapidly becoming so for leading retailers. A few years ago, retailers' store systems and online systems—both front office and back—were completely separate. This made it difficult to offer and service customers with all these possible combinations. However, today many of the world's leading retailers are transitioning systems, so they can provide their customers an array of browsing, buying, and delivery choices.

There is no doubt that the number of retail stores and retail square footage are on the decline. So is the foot traffic within most stores. A lot of this decline is a function of online shopping, but this doesn't mean that stores are completely dying. It does mean that the shopping experiences we know today are morphing into something different, so that strictly keeping score of in-store versus online dollars may be moot. This is why, for example, Forrester Research (O'Grady 2016) has been reporting the relative position of online, Web-influenced, and non-Web-influenced off-line sales. When these distinctions are made, they estimate that the $3.6 trillion in global retails sales for 2016 sales will be divided among the three categories 8%, 44%, and 48%, respectively.

Cash Versus Noncash Transactions

Both off-line and online noncash payments are on the rise. In absolute terms this doesn't mean that cash payments are declining and ultimately dying. In fact they are actually increasing but at a slower rate than noncash payments.

Unlike noncash payments, it is very difficult to track and accurately measure the total use of cash in a country. Governments try to track how much cash is in circulation, but most governments have no way of accurately knowing who's using how much cash to buy what. In fact, this is one of the reasons that some people like cash, as well as the digital counterparts like bitcoins.

One thing we can measure is ATM activity. The ATM business is booming (Gordon 2015). In 2014, the installed base of ATMs worldwide was three million and is expected to be at four million by 2020. Indeed, China with the fast growing economy had 600,000 ATMs that year, an increase of 500% from the year before. In 2014, there were over 90 billion cash withdrawals worth around $14 trillion. That was an increase of over 4%. Of course, in the future we'll be able to load our electronic wallets from ATMs, so we'll have to make a distinction between cash versus electronic withdrawals.

From a cash standpoint, another thing we can estimate is the relative number of consumer transactions that are cash versus noncash. A widely cited report from MasterCard (2015) noted that cash accounts for 85% of global consumer transactions, although this percentage varies widely by country. Actually, in the vast majority of countries the percent exceeds 85%. Included in this majority are China, Spain, Brazil, Japan, India, and Russia. This is followed by a group of countries like the USA, Australia, Germany, and South Korea where the percent of consumer cash transactions falls between 55 and 70%. Finally, there is a very small handful of countries where the percent is between 40 and 50%. These are the closest thing we get to a cashless society and include Singapore, the Netherlands, France, Sweden, Canada, and Belgium.

There is a substantial push by a number of governments to eliminate cash transactions as much as possible. However, because of its ubiquitous role in small-value transactions and among lower income populations who have few financial alternatives, it's close to impossible for a government to eliminate cash even in a country that is economically advanced.

This pattern between cash and noncash consumer transactions mirrors the pattern between off-line and online retail sales. More specifically, like in-store retail cash is king and increasing. However, noncash transactions are increasing more rapidly and gaining market share. These gains are being driven by EC sales transactions. While cash can be used for EC purchases (e.g., cash on delivery or transfers from cash accounts), the vast majority of these sales involve noncash payments of various sorts.

Like cash in the broader world, cards—credit and debit—have been the king of global noncash payments since the early 2000s. Looking at figures from a Capgemini Financial Services Analysis (2016), overall noncash payments fall into one of four groups—cards, direct debit, credit transfers, and checks. Except for Europe where cards represent about 45% of all noncash payments, in every other region of the world the share of card transactions ranges from a low of 50% in Latin America to a high of over 80% in Emerging Asia.

Data from worldwide survey of 13,000 consumers in 26 countries conducted by Nielsen (2016) provides a closer look at how noncash transactions are used globally in the online world. Respondents were asked to indicate what methods they used to make B2C online purchases in the last 3 months. Payments were divided into five categories—credit card, debit cards (third party), digital payments systems (e.g., PayPal), direct debit, and cash on delivery (COD). The top three payment methods for a number of key geographical areas are shown in Table 11.1.

Globally, cards (credit and debit) are the most frequently used, followed by digital payment systems. However, it's obvious that the relative importance of a particular method varies from one region to another. Clearly, China is an anomaly because neither credit cards nor debit cards are in its top three. In China digital payments are used most frequently by a wide margin. In China the popularity of digital payments results from the fact that Alibaba is by far the largest EC site in the county, and Alibaba relies on its own proprietary payment system called Alipay. Again, it is also important to point out that COD is the leading payment method in four out of the nine areas which all happened to be developing economies where there is a large portion of "unbanked."

Table 11.1 Percent of respondents using EC payment method in last 3 months

Country	Credit	Debit	Digital	Direct debit	COD
Global	53	49	43	–	–
China	–	–	86	53	49
India	–	71	–	61	83
SE Asia	57	–	37	35	–
Western Europe	44	56	56	–	–
Eastern Europe	46	–	–	55	57
North America	74	–	38	–	–
Africa	–	52	–	42	54
Latin America	65	31	46	–	–
Middle East	46	11	–	–	64

Source: Based on data from Nielsen (2016)

Move to Mobile

It should be no surprise that the world is rapidly adopting smart phones. According to Ericson (Lunden 2015), in 2015 there were just under two million smartphone users globally, around 25% of the world population. By 2016, they expect the number to rise to over six million users or 70% of the world population. Much of this astounding growth is being fueled by developing economies and by the "digital natives" between the ages of 18 and 24.

Not surprisingly, the rapid adoption of smartphones is also highlighted by the number of global shipments of new smartphones versus the combined shipments of other computer-based devices including tablets, 2-in-1 hybrid tablets, portable PCs, and desktop PCs (Lunden 2015). At the end of 2011, new shipments of smartphones exceeded the shipments of PCs of all sorts for the first time. Today, smartphones account for 70% of all new shipments. By 2019, the percent will be close to 80%.

Clearly, the PC is on its last breath, but not so fast. First, ignoring the fact that Apple still refuses to provide touch screens on the Macbooks, most PCs are morphing into tablet devices which have mobile capabilities. Second, many smartphone users still have PCs that they use on a daily basis. Finally, when you look at the EC world, it's clear that PCs still rule the roost in terms of online purchases.

With respect to this latter claim, consider the data in Figure 11.1. This figure shows the percent on online purchases made with tablets, smartphones, and PCs. With the exception of two countries—Japan and South Korea where cell phone and smartphone usage is historically very high—PCs account for at least 70% of the purchases. Even in Japan and South Korea the numbers are around 50%.

Why is the percent of online purchases with PCs so much higher than it is for smartphones? There are a number of reasons. One reason is that sizeable percentage of smartphone users are still hesitant to put personal and credit information on their phones, fearing it might be stolen and hacked. This is the same sort of fear that slowed the use of credit cards for online purchases when EC was first getting started. Obviously, consumers got over it and they'll get over it again with

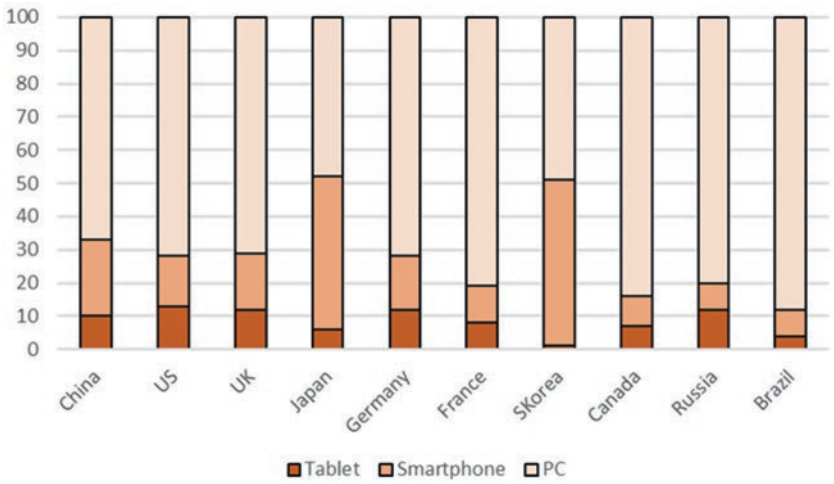

Figure 11.1 Percent of Total Country Online EC Spend by Device. Source: Keith, M. Global eCommerce Sales, Trends and Statistics 2015. September 2, 2015. **remarkety.com/global-ecommerce-sales-trends-and-statistics-2015** (accessed May 2016)

mobile devices. A second reason is found in the demographics of the buyers. Adoption of mobile devices is strongest among younger cohorts. Yet, the purchasing power of older cohorts is much larger than it is for younger cohorts. Globally, the median networth of those over 65 is close to 50 times larger than those under 35! Older consumers still use PCs. What this is likely to mean in the longer run is that the percent of purchases by smartphones will begin to climb rapidly. However, the dollar value purchased with PCs will be larger than it is for smartphones for the foreseeable future.

Implications for EC Payments

Since its inception in 1995, B2C EC has been dominated by a relatively simple set of business models, transactions, and payment types. Crudely put, at the beginning of the twenty-first century it was enough for the average merchant to offer a catalog of products and prices via a browser, to enable payment by card (credit and debit) or some third-party payment processor (e.g., PayPal), to provide systems for shipping the product and handling returns, and to provide customer support. Those merchants with both a physical and digital presence tended to run their online business as a simple, albeit separate, extension of their off-line world. Basically, it was as if a catalog business had gone digital. Like most catalog businesses, the primary focus has been on (non-perishable) products, not customers, and on domestic markets, not international buyers. Even today a large portion of EC sites still operate this way with a number of bells and whistles thrown in.

For the last 10 years the underlying tenets and practices of this model have been under assault by the operational, technical, and demographic changes briefly described in this section. In the last 4–5 years these changes have picked up a full head of steam. Nowhere is this more apparent than in the area of payments both from the buyers' and sellers' side. The size of the assault in this area has been described as a tsunami. Literally, innovations aimed at supplementing, modifying, or replacing some aspect of electronic payments number in the thousands. Many of these are coming from new players and start-ups in the financial technology (fintech) industry.

While there are no industry standard categories for classifying these efforts and, thus, no official data for estimating associated volume and value, Capgemini Financial Services Analysis (2016) has attempted to address these deficiencies. They coined the term "hidden digital payments" to describe this overall collection of activities and divided the payments into four main types including:

- *Closed-loop cards and mobile apps*, enabling online and off-line payments and aimed at promoting loyalty.
- *Digital wallets (non-banks)*, supporting a variety of EC transactions.
- *Mobile money*, enabling mobile financial transactions for the "unbanked" and "underbanked."
- *Virtual currencies*, supporting the instantaneous transfer of "value" without the aid of traditional financial institutions.

For 2015, they estimated the total volume of hidden payments between 25 and 40 billion, a small percent of all non-cash transactions (between 6 and 10%).

Critical Mass

Before credit cards became the standard in EC, many companies tried to introduce nontraditional payment systems. With the exception of PayPal, they all died an early death. Today, the number of new systems far exceeds the number from those early years. A handful will probably gain widespread acceptance, another handful will gain regional acceptance, and the overwhelming majority of these will suffer the same fate as their predecessors. Even notoriety and a faithful group of followers is not any guarantee of success.

A case in point is the well-publicized virtual currency Bitcoin (**bitcoin.org**). Bitcoin is a peer-to-peer, encrypted digital currency powered by open source software (discussed in detail in Section 11.7). It has a sizeable number of users and supporters. It has a rocky history. At this point in time, some pundits are forecasting its demise as a currency. However, they are also forecasting that there's a good chance that its underlying technical foundation may be repurposed for other financial applications.

As Evans and Schmalensee (2005) pointed out back in 2005, it takes years for any payment system to gain widespread acceptance. For example, credit cards were introduced in the 1950s but did not reach widespread use until the 1980s. A crucial element in the success of any e-payment method is the "chicken-and-egg" problem: How do you get sellers to adopt a payment method when there are few buyers using it? Further, how do you get buyers to adopt a method when there are few sellers using it? In physics terms, how do the payment systems reach critical mass.

Critical mass depends on a number of key factors such as those listed below:

- **Independence.** Most forms of e-payment require the buyer to adopt some new technology in order to initiate a payment and the merchant to install specialized software and hardware to accept, authorize, and process a payment. If the new system can piggy-back on existing technologies and practices, it has an easier road to success.
- **Interoperability and portability.** An e-payment method must be integrated with existing information systems before it can be adopted.
- **Security.** How safe is the payment transaction? What if the transfer is compromised? Only safe systems will succeed.
- **Anonymity.** Some buyers want their identities and purchase records to be anonymous. This can be done only when cash is used. To succeed, special payment methods, such as virtual currencies, have to maintain anonymity.
- **Divisibility.** It is difficult for most payments systems to efficiently scale across a range of purchase prices. For example, on one end try using a credit card to buy a candy bar. On the other, try using a credit card to purchase a plane. Any method that can service one or the other of the extremes or can cover a wide range in the middle has a chance of succeeding.
- **Ease of use.** Credit cards are used for B2C and B2B e-payments because of their ease of use. E-payments must complement the trading methods.
- **Transaction fees.** Outside of cash, virtually any payment system costs someone money. When a credit card is used, the merchant pays processing fees. When a card is used to withdraw money, the cardholder usually pays. If the aggregate fees prove too costly for one of the parties, the system is likely to fail.
- **International support.** EC is a worldwide phenomenon. An e-payment method must be easily adapted to fit buying needs and local legal requirements before it can be widely adopted. The major exceptions are systems that are mandated by law.
- **Regulations.** A number of international, federal, and state regulations govern all payment methods. Any changes or new methods need approval of the regulators. PayPal, for instance, faced several lawsuits brought against them by several U.S. states for alleged violations of banking regulations.

SECTION 11.1 REVIEW QUESTIONS

1. What is omni-channel retail? "Showrooming?" "Webrooming?"
2. Why is it difficult to track the global use of cash?
3. What are the different types of noncash EC payment used in different regions of the world?
4. Describe the relative use smartphones, tablets, and PC for EC purchases?
5. What are main types of "hidden payments?"
6. What is the "chicken-egg" problem in EC payment adoption?
7. What factors are key to the successful adoption of an EC payment method?

11.2 USING PAYMENT CARDS ONLINE

Payment cards are electronic cards that contain payment-related data. They come in three forms:

1. **Credit cards.** A credit card enables its holder to charge items (and pay later), or obtain cash up to the cardholder's authorized limit. With each purchase, the credit card holder receives a loan from

the credit card issuers. Most credit cards do not have an annual fee. However, holders are charged interest if the balance is not paid in full by the due date. Visa and MasterCard are the leading cards.
2. **Charge cards.** These are special credit cards where the balance must be paid in full by the due date and usually have annual fees. Examples of issuers are American Express and Diner's Club (they both offer regular credit cards as well).
3. **Debit cards.** Payments made with a debit card are withdrawn from the holder's checking or savings account. The actual transfer of funds usually takes place in real time from the holder's account (if an ATM card is used). However, a settlement to a merchant's checking account may take place within 1–2 days. Again, MasterCard and Visa are examples of debit card issuers. For a discussion of some best practices for debit card usage, see **usatoday.com/story/tech/columnist/komando/2014/04/11/4-places-you-should-not-swipe-your-debit-card/7436229**.

Credit Card Reading

When paying with a credit card, it is necessary for merchants to read the content of the card and then transfer the content for approval and processing. This must be done in almost real time.

Several methods are available.

- **Stationary card readers.** The most common readers available are physical POS in stores. They are wire-lined to the authorization and processing system.
- **Portable card readers.** These are used in places where wirelines do not exist (e.g., on airplanes). They may be connected wirelessly to the processing system, or may be stand-alone systems (sellers then take risks, usually for small payments).
- **Mobile readers.** These systems enable payments from mobile devices. They include credit card readers, which are plugged into the smartphones. The Square Reader (**squareup.com**), which has a "swiper" that plugs into the smartphone's headphone jack and reads the information from the magnetic strip of the customer's card, is such a device (see Section 11.5).

Processing Cards Online

The processing of credit card payments has two major phases: *authorization* and *settlement*. **Authorization** determines whether a buyer's card is valid (e.g., not expired) and whether the customer has sufficient credit or funds in his or her account. **Settlement** involves the transfer of money from the buyer's account to the merchant's. There are a number of parties involved in both processes including:

- **Customer.** The individual possessing the card.
- **Merchant.** The vendor that sells goods or services.
- **Issuing bank.** The issuer (usually a bank) of the credit (debit) card to customer (or businesses). Services customer accounts including billing and collecting month payments.
- **Merchant acquiring bank.** Enrolls merchants into a program that accept a specific card brand (e.g., Visa) and, on the merchant's behalf, processes debit or credit card payments made using that particular card brand.
- **Credit card (association) network.** Credit card networks determine where credit cards can be used and facilitate the payment process between credit card users, merchants, and credit card issuers.
- **Payment service provider.** The company that provides electronic connections and transaction services among all the parties involved in electronic payments (including authorizations). A payment service provider is also called a payment gateway provider.

The roles that the participants play, the linkages among them and the general flow of the authorization and settlement processes are depicted in Figure 11.2. For any given card and merchant there can be variations in the exact players and in the details of the process. However, regardless of whether the payment is being made off-line or online, they usually include:

- **Authorization Cycle**—[1] The customer initiates a payment transaction (fills out Web page, swipes a card, etc.). The merchant receives the transaction information [2]. This information is passed to its PSP where it is routed [3] to the merchant's acquiring bank (processor). The acquiring bank passes the information [4–5] to the issuing bank through the credit card network. If the issuing bank approves the transaction, an authorization code is sent

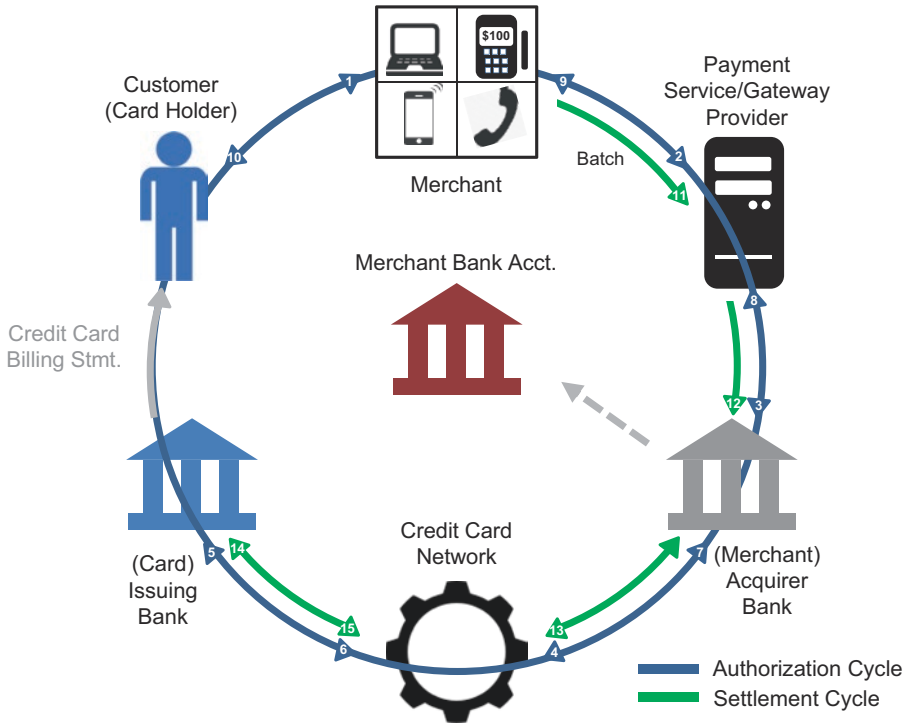

Figure 11.2 Credit card payment procedure (Drawn by D. King)

back [6–9] to the merchant via the same linkages. The issuing bank also holds an authorization associated with that merchant and consumer for the approved amount. Finally, the merchant notifies [10] the customer and fulfills the order.

- **Settlement**—At the end of the day, the merchant submits [11, 12] in batch all the approved authorizations they have received to the acquiring bank via its PSP. Again, the acquiring bank makes the batch settlement request [13, 14] to the issuing bank via the card network. The credit card issuer makes a settlement payment [15, 16] to the acquiring bank via the card network (the next day). The acquiring bank subsequently deposits [17] approved funds into the merchant's nominated account. This could be an account with the acquiring bank if the merchant does their banking with the same bank, or an account with another bank. The entire process from authorization to settlement to funding typically takes 3 days.

Although the entire authorization process involves a number of parties, it usually takes a few seconds. Some of that time involves various security measures—encrypting the information that is transmitted and checking for fraudulent transactions along the way. In contrast, the settlement process usually takes a few days. The settlement process can be slowed if the transaction depends on the customer actually receiving the order.

While cards are obviously convenient for both the consumer and the merchant, they cost the merchant money. This is one of the reasons smaller businesses are hesitant to support a laundry list of card brands and types because of the size and complexity of the charges that come with this support. The main fee that a merchant pays for offering credit card payments is called this **discount rate**. It might be something like 2%, 3%, or more of the transaction value. There are a number of factors that impact the rate like the size of the transaction, the type of transaction (e.g., card present or not), the particular brand of card, etc. A major portion of the discount rate (e.g., 85%) goes to the issuing bank—these are the fees charged by the issuing bank for handling authorization and settlement requests. This segment of the fees are called the **interchange rate**. The remaining amount is split between the credit card association (around one-third) and the acquiring bank (around two-thirds).

One way to eliminate or reduce some of the complexities and costs associated with card payments is by eliminating or consolidating some of the steps in the process—especially the processing options that link the merchant to the issuing bank. The following are the major processing options. The EC merchant may:

1. **Own the payment software.** A merchant can purchase a payment-processing module and integrate it with its other EC software. This module communicates with a payment gateway run by an acquiring bank or another third party.

2. **Use a point-of-sale (POS) system operated by a card acquirer.** Merchants can redirect cardholders to a POS system run by an acquirer. The POS handles the complete payment process and directs the cardholder back to the merchant's site once payment is complete. In this case, the merchant's system deals only with order information. In this configuration, it is important to find an acquirer that handles multiple cards and payment instruments. If not, the merchant will need to connect with a multitude of acquirers.
3. **Use a POS system operated by a payment service provider. Merchants can rely on payment service providers (PSPs)**, which are third-party companies that provide services to merchants so they can accept all kinds of electronic payments. The PSPs connect all participants in the electronic transactions. See an example at **usa.visa.com/content/dam/VCOM/download/merchants/bulletin-mobile-best-practices.pdf**.

Option number 1 is simply the base method that is shown in Figure 11.2. With option 2 the merchant steps to the side and lets the acquirer deal with the customer's payment. In option 3, the merchant simply deals with a third-party processor that handles not only card payments but other types of payments as well. These third-party companies can also alleviate the need for merchants to establish relations with acquiring banks.

Fraudulent Card Transactions

Although the processes used for authorizing and settling card payments off-line and online are very similar, there is one substantial difference between the two. In e-commerce, the merchants usually are liable for fraudulent transactions. In addition to the cost of lost merchandise and shipping charges, merchants who accept fraudulent or unauthorized cards for payments may have to pay penalties to the credit card companies. However, these are not the only costs.

There also are the costs associated with combating fraudulent transactions. These include the costs of tools and systems to review orders, the costs of manually reviewing orders, and the revenue that is lost from erroneously rejecting valid orders. According to CyberSource's sixteenth annual survey (CyberSource 2016) of online fraud management, fraudulent online card transactions still result in substantial losses although the rate of e-commerce revenue loss has remained steady (at .9%) for the past 5 years. The stability is a function of the measures that merchants have adopted to manage fraud. Over the years, the CyberSource surveys (CyberSource is a subsidiary of Visa) also have monitored the steps taken by merchants to combat fraud. Today, virtually every merchant has instituted automated processes backed by manual review to detect fraudulent transactions. The exact automated procedures vary from one merchant to the next. However there are some tools that are used by a majority. The key tools used in combating fraud are:

- **Card verification number (CVN).** More than 86% of all merchants use the **card verification number (CVN)** method, which detects fraud by matching the three-digit verification number printed on the signature strip on the back of the credit card (or the four-digit number on the front of the card, such as American Express cards) to the number stored by the cardholder's issuing bank. However, if a fraudster possesses a stolen card, the number is in plain view and verification becomes difficult. Attempts are made to check the habits of the card user (e.g., to check unusually large purchases or purchases made overseas). In such cases, a cardholder may get a telephone call from the card issuer or the credit card company, asking for verification of identity. In such a case, the verification may be done by intelligent software agents automatically.
- **Address verification.** A vast majority of merchants (better than 86%) use the **Address Verification System (AVS)**, which detects fraud by comparing the address provided by the buyer at checkout with the card address on file. Unfortunately, this method may result in a number of false positives, meaning that the merchant may reject a valid order. Cardholders may have a new address or simply make mistakes in inputting numeric street addresses or zip codes. AVS is available only in the United States and Canada.
- **Customer order history.** The purchases made with a particular card (and card holder) tend to follow regular patterns with respect to place, amounts, types, and velocity. Order data from the cards used can be mathematically and statistically mined to discern these patterns. Current card purchases can be matched against these patterns to detect anomalies in real time in order to flag them as potential fraud. Close to 78% of merchants employ this process.
- **Negative lists.** Close to 70% of the merchants use negative lists. A negative list is a database of card

numbers that could potentially be used by fraudsters. It is also a database of card numbers used to avoid further fraud from repeat offenders. The merchants can match each customer's card against this database to find customers and cards with known problems.
- **Postal address validation service.** Checks to see if the shipping address received with an order is a valid postal address. Just under 70% use this technique.

While automated procedures are key to fraud detection, the CyberSource survey indicated that close to one out of every four card transactions is flagged as potentially fraudulent, requiring manual review. The average length of a manual review is about 5 min. This adds up to a lot of time and labor expense. In fact half of the money spent combating card transaction fraud goes to these costs. The future key to reducing these costs is clearly better automated procedures.

SECTION 11.2 REVIEW QUESTIONS

1. Describe the three types of payment cards.
2. Describe credit card readers.
3. List the major participants in processing cards online.
4. Describe the key processes in card settlement and authorization.
5. What options does a merchant have in setting up an e-payment system?
6. What costs does an online merchant incur if it accepts a fraudulent card transaction?
7. What steps are often taken by online merchants to combat fraudulent orders?

11.3 SMART CARDS

A **smart card** is a plastic payment card that contains data in an embedded microchip. The embedded chip can be a microprocessor combined with a memory chip or just a memory chip with nonprogrammable logic. Information on a microprocessor card can be added, deleted, or otherwise manipulated; a memory-chip card is usually a "read-only" card, similar to a magnetic stripe card. The card's programs and data must be downloaded from, and activated by, some other device (such as an ATM). Smart cards are used for a wide variety of purposes including:

- Telecom—SIM cards
- Financial—cards issued by banks, retailers, and service providers for payment services (debit, credit, prepaid), loyalty, and social cards with payment apps
- Government and healthcare—cards issued by governments for citizen identification and online services and cards issued by private health insurance companies
- Device manufactures—mobile phones, tablets, navigation devices, and other connected devices including secure element without SIM application
- Other—cards issued by operators of transport, toll, car park, pay TV, and other services, as well as cards providing physical and logical access.

A little over 9.2 billion smart cards were shipped in 2015, a 12% increase over the previous year. In 2016, the number is expected to only grow about 6% to 9.8 billion units. The majority of smart cards are currently found in telephones (5.4 billion out of the 9.2 billion) cards used for payments (which is 2.6 billion). The growth that has been experienced is being driven primarily by the migration of payment cards from swipe to (EVM) chips, the rise in mobile devices (excluding SIM cards), and increasing e-government services.

Types of Smart Cards

There are two distinct types of smart cards. The first type is a **contact card**, which is activated when it is inserted into a smart card reader. The second type of card is a **contactless (proximity) card**, meaning that the card only has to be within a certain proximity of a smart card reader to process a transaction. On the front or back of the contact smart cards there is a small gold (or silver) plate about one-half inch in diameter that contains a chip. When the card is inserted into the card reader, the plate makes electronic contact and data are transferred to and from the chip. A contactless card has an embedded antenna that facilitates data transfer to another antenna (e.g., attached to another device). Contactless cards are especially useful where data must be processed (e.g., paying toll road fees, bus or train fares) or when contact may be difficult. Most proximity cards work at short range (just a few inches). For some applications, such as payments at highway tollbooths, longer range proximity cards are available.

In 2015, over 50% of the smart cards shipped to the USA and Europe were contactless. For Asia Pacific, the figure was close to 75%.

With both types of cards, *smart card readers* are crucial to the operation of the system. Technically speaking, a smart card reader is actually a read/write device. The primary purpose of the **smart card reader** is to act as a mediator between the card and the host system that stores application data and processes transactions. Just as there are two basic types of cards, there are two types of smart card readers—*contact* and *proximity*—that match the particular type of card. Smart card readers can be transparent, requiring a host device to operate,

or stand alone, functioning independently. Smart card readers are a key element in determining the overall cost of a smart card application. Although the cost of a single reader is usually low, the cost can be quite high when they are used with a large population of users (e.g., passengers traveling on a metropolitan mass transit system).

Hybrid cards and *combi cards* combine the properties of contact and proximity cards into one card. A hybrid smart card has two separate chips embedded in a card: contact and contactless. In contrast, a combi card (dual-interface) smart card has a single chip that supports both types of interfaces. The benefit of either card is that it eliminates the need of carrying both contact and contactless cards to use with different applications. In addition, you need only one card reader.

Stored-Value Cards

The **stored-value card** is a card where a monetary value is prepaid and can be loaded on the card once or several times. From a physical and technical standpoint, a stored-value card is indistinguishable from a regular credit or debit card. In the past, the money value was stored on the magnetic strip, but recently, most stored-value cards use the technology of smart cards. With stored-value cards, the chip stores the prepaid value. Consumers can use stored-value cards to make purchases, off-line or online, in the same way that they use credit and debit cards—relying on the same networks, encrypted communications, and electronic banking protocols. What is different about a stored-value card is there is no need for authorization, but there is a limit set by how much money is stored on the card. The most popular applications of stored-value cards are the transportation cards that are very popular in the large cities in Asia. It is a necessity for the citizens in Seoul, Hong Kong, and Singapore to hold smart cards that pay for subways, buses, taxis, and other applications. The transportation cards do not require any fees, but the bank that initiates prepaid cards may require fixed monthly fees or a registration fee. Stored-value cards are also popular to pay for telephone calls and texting.

Stored-value cards come in two varieties: *closed-loop* (single purpose) and *open-loop* (multiple purposes). Closed-loop cards are issued by a specific merchant or merchant group (e.g., a shopping mall) and can be used to make purchases only from the card issuer. Mall cards, refund cards, some toll-pay cards, prepaid telephone cards, and Internet use cards are all examples of closed-loop cards.

Among closed-loop cards, gift cards have traditionally represented a strong growth area, especially in the United States (CardCash 2015). Over 90% of U.S. consumers purchase or receive a gift card annually. In the USA over $100 billion is spent annually on gift cards. The figure has been averaging about a 6% annual increase over the last 5 years.

An open-loop card is a multipurpose card that can be used for transactions at several retailers or service providers. Open-loop cards also can be used for other purposes, such as a prepaid debit card or for withdrawing cash from an ATM. Financial institutions with card-association branding, such as Visa or MasterCard®, issue some open-loop cards. They can be used anywhere that the branded cards are accepted. *Full open-loop cards* (e.g., the MasterCard Mondex® card) allow the transfer of money between cards without the bank's intervention.

Stored-value cards may be acquired in a variety of ways. Employers or government agencies may issue them as payroll cards or benefit cards in lieu of checks or direct deposits. Merchants or merchant groups sell and load gift cards. Various financial institutions and nonfinancial outlets sell prepaid cards by telephone, online, or in person. Cash, bank wire transfers, money orders, cashier's checks, other credit cards, or direct payroll or government deposits fund prepaid cards.

Applications of Smart Cards

In many parts of the world, smart cards with magnetic stripes are used as credit cards for retail purchases and paying for transportation. They also are used to support nonretail and nonfinancial applications. A general discussion of all types of smart card applications can be found at **globalplatform.org**.

Retail Purchases

Credit card companies and financial institutions are transitioning their traditional credit and debit cards to multiapplication smart cards. In many parts of the world, smart cards have reached mass-market adoption rates. This is especially true in Europe, where the goal was to have all bank cards be smart cards with strong authentication and digital signature capabilities by 2010.

In 2000, the European Commission established an initiative known as the Single Europe Payment Area (SEPA), encompassing 33 European countries. To bring this initiative to fruition, all the EU banks agreed to use the same basic bank card standard, enabling the use of credit and debit cards throughout the EU. The standard (EMV) is named after the three major card associations that developed its initial specifications (Europay, MasterCard, and Visa). It is based on smart cards with a microprocessor chip. The chip is capable of storing not only financial information, but other applications as well, such as strong authentication and digital signatures. The history of SEPA along with its key principles is detailed in Wikipedia (**en.wikipedia.org/wiki/Single_Euro_Payments_Area**).

Originally, the 33 countries agreed to convert all their magnetic strip cards to EMV smart cards by December 2010. None did. Today, European adoption varies by region. In Western Europe, 97% of all card transactions are EMV. For Eastern Europe it's around 65%. Outside of Europe, there have also been high rates of adoption in the Middle East, Africa, Canada, and Latin and South America. In these areas, it is 85% or higher. In Asia Pacific, reception has been modest with around 35% of the card transactions involving EMV. Likewise, in the U.S. adoption has been very slow.

In the USA, the major card associations had self-imposed October 1, 2015 as the date for mandatory adoption of EMV cards. On that date, those merchants who had not adopted the format would be held liable for any losses they incurred from credit card fraud. The date came and went. By the end of last year, the estimate was that less than 40% of the merchants had EMV terminals and around 40% of card holders have cards with EMV chips. While the USA has been slow to move, the rate of adoption has picked up substantially over the past year. The exception is gas stations which aren't expected to accept EMV cards until 2017.

The impetus for smart card versus standard usage is that they are more secure. Because they are often used to store more valuable or sensitive information (e.g., cash or medical records), smart cards often are secured against theft, fraud, or misuse. In contrast, if someone steals a regular payment card, he (she) can see the card's number, the owner's signature, and the security code. In many cases only the card number and the security code are required to make a purchase. However, criminals can use the cards up to the authorized value, which is a loss to the bank and Visa or MasterCard.

On the other hand, if someone steals a smart card, the thief is usually out of luck (with the major exception of contactless, or "wave and go," cards used for retail purchases). Before the smart card can be used, the holder may be required to enter a PIN. The other benefit of smart cards versus standard payment cards is that they can be widened to include other payment services. In the retail arena, many of these services are aimed at those establishments where payments are usually made in cash, and speed and convenience are important. These include convenience stores, gas stations, fast food or quick-service restaurants, and cinemas. Contactless payments exemplify this sort of value-added service.

A few years ago, card companies began piloting contactless payment systems in retail operations where speed and convenience are crucial. All these systems utilize the existing POS and magnetic strip payment infrastructure used with traditional credit and debit cards. The only difference is that a special contactless smart card reader is required. To make a purchase, a cardholder simply waves his or her card near the terminal, and the terminal reads the financial information on the card. Despite their convenience and speed, the overall uptake of contactless payment cards in retail stores has been relatively slow until recently. For example, according to data from the Smart Payment Association (2016), 40% of the 1.5 billion smart payments cards shipped in 2014 were contactless. That's a 35% increase from the year before.

Transit Fares

In the USA, several European countries, and large Japanese cities, commuters need to drive to a parking lot near a train station, board a train, and then change to one or more subways or buses to arrive at work. The entire trip may require several payments. Many major transit operators in the United States and Asia have introduced smart card fare-ticketing systems to help these commuters. The transit systems in Washington, DC, Seoul, Hong Kong, San Francisco Bay area, Singapore, and most other major cities all use smart card payment systems. In addition to handling transit fares, the public transport smart cards and other e-payment systems (e.g., smartphones) are being used for paying parking fees and even for purchasing certain goods. For an example, see the Philadelphia Parking Authority (**philapark.org**). Similarly, many of the major toll roads in the United States and elsewhere accept electronic payments rendered by devices called *transponders* that operate much like contactless smart cards but from a much larger distance. Singapore's ERP (Electronic Road Pricing) system, shown in Figure 11.3, monitors the roads in downtown Singapore to control traffic, especially during rush hour, by using remote transponders in the car.

SECTION 11.3 REVIEW QUESTIONS

1. What is a smart card? Contact card? Contactless card?
2. Describe some of the general where smartcards are used?
3. What is a stored-value card? Closed-loop card? Open-loop card?
4. What is the EMV standard?
5. Why is a smartcard more secure than a regular credit card?
6. Describe the use of smart cards in metropolitan transportation systems.

11.4 EC MICROPAYMENTS

Micropayments or **e-micropayments** are small payments made online, usually under $10. From the viewpoint of many vendors, credit cards are too expensive for processing small payments. The same is true for debit cards, where the fixed transaction fees are greater, even though there are no percentage charges. These fees are relatively small (in percentage) only for card purchases over $10. Regardless of the vendor's

Figure 11.3 Singapore electronic road pricing system. (Source: Photo taken by J. K. Lee March 2013)

point of view, there is substantial evidence, at least in the off-line world, that consumers are willing to use their credit or debit cards for small-value purchases. In the online world, the evidence suggests that consumers are interested in making small-value purchases, but not with credit or debit card payments. A good example is Apple's iTunes music store and their App Store. There have been more than 35 billion songs downloaded from iTunes (Lee 2014) and over 100 billion apps downloaded from their App store (Statista-1 2015). A substantial percentage of the songs that were downloaded cost $1.29 a piece, while many of the apps cost somewhere between $.99 and $5. Although most of Apple's customers paid for these downloads with a credit or debit card, the payments were not on a per-transaction basis. Instead, their customers created accounts with Apple, and Apple then aggregated multiple purchases before charging a user's credit or debit card.

Other areas where consumers have shown a willingness to purchase items under $5 using a credit card are cell phone ringtones, ring-back tones, and online games. The annual market for ringtones and ring-back tones is in the billions of dollars. The download of both types of tones is charged to the consumer's cell phone bill. Similarly, the annual market for online games is in the billions of dollars. Like songs and tones, downloading a game is usually charged to the consumer's account, which is paid by a credit or debit card.

Currently, there are five basic micropayment models that do not depend solely or directly on credit or debit cards, and that have enjoyed some amount of success. Some of these are better suited for off-line payments than online payments, although there is nothing that precludes the application of any of the models to the online world. The models include:

- **Aggregation.** Payments from a single consumer are accumulated and processed periodically (e.g., once a month), or as a certain level is reached (e.g., $100). This model fits vendors with a high volume of repeat business. Both Apple's iTunes and App stores use this model. The transportation card used in Seoul, Korea, and many other places is of this nature.
- **Direct payment.** In this case, an aggregation is used but the micropayments are processed with an existing monthly bill (e.g., a mobile phone bill).
- **Stored-value.** Funds are loaded into a debit account from which the money value of purchases is deducted when purchases are made. Off-line vendors (e.g., Starbucks) use this model, and music-download services use variants of this model. This system is being used by several online gaming companies and social media sites.
- **Subscriptions.** A single payment (e.g., monthly) provides access to content. Online gaming companies and a number of online newspapers and journals have used this model.
- **À la carte.** Payments are made for transactions as they occur; volume discounts may be negotiated. This model is used in stock trading, such as at E-Trade.

The world of micropayments has been billed as $13 billion opportunity being driven by the rapid growth in digital content (news, music, videos, etc.), mobile apps, and the social network and online gaming communities (LPT Team 2014). In spite of this opportunity, the micropayment arena continues to be a graveyard filled with the remains of companies who expired in their infancy. Some companies and payments options that support micropayments and seem to have some staying power are: Amazon Payments, PayPal Micropayments, and the mobile payment companies Boku (**boku.com**) and Fortumo (**fortumo.com**). Prior to their acquisition by PayPal, Zong was a relatively successful mobile payment company that specialized in micropayments for online gaming and social networking.

Except for a handful of situations, all of these options still cost the merchants and consumers money depending on nature of the purchases and on how the customer backs the payment (by credit cards, bank accounts, mobile accounts, etc.). So, the long-term answer to the issues with micropayments may ultimately rest with the credit card associations. In some cases the solution might be for the card associations to adjust their fees, which Visa and MasterCard have done for some vendors with high transaction volumes. In other cases it may require changes in the way that the cards are traditionally processed by the vendors. A good example of this is found in Case 11.1 which discusses the use of credit cards for real-time payment of transit fares in South Korea.

CASE 11.1: EC APPLICATION INNOVATIVE CREDIT CARD MICROPAYMENTS FOR THE KOREAN METROPOLITAN UNIFIED FARE SYSTEM

In many Asian countries, daily commuters often use a combination of public trains and buses to travel to and from work, necessitating the use of a combination of stored-value or regular credit cards for each mode. This was the situation facing commuters in Seoul, Korea, a few years ago. As the details of this case explain, the eventual solution was the creation of a unified transportation smart card.

The Problem

Boram, a banker in Seoul, Korea, commutes by MRT and public buses. She uses a credit card that allows her to pay for both MRT and buses, not only in Seoul, but also in other major Korean cities without having to recharge the card. The accumulated monthly charges are automatically paid by the bank. Boram recalls the days when she had to carry two different transportation cards in addition to credit cards.

In the past, Boram used to pay for the subway by using a Seoul MRT Card, which is a stored-value card. The card is issued by the city-owned Seoul MRT Corporation and could be recharged only at MRT stations. To ride a bus, she had to use a Seoul Bus Card that is another stored-value card issued by the private Seoul Bus Transport Association (SBTA). The Seoul Bus Card was introduced in 1996 as the first RF-type bus card in the world. Thus, she had to recharge both cards individually because they could not be used interchangeably. Other cities have similar governance structures. Therefore, to take the subway in another city, Boram had to buy one-time subway tickets at the subway station.

Credit cards, as described in this chapter, are not cost-effective enough to be used for the micropayment of transportation because the card company could not justify its service fee. Therefore, as described earlier, Boram needed to carry at least one credit card and two transportation cards in her wallet.

Large cities in Asia such as Seoul, Hong Kong, and Singapore have adopted similar types of stored-value transportation cards. As such, credit cards and stored-value cards coexist as two major card services. The two types of card issuers compete to expand their application territory. The transportation card company wants to extend the card's application so users can pay for parking fees, various toll fees, and at restaurants and stores. However, the users have to load the cards for prepayment.

At the same time, for credit cards issuers to expand their application to include payments for transportation, they need to simplify the authorization process and reduce the service fee for the participating transporters. The question is: which business model will eventually win? In Seoul, it is the credit card issuer that includes payments for transportation.

The Solution

In order to pay transportation fares quickly, credit card payments for subways and buses must be processed without the full authorization procedure. This risk is tolerable because the frequency and amount of micropayment abuse is low in Korea. Therefore, the transportation ticket gate merely automatically checks whether the card is valid and not on a "blacklist." The gate displays not only the fare, but also the charges incurred during the current month as shown in Figure 11.4. The first credit-based MRT card was adopted by Kookmin Bank in 1998. Today, several issuers support this type of card.

The credit-based transportation card has revolutionized the recharge service process. In the early stage, both MRT cards and bus cards had to be recharged at manned booths. To reduce the expense of the recharge service, unmanned

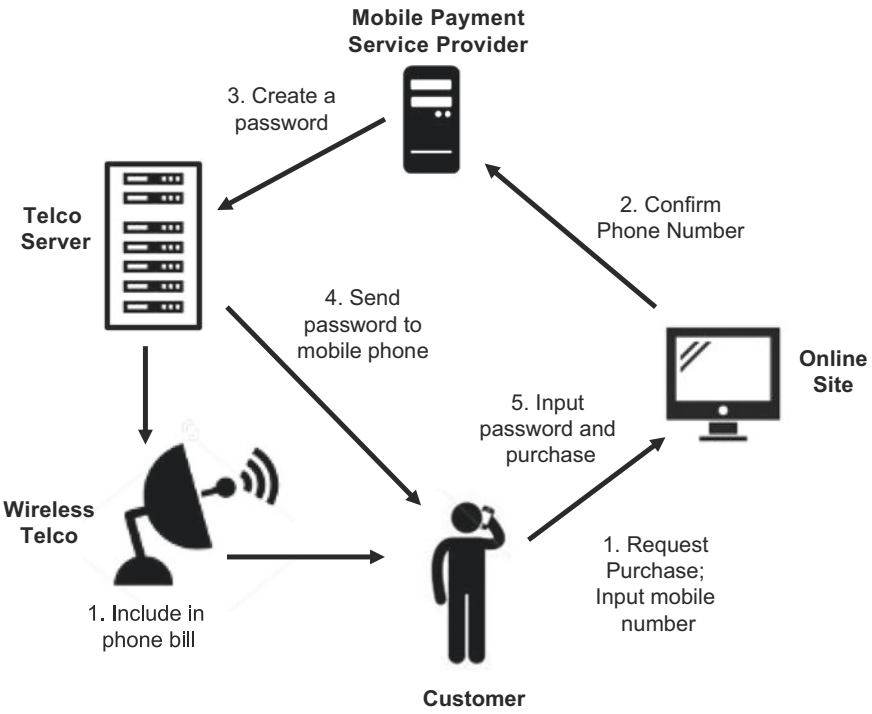

Figure 11.4 Process of mobile payment service. (Drawn by D. King & J. K. Lee)

booths were installed at MRT stations. However, with the credit card, recharge booths can be eliminated altogether and users do not have to spend time recharging their cards. Therefore, both the users and the city transportation authority benefit.

Another benefit of the smart transportation card is that it can restructure the city's transportation system by aligning and coordinating the routes of subways and buses. In the past, bus routes were designed in consideration of the departure and destination points of citizens' trips. This approach intended to make it convenient for citizens to take only one bus to reach their destination. However, too many buses created bottlenecks in busy streets, causing traffic jams. To avoid such congestion, the MRT and main bus companies planned to design the transportation system so that bus branch routes are connected to the subway and to the main bus routes. However, if citizens are required to pay an additional fee for branch routes, they may resist the new structure. Therefore, the transportation fare card should be interconnected.

To solve this problem, the transportation card, credit or stored-value, is designed to memorize the departure time from the MRT station so that the connecting buses do not charge passengers again if the elapsed time is less than 30 min. Taking a branch bus is regarded as a transfer for single trip. This means that the owners of transport systems need to agree on about how to allocate the collected fees. Therefore, the city of Seoul adopted the Metropolitan Unified Fare System in 2009.

The Results

Due to the national standardization and integration effort, nationwide transportation cards are now unified using smart cards. Credit card companies do not really make enough money through transportation payment services, but this service is essential for them to gain new customers and retain existing ones.

The city also can collect data about commuters so that additional buses can be dispatched depending upon the passenger load by route and time. Note that, at midnight, regular bus services stops. For midnight bus service, the control center analyzes the frequency of mobile phone usage in certain areas to estimate the number of potential commuters and dynamically determine the routes of midnight buses.

Another lesson that can be learned from Korea's experience is the C2C payment system use of credit cards. In C2C auction markets, escrow services that are based on credit cards allow individual buyers to pay eBay Korea directly. The sellers can receive payment through eBay Korea if delivery is confirmed by the buyer. Therefore, there is no need for an e-mail payment system such as PayPal that charges high service fees. The function of a debit card, combined with a credit card, has also virtually replaced the function of electronic checks, so e-checks are no longer needed. In this manner, payments by credit cards in Korea are electronically integrated for e-commerce, physical stores, and micropayments for transportation.

Sources: Case written by Jae K. Lee, Seoul, Korea.

Questions

1. How can credit cards be processed as quickly as stored-value cards at the ticket gate?
2. What is the major benefit of owning a credit-based transportation card for commuters?
3. What is the major benefit of credit-based transportation cards to the city government?
4. How can the Metropolitan Unified Fare System enable the restructuring of public transportation infrastructure?

SECTION 11.4 REVIEW QUESTIONS

1. What is a micropayment?
2. List some of the circumstances where micropayments can be used.
3. Besides credit or debit cards, what are some alternate ways that an online merchant can process micropayments?

11.5 PAYPAL AND OTHER THIRD-PARTY PAYMENT GATEWAYS

While credit and debit cards dominate e-commerce payments, one alternative that has succeeded is PayPal (and its clones). PayPal was formed in the late 1990s from the merger of two small start-up companies, Confinity and X.com. Their initial success came from providing a payment system that was used for eBay transactions (PayPal is now an eBay company). How did the system work? Essentially, eBay sellers and buyers opened up PayPal accounts that were secured by a bank or credit card account. At the completion of an auction, the payment transactions were conducted via the seller's and buyer's PayPal accounts. In this way, the bank or credit card accounts remained confidential. It is important to remember that in those days, buyers were often wary of revealing their credit card numbers online. For the seller, it also eliminated the transaction fees charged by the credit card companies, although PayPal eventually began charging similar, though somewhat lower, transaction fees.

Even though eBay had a payment system called Billpoint, PayPal became so successful that eBay eventually decided to close Billpoint and acquired PayPal in October 2002. Why did eBay select PayPal over Billpoint? This is a tough question that has generated a multitude of answers. PayPal had a better user interface, better marketing, and a better mix of services. Regardless, neither Billpoint nor PayPal had to find the market of potential buyers and sellers; eBay had already done this. What Billpoint and PayPal had to do was convince eBay consumers and merchants to use their systems. PayPal was simply more successful at it than Billpoint.

Because of their ongoing success and the percentage of their non-eBay business, PayPal was spun off from eBay in July 2015. According to their 2015 annual report, PayPal operates in 203 global markets and has 184 million active user accounts. PayPal supports payments in 26 currencies. As a standalone company, their 2015 revenue was about $9.2 billion up 15% from the prior year. Part of this growth comes from the acquisition of a number of key payment companies focused on the future of digital payments including:

- Braintree—payment gateway with key customers in the sharing economy space (e.g., Airbnb and Uber)
- Venmo—mobile P2P company that was part of Braintree (see Section 11.6 for details of mobile P2P)
- Xoom—international remittance (the closing case in this chapter discusses and illustrates new approaches to digital remittance)
- Padiant—technology for creating branded (private-label) mobile e-wallets for retail chains

While PayPal provides a number of services, at their core they are a full-service third-party payment gateway (discussed earlier in Section 11.2). Basically, they eliminate the need for a merchant to deal with the intricacies and complexities of authorization and settlement in online payment. They also eliminate the need for merchants to handle card information and for customers to provide their financial information with every transaction. The way it works is that in a given purchase transaction the customer is presented with a payment webpage containing PayPal as an option. If the customer selects this option, they are directed to a Web page on PayPal's site. If the customer has a PayPal account, they simply confirm the purchase and payment instrument (e.g., card). If not, they provide information about their card, and PayPal takes it from there. In both cases, the customer is returned to the merchant site along with approval of the payment. At this point, PayPal transfers the settlement payment to the merchant's bank.

Domestically, PayPal is the leading third-party payment gateway. In recent years, Amazon, the leading online retailer, has started to make forays into this third-party payment arena with their Amazon Payments system (**payments.amazon.com**). It is a comprehensive set of online payment tools and APIs that enable businesses and developers to offer Amazon's payment capabilities as an alternative to paying with credit or debit cards or Paypal. Like PayPal this alternative is surfaced by incorporating a "Pay with Amazon" button on the merchant's checkout Web page or mobile app. If a customer clicks the button, they are taken to Amazon's familiar "Login and Pay" screen. If he or she already has an account with

Amazon, then the customer will be asked to confirm or select from the cards and shipping addresses that are associated with the account. If he or she doesn't have an account, they be guided through the enrollment process. While Amazon is not an immediate threat to PayPal, they may be in the future. It is estimated that are over 50 million U.S. Amazon Prime members, which represents close to 50% of U.S. households. Amazon already has their payment information on hand and these customers are all familiar with the simplicity of their patented "By now with 1-Click" button.

Globally, PayPal is also the market-leading gateway. PayPal is used extensively throughout the world. In a number of countries PayPal is one of the preferred payment methods behind cards, often handling between 10 and 15% of all payments (Adyen 2015). This is the case, for example, in France, Germany, the UK, and Australia. However, in select countries there are other gateways that are used more often. Included in this group are:

- Sofort (**sofort.com**) in Germany. Gateway that relies on direct bank transfers rather than cards.
- Wirecard AG (**wirecard.com** in Germany. Offers cashless payment and other payment services both within Germany and worldwide.
- Yandex.Money (**wirecard.com**) in Russia. Partnership between Srebank and the search company Yandex. Handles cash, bankcards, and e-money.
- Qiwi (**qiwi.com**) in Russia. Payment service that is publicly traded on NASDAQ and headquartered in Cyprus. It also operates in Kazakhstan, Moldova, Belarus, Romania, the United States, and the United Arab Emirates.
- Alipay (**global.alipay.com**) in China. Part of the Alibaba group discussed in the opening case of this chapter. Like PayPal it is a full-service payment gateway servicing domestic and cross-border transactions in China.
- Tenpay (**global.tenpay.com**) in China. Second largest payment service. It's owned by Tencent who also owns China's largest social network Weibo.
- iDEAL (**ideal.nl**) in the Netherlands. A payment service in the Netherlands that uses direct bank transfers.

With the exception of China, in each of these countries PayPal is still used.

SECTION 11.5 REVIEW QUESTIONS

1. What is PayPal?
2. Why was PayPal more successful than its competitors?
3. What is a third-party payment gateway? Describe how one works?
4. What is Amazon Payments? What competitive threat does it pose for PayPal?
5. What are some of the key gateways used in other regions of the world?

11.6 MOBILE PAYMENTS

Because of the strong growth in mobile usage worldwide (see Section 11.1), there continues to be a strong belief that mobile payments will emerge as a primary way to pay, potentially eliminating dependence on cash, cards, and other modes of EC payment. While mobile payments are growing rapidly, they will not supplant cash, cards, or even other forms of EC payments anytime soon. According to eMarketer (2016), mobile payments reached $450 billion in 2015 and will grow to $1 trillion by 2019. To put this in context, in 2015 mobile payments accounted for 24% of all EC retail sales and 1% of total retail sales. By 2019, they will account for 30% and 4%, respectively. These shifts reflect a substantial amount of growth in mobile payments that sellers cannot ignore, but it's important to remember that in relative terms usage is still low when compared to all other forms of payment.

Types of Mobile Payments

The term **mobile payment** refers to payment transactions initiated or confirmed using a person's mobile device, usually a smartphone although payments can be made with other mobile devices such as tablets and wearables. The term actually covers a number of different types of solutions, as well as different combinations of hardware and software technologies.

Just like online payments, there are many parties involved in any mobile payment system (see Figure 11.5). From the standpoint of the various parties, any successful mobile system needs to overcome the following sorts of issues:

For Buyer: Security (fraud protection), privacy, ease of use, choice of mobile device.
For Seller: Security (getting paid on time), low cost of operations, adoption by sufficient number of users, improved speed of transactions.
For Network Operator: Availability of open standards, cost of operation, inter-operability, and flexibility and roaming.
For Financial Institutions: Fraud protection and reduction, security (authentication, integrity, non-repudiation; see Chapter 10), and reputation.

Most of today's mobile payment solutions are designed to replace existing payment methods including non-digital

Figure 11.5 The credit-based transportation card displays the fare and accumulated charges for the current month at the ticket gate (Photos by J. K. Lee)

(cash or credit) and digital (PC-based). As such, they tend to fall into one of four payment types (distinguished by "who pays whom") including (Allum 2014):

- **Consumer**. Buyer pays a merchant for goods and services. This is the purview of most digital wallets (e.g., Apple Pay).
- **Merchant**. Receiving money from a customer in exchange for goods and services. Often enabled by mobile POS (e.g., Square).
- **Person-to-Person (P2P)**. Money exchange between two or more people, as a gift or payback (e.g., PayPal's Venmo).
- **Institutional**. Managing and paying bills from an institution (like a utility company) for services rendered (e.g., Finovera or Mint).

The fact that these payment types are all designed to supplant or cannibalize existing nonmobile payments systems may be one of the reasons for their slower than expected uptake. To many potential users, mobile payments applications are simply "credit card surrogates: they're a veneer over what already exists." So, why change especially since they are all underpinned by substantial technological ecosystems.

We won't discuss institutional payments in this chapter, but we will describe the other three types of mobile payments in this section along with their underlying technologies.

Mobile Consumer Payments: Wallets, Clouds, and Loops

As a recent Accenture (2015) survey of 4000 respondents in North America shows, the average consumer's exposure to mobile payments is through his or her mobile digital wallet. Among the more popular wallets are PayPal, Apple Pay, and the recently morphed Google Wallet (in that order).

The term **mobile digital wallet** refers to the combination of an electronic account along with a smart phone and mobile app designed to make purchases digitally and to redeem rewards from loyalty programs and targeted digital promotions. There are two main types of wallets—device-based and cloud-based.

Device-Based Digital Wallets

These are proximity payment systems enabled by near field communication (NFC) technology. On the consumer side, the system requires that the mobile device being used is equipped with NFC antenna and an integrated chip or a smartcard inside the phone that holds payment card information (credit or debit). On the merchant's side, it requires a specialized NFC reader used to recognize the chip when the chip comes within a short distance of the reader, and a network for handling the payment. Essentially, a buyer first enters his or her credit card information into the wallet app on the phone prior to shopping. At the time of the purchase, the buyer then "waves" the specially equipped mobile phone near a reader to initiate a payment. The reader collects the info and passes to the payment network. The card is charged and the purchase is complete. These proximity payments are also called *contactless payments* where the phone plays the surrogate roll of a contactless card with a chip (see Section 11.3).

In the past there were few wallets on the market. Today, while there a large number of device-based wallets (last count over 1000), the most popular are PayPal wallet (**paypal.com**), Apple Pay (**apple.com/apple-pay**), and Android Pay (**android.com/pay**).

Over the years, a number of protocols and technologies have been proposed to support proximity payments (e.g., from mobile devices). NFC has won out. It is now used for a wide variety of purchases including those in-store, from vending machines, and from transit ticket dispensers or fare

collection. As of 2015 (Statista-2 2016), around 13% of smartphone users in the USA were active users of these sorts of proximity payments. In that same year the total value of these transactions was about $27 billion. By 2019 this figure is projected to (magically) climb to $210 billion.

It will require extraordinary growth (a sevenfold increase in a 4 year period) in the number of installed NFC readers for these estimates to pan out. Thus far, many merchants have been hesitant to install the readers. Part of this hesitancy is due to the fact that while NFC is a standard, there is still disagreement about the specific handsets, chips, readers and networks to be used. A case in point is the Google Wallet. Originally, Google Wallet had a fixed set of operational partners (Sprint, Citibank, MasterCard, and FirstData), and was available only on the Sprint Nexus S 4 G handset, supporting two credit cards (Citibank MasterCard Paypass terminals and Google Prepaid cards). Then they shifted to MasterCard and MasterCard PayPass terminals. Just recently, they turned Google Wallet solely into a P2P application and shifted general purchasing to a newer wallet called Android Pay, which operates on both Android and Apple smartphones. This is simply another example of the "chicken-egg" problem (Section 11.1).

It is also an example of another reason why there is hesitancy to adopt a particular NFC configuration because the mobile payments field is changing so fast that there is no assurance that the current form of NFC proximity payments won't be supplanted by some other technology. A good case in point is the diminishing role of the integrated (payment) chips inside smartphones. These chips were used to bolster security. However, they only worked with specific readers. Today, wallets like Apple Pay and Android Pay store card and other information on the phone, not in a chip. During a purchase, card information is not transmitted to the reader; instead a secure numerical token (one-time payment number and dynamic security code) is generated and transmitted. This opens up the number of types of readers that the mobile wallet can work with.

Example: Wearable Wallets from MasterCard and Coin (onlycoin.com)

In October of 2015, MasterCard (2015) announced a new program—*Commerce for Every Device*—aimed at bringing mobile payment capabilities to a range of consumer products across the automative, fashion, technology, and wearable worlds. The goal is to provide consumers with the ability to shop and pay with the device or thing that is most convenient and secure. The announcement named a number of partners like Bulgari, GM, the Parsons School of Design, and Ringly (jewelry) along with a number of "wearables" companies, including Nymi, Atlas Wearables, Moov, and Omate. The program is an extension of the MasterCard Digital Enablement Service and the Digital Enablement Express programs and supports their vision to enable virtually every device for commerce.

From a technology standpoint, a key partner is Coin. Currently, the primary product that Coin provides is a combined EMV and NFC compliant smartcard called the Coin. The smartcard holds information of all the credit and debit cards that the card owner wants to use for purchases. A companion smartphone app is used for initial setup and for adding and changing cards. Given its combined EMV and NFC capabilities, purchases can be made with the Coin card by swiping, tapping, or waving like other EMV or NFC smartcard. The advantage is that the Coin eliminates the need to carry multiple cards or even a smartphone. The Coin card provides the means to switch from one card to the next depending on the owners' preferences at the time of purchase.

Initially, Coin was solely focused on using the technology for their own card. With the MasterCard partnership they have expanded their horizons and plan to provide other companies with their *Payment of Things* hardware and software platform (Cipriani 2016). This will enable these companies to embed Coin's smartcard payment capabilities into these devices. The fact that the partnership is nonexclusive means that Coin's platform will eventually be available to companies affiliated with the other card associations.

Cloud-Based Digital Wallets

An alternative to device-based mobile wallets is cloud-based mobile wallets. The infrastructure for these wallets is not as onerous as a system based on NFC. Basically, a customer enrolls his or her card with a secure Web service. Requests for payments are made to the service and charged to enrolled card(s). In this way no card information is transmitted during a purchase. Instead, transactions are initiated by scanning a barcode or Quick Response (QR) code created specifically for the customer and stored and displayed on the smartphone by the wallet app. A QR code is a 2D barcode consisting of a collection of black square dots placed on a square grid with a white background. What is required on the merchant's end is a barcode or QR code image reader that is networked into the service via the Web. The whole system operates much like the way PayPal operates without using a Web page with a PayPal button to start the process. Instead, it's started when the code is scanned. As a point of fact, PayPal employs a cloud-based mobile wallet instead of device-based.

This architecture is also being used to create Walmart Pay (**walmart.com/cp/walmart-pay/5998388**) and Chase Pay (**chase.com/digital/digital-payments/chase-pay**). Actually, both Walmart and Chase are using a cloud-based mobile platform called *CurrentC* being created by the Merchant Customer Exchange (MCX) consortium (**mcx.com**) which is

being funded by over 30 retailers who are its members. Not only will the platform support initiating a purchase by scanning a QR code on the customer's screen, but it will also support initiating a purchase by having the customer user his or her phone to scan a QR code on the merchant's screen.

Compared to device-based wallets, it's much simpler to create and develop a cloud-based wallet. Because these systems are basically hardware agnostic, the main barriers revolve around PCI security compliance, customer authentication, and integration with a settlement system. Of course, building it is one thing, having merchants adopt it is another. While these systems require a barcode and QR code reader hooked to the backend Web service (not too onerous), these transactions are "card not present." CNP transactions have higher authorization and settlement fees. Additionally, since a cloud-based wallet relies on the Web, a merchant will need uninterrupted and reliable Internet service with consistent speed throughout business hours—not a sure bet.

Closed-Loop Systems

Closely tied to the cloud-based wallets are the closed-loop payment applications. These systems are much like the closed-loop, stored-value or prepaid (gift) cards offered by a single retailer. The main difference is that the value is stored in an application on your phone and redeemed with your phone by again having an application barcode or QR code scanned by the merchant. In essence it is a cloud-based digital wallet that can only be used with a single retailer (although this isn't a hard and fast rule). One advantage of the phone is that you can reload the application at virtually anytime rather than having the retailer do it in the store.

Example: Starbucks Closed-Loop Wallet (starbucks.com)

One of the better known and most widely used closed-loop mobile payments system is the Starbucks Mobile Wallet app that works on Apple and Android smartphones. Because it is closed-loop, the app can only be used to do business with Starbucks. The card enables Starbucks' customers to use their smartphones to locate stores, buy gift cards online, to place an order for pickup at a designated local Starbucks, and most importantly to use their smart phones to pay for in-store purchases using an electronic version of the loyalty reward cards which are basically prepaid stored-value cards. The electronic version displays a QR code on the smartphone screen which is scanned by an image reader connected to a POS. Each time a purchase is made with the app, the stored value of the card is debited and associated Starbuck rewards are increased. The app is also used to automatically reload the card when the value falls below a customer specified minimum.

Automatic reload obviously encourages regular consumption, and it's working (Taylor 2015). Starbucks has 10.4 million loyalty card members. A third of all purchases are made with these cards. On initial rollout the mobile version was accounting for over 20% of all transactions. Given the demographic of their customers this will only increase.

Mobile Point of Sale

Up to this point the discussion has all been about supporting mobile purchases from the customer's point of view. Mobile payment apps are also used to meet the needs of the merchant during the purchase process. One key area where mobile payment applications are being employed by merchants is at the point of sale (POS). Instead of taking payments at a traditional POS register or computer that is stationary, mobile POS (mPOS) devices are used in their place. Initially, mPOS systems were designed to run on specialized hardware and networks, just like their tethered counterparts. Today, they run on tablets and smart phones and are cloud-based. The cost of these cloud-based mPOS is substantially less. Not only is the hardware less expensive but so are the network costs.

Because of their lower costs, mPOS were originally targeted at small businesses and independent operators such doctors, dentists, delivery companies, taxis, and retail kiosks. More recently, these devices are being used in-store by retailers of all sizes. They are also being integrated with mobile *clienteling* applications designed to help sales staff with in-store, personalized customer support and service.

Example: Square (squareup.com)

One of the leading vendors of mPOS hardware and software is Square, Inc. They are a "financial services, merchant services and mobile payment company" that was started in 2008 by Jack Dorsey (also the CEO and founder of Twitter). Square is probably best known for their Square *Magstripe Reader*, a small square dongle device that plugs into the headset jack of an iPhone, iPad, or Android and enables a merchant to accept payments made with credit cards. There are actually two parts to the reader. There's the card swipe device, and there's the Square Wallet application. The way it works for a merchant is the following:

1. Download the Square app from the Apple App Store or Google's Android Market.
2. Register with Square, providing U.S.-based bank account, U.S. mailing address and Social Security number and the business employer id (if there is one). Once the registration is accepted, Square will send the free card reader.
3. With the bank registration information, Square will next run a test to ensure that your bank account will accept deposits from the Square app. After that, funds from card transactions will be directly deposited to the account within 24 hours of the transaction.

4. Start using the reader and application. For each transaction, the amount and description of the product or service is input, then the card is swiped. The app transmits the information to Square's proprietary card service (via the Internet) for approval. Once approved, the customer signs with their finger. The receipt is then delivered by text message or e-mail to the customer. If the reader happens to fail, the information can be put into the application manually.

Square has a simple pricing policy. The reader is free and so is setup. There is a 2.75% fee "per swipe for Visa, MasterCard, Discover, and American Express."

The Square Magstripe Reader is used by major vendors such as AT&T, Walgreens, FedEx Office, Walmart, Starbucks, and Whole Foods. For example, Starbucks use the Square mobile POS in-store as well as allowing customers to pay with Square Wallet. Likewise, Whole Foods has Square checkout stands at the food venues (e.g., sandwich counters, juice and coffee bars, and beer and wine bars), see **media.wholefoodsmarket.com/news/square-and-whole-foods-market-partner-to-create-faster-easier-payment-and-c**.

More recently, Square has added additional input devices including a combined contactless NFC and EMV chip card reader and an iPad POS stand with a card reader (called Square Stand).

Square's success has generated a raft of competitors including various offerings from the major POS players like Oracle Micros and NCR. PayPal has essentially cloned Square's hardware and application with a service called PayPal Here. Just like Square, they provide a dongle and EMV chip card reader along with a mobile wallet app. They also have the same fee structure. For details, see **paypal.com/webapps/mpp/credit-card-reader**.

Person-to-Person (P2P) Payments

Financial transactions among individuals—friends, colleagues, family members, and the like—occur all the time. We lend money to a friend, we pay somebody back for lunch, we send or receive money from home, or we send money as a birthday present. Most of the time, these transactions involve cash or check.

Increasingly, these person-to-person (P2P) transactions are being handled by online payment systems using either a computer, tablet, smart phone or even prepaid cards. Many of the more popular P2P systems are actually provided by the major payment gateways (like PayPal) either as a component of the larger payment system or as a separate application. These online P2P systems transcend distance and time, eliminate the need carry cash and checks for smaller transactions of this sort, and in some cases offer the "unbanked" and "underbanked" an entry into the larger financial. They enable us not only to pay friends but also merchants for lower priced products and services. The closing case at the end of this chapter discusses in detail Kenya's M-Pesa system, which is an exceptional success story of how a mobile P2P system provides benefits of these sorts and much more.

SECTION 11.6 REVIEW QUESTIONS

1. What are the four types of mobile payment?
2. Who are the key players in a mobile payment system?
3. What is mobile wallet? Devised-based wallet? Cloud-based wallet? Wearable wallet?
4. Describe closed-loop payment systems? What is a good example of this type of system?
5. What is a mobile POS? Who is the leading provider of these systems?
6. What is a person-to-person payment?

11.7 DIGITAL AND VIRTUAL CURRENCIES

In some discussions the terms *digital currency*, *virtual currency,* and *e-money* are often used interchangeably. In other discussions, they are recognized as being different, although there seems to be little consistency about which is which. In this discussion, the definitions that are used come from the Financial Action Task Force (FATF 2014). This is an intergovernment body with 35 member countries (including all the major players in EC) charged with examining and addressing anti-money laundering and countering the financing of terroism (AML/CFT) worldwide. They are one of the few official bodies that has a critical stake in defining the differences among the concepts so they can craft language to be used by legal and regulatory bodies.

Types of Digital Currencies

To understand the differences among these three concepts, let's start at the other end of the currency spectrum—*fiat currency*. **Fiat currency** (aka real currency, real money, or national currency) is the "coin and paper money of a country that is designated as legal tender; circulates; and is customarily used and accepted as the medium of exchange in the issuing country." **Electronic money** (abbreviated e-money) is a digital representation of fiat currency used for purposes of electronic transfer (e.g., the digital representation funds used to settle a merchant account after an EC purchase is made). In contrast, **virtual currency** is the "digital representation of value that can be digitally traded and functions as (1) a medium of exchange; and/or (2) a unit of account; and/or (3) a store of value, but does not have legal status in any jurisdiction."

Basically, it only functions as a currency because there is a community of users willing to treat it as such. Finally, **digital currency** is a generic term that refers to the digital representation (0 s and 1 s) of either e-money (fiat) or virtual currency (non-fiat). So, e-money and virtual currency are types of digital currency but not vice versa.

Virtual currency covers two sub-types: *non-convertible* (closed) and *convertible* (open). According to the U.S. Treasury's Financial Crimes Enforcement Network (**fincen.gov**), **convertible virtual currency** is a virtual currency that has "an equivalent value in real currency, or acts as a substitute for real currency." Some examples include the cryptocurrencies like Bitcoin and most retail e-coupons. In contrast, a **nonconvertible virtual currency** is a virtual currency used in a specific virtual world or domain that cannot (theoretically) be exchanged for fiat currency. Many of the better known examples come from online games. Some examples of this would include: World of Warcraft Gold, Farm(ville) Cash, and Q Coin from TenCent QQ. In these games success is based on obtaining virtual money, which is earned by completing various tasks or purchased using real money (which is often the primary source of income for the game company). Technically, these currencies cannot be used or exchanged in the outside world. However, it many cases secondary markets (black or not) have arisen that are willing to exchange the nonconvertible currency into a fiat currency or some other virtual currency.

A key feature of nonconvertible, virtualized currencies is that they are *centralized*. This means that there is a single administrative authority in charge of regulating the currency—issuing the currency, establishing rules of use and exchange rates, tracking payments, and controlling the amount in circulation. In contrast, convertible virtual currencies can be either centralized or decentralized. A *decentralized* virtual currency is distributed, open-sourced, and peer-to-peer. There is no single administrate authority who oversees and monitors the currency. This is the nature of many of the *cryptocurrencies* like Bitcoin which we'll discuss momentarily.

Size of the Virtual Currency Market

A couple of years back, the Yankee Group (McKee 2013) accessed the size of the virtual currency market. Their analysis included both the mature virtual currencies like loyalty points, credit card points, air miles and physical coupons, as well as the up-and-coming (digital) virtual currencies including app-based coins and tokens, personal information and time (exchanged) for apps and tokens, and Bitcoins. At that time (2012), the total value of all the virtual currency markets was close to $48 billion with the mature currencies making up close to 97% of the total. They estimated that by 2017, the mature markets would grow steadily, while the up-and-comers would experience rapid growth (in the 130–200% range). Yet, the mature markets would still garner the lion's share.

However, the problem with the estimates are that, then and now, it is very difficult to assess the exact values associated with the game-based and Bitcoin currencies, although for different reasons. For game-based you not only have to calculate an exchange rate but many of the game companies don't provide the necessary data to do a reasonable assessment. For Bitcoin the number of coins in circulation is known, however their exact value is dependent on exchange rates that can fluctuate substantially at any given time. The value is subjective and based on market volatility and the going rates paid by the Bitcoin exchanges. For example, in the spring of 2016 the total number of Bitcoins in circulation was around 15.5 billion and the price was fluctuating between $400 and $450. That's a difference of around $6.2 billion to $6.7 billion which is fairly substantial.

Bitcoin and Other Cryptocurrencies

Among the (digital) virtual currencies, the one that has garnered the most attention is Bitcoin. From previous discussion, it was stated that Bitcoin is an encrypted, decentralized (peer-to-peer), convertible, virtual currency. Taken together it sounds complex, and it is. That's why we will simply touch the surface of how it works along with its advantages and disadvantages. For those who are interested, there are any number of books (e.g., Antonopoulos 2015) and Youtube videos devoted to various aspects of its history, underlying mathematics, structure, operation, and uses. Instead, in this discussion we'll hit the highlights of these elements.

Bitcoin Background

The origin of Bitcoin comes from a specification and proof of concept developed in 2009 by Satoshi Nakamoto and published in a paper entitled "Bitcoin: A Peer-to-Peer Electronic Cash System." That's not his real name, it's a pen name. The real identity of the inventor is still unknown. After the initial development, Satoshi left the project in the hands of a community of open source developers (see **bitcoin.org**), meaning that the development and maintenance of the underlying code is being done by a community in much same ways as projects like Linus and Apache.

Bitcoin was not the first system to propose a decentralized virtual currency. However, it was the first to come up with a decentralized system that offered a useable solution to what is known as the *double-spend problem*. As the concept implies, in a virtual currency double-spending refers to the result of spending the same money more than once. For

instance, if money is held in a digital file, what prevents a clever user from simply duplicating the file and using it again for a purchase or investment. In most systems this is handled by having a central (automated) authority review transactions before they are committed. In Bitcoin there is no central authority. Instead, it relies on an innovative *proof-of-work* scheme that uses consensus among peer-to-peer nodes to verify transactions and to protect against assaults like double-spending.

When we talk about the Bitcoin ecosystem, the term is capitalized. When we speak about the unit of currency in this system it is designated in small letters (bitcoin) which in abbreviated form is designated as BTC (similar to USD). There is an upper limit on the number of bitcoins that will can be produced (21 million BTC), a governor on the number of bitcoins that are produced on the average every 10 min (i.e., 1 block), and an end date for their production (2040). Like the dollar or any other currency, a bitcoin is a *unit of account* that possesses a number of the key characteristics (Tomaino 2015):

- Durable—This means that it retains its shape, form, and substance over an extended period of time, so that in the future it will still work as a medium of exchange. While bitcoins have only been around for 7 years, they are widely accepted at merchants, traded on currency exchanges, recognized (or tolerated) by many countries, and owned by sizeable numbers of individuals. There's no assurance about its future, but it has lasted longer that virtually all of its digital predecessors.
- Divisible—This characteristic means that a currency can be divided into smaller increments so that the sum of the increments equal the original value. In this way bitcoins can be used to purchase products and services of varying value. The smallest unit of the bitcoin is .00000001BTC (that's 1 hundred millionth). This unit is called a Satoshi. It serves the same role as $.01 or a penny in USD.
- Countable—This implies that the units are subject to the rules of mathematics so they can be added, subtracted, multiplied, and divided. In accounting terms it means we can employ these operations to measure profit, loss, income, expenses, debt, and wealth and determine the net worth of an entity possessing units.
- Transportable—Currency needs to be easily support transactions and exchanges across the world. Because bitcoins run on the Internet in a decentralized fashion, they are more transportable than most fiat currencies.
- Fungible—This means that one unit of a currency is interchangeable with all others regardless of when or where it was obtained. For example, in the corn commodities market, all No. 2 corn has the same value regardless of where it was grown. Similarly, one bit coin is the same as any other bitcoin regardless of how it was produced or who holds it.
- Verifiable (Non-counterfeitable)—Means that it is not easily counterfeited, and if it is, it's easily detected. This is one of the key characteristics and strengths of a cryptocurrency like bitcoins. Before any bitcoins are accepted for payment, there is a strong vetting process to ensure its authenticity.

How Does Bitcoin Work?

At its foundation, the Bitcoin currency is nothing more than a *public ledger*. Essentially, it is a digital file tracking every Bitcoin transaction—time, date, participants, amount, and transfer of ownership of bitcoins—that has ever occurred since the first bitcoin was issued. It's much like a company's general ledger that provides a complete record of all the transactions that have occurred over the life of the company except in this case the company consists of everyone worldwide who has ever owned some fraction of a bitcoin. At the present time, the ledger file is about 20GB.

The Bitcoin ledger is called the **blockchain**. As the name suggests, it is a collection of blocks each containing a grouping of bitcoin transactions that occurred around the same time, much like a single page in a ledger. These blocks are linked or chained together in the order in which they occurred.

Unlike a company ledger, the Bitcoin blockchain is *public*, as opposed to private or secret. This means that anyone can view it. In fact there are websites (e.g., **blockchain.info**) where you can watch the transactions in action. Also, unlike a company ledger, there is no central body (like the finance department) or trusted third party that is in charge of the ledger or central place where the official copy is held. Instead there is one digital file that is fully distributed across Bitcoins decentralized peer-to-peer network. Each node or computer on the network has a full-copy of the file. Using complex mathematical computations, the transactions are verified by *bitcoin miners* (computers and computer programs) that maintain the ledger. The computations also ensure that there is agreement among all the nodes on the network about the current state of the blockchain and every transaction in it. If an attempt is made to corrupt a transaction within a block, then the nodes will fail to reach consensus and the transaction and the associated block will not be verified.

With the right equipment and software anyone can run a node on the network and can be a bitcoin miner. The incentive for doing so is that miners can earn bitcoins for their "verification" efforts. Crudely put, verification is a bit like a "hackathon" or coding contest. There are very specific mathematical criteria and hurdles that are required to combine transactions into a block. The miner who does it first while adhering to criteria receives 25 new bitcoins. Doesn't sound like much, but remember there are a lot of transactions in a day (ergo a number of blocks created), and each bitcoin is

currently worth around $450 which is over $11,000. Also, if you are thinking about joining the ranks of the miners, these days it takes a lot of computing power to handle the computations. As a consequence, groups of miners have formed *Bitcoin mining pools* that share computing resources and split the bitcoin payoff.

There are easier ways to obtain bitcoins besides mining for them. Someone who has their own bitcoins could give some of them to you. You can buy them from any one of the commercial bitcoin exchanges (e.g., **coinbase.com** or **cex.io**) using another currency (e.g., USD). Also, you could sell someone goods or services in exchange for bitcoins. Regardless of the method, how do they "give" them to you, and where do they go after you get them? After all, bitcoins aren't physical, they are digital, and there is no bank where you can deposit them.

While Bitcoin is a payment system for exchanging value, at its technical base it is a messaging system built on its peer-to-peer (Internet) network. The messages that are sent are the transactions. These messages are sent and received in much the same way that encrypted message are sent and received over the Internet using asymmetrical public and private keys (similar to those described Section 10.6). However, in this instance the type of encryption that is used is called Elliptical Curve Digital Signature Algorithm (ECDSA).

In order to send or receive a message over the Bitcoin network, a user needs a private key and a Bitcoin address. A **Bitcoin private key** is a randomly generated number between 1 and 2^{256} (i.e., 2 raised to the 256th power) that is used by the owner to initiate and digitally sign transactions and used by the network to verify them. You can think of it like a password or PIN that is used to gain access to funds in a bank account, although in this case the funds are not stored in an account but are recorded in a ledger. Just like any password, this private key can be used by anyone who has it to gain access to the protected bitcoins whether they are the rightful owner or not. So it pays to keep it secret. Also, like any other password, if the owner loses or forgets it, then the funds it protects can no longer be accessed. In this case, however, they are lost for eternity because there is no way for anyone to reset it.

A **Bitcoin address** is an alphanumeric string that identifies the recipient of a Bitcoin transaction. You can think of the Bitcoin address like the bank account number that is password protected by the private key. Bitcoin addresses are generated in a two step process. First, elliptical curve mathematics are used to create a paired *public key* from the private key. Second, a special mathematical function called a "hash function" is used to generate a Bitcoin address from the public key. A Bitcoin address starts with either a 1 or a 3 and has between 27 and 34 alphanumeric characters (except for 0 or O and 1 or l because these pairs are easily mistaken for one another). The identifier can also be represented as a QR code which is easily displayed on a mobile device so the address can be scanned instead of typing the character representation.

When someone wants to execute a transaction, he or she uses his or her private key to digitally sign a message that includes:

- Input—the funds to be transferred or more specifically the source transactions that assigned ownership to the bitcoins being sent.
- Amount—the amount of bitcoins being sent.
- Output—the Bitcoin address of the recipient.

The message is broadcast to the nodes on the Bitcoin network at which point the verification process begins. Sometime later if it is verified by one or more machines it will be posted. Typically, this process takes about 10 min.

In reality, if a user had to remember and handle all of the details of a transaction, the Bitcoin ecosystem would have never gained much traction. Fortunately, most of these details are hidden by the Bitcoin wallets which is client software that is used to create the keys and addresses and to send and receive bitcoins. Electronic Bitcoin wallets come in three versions: Desktop, Mobile (Apps), and Web. Figure 11.6 displays the Web wallet for a dummy account. The first panel of this figure shows the initial screen which displays the Bitcoin address and its associated QR code, shows pertinent transaction data including the balance for this user, and menu selections for sending and receiving bitcoins. The second panel shows the entries required to send bitcoins. In this case you only need to enter an address and an amount. The address can either be the alphanumeric string or the scanned image of the associated QR code.

There are a lot of details about how the Bitcoin ecosystem operates. This discussion has only touched on a few. For those who are interested, refer to: Antonopoulos (2015), the diagram at **bitcoin.stackexchange.com/questions/4838/what-does-a-bitcoin-transaction-consist-of**, and **en.wikipedia.org/wiki/Bitcoin_network**.

Advantages and Disadvantages of Bitcoin

The adherents and supporters of Bitcoin, of which there many, point to number of advantages of Bitcoin over fiat currencies and other virtual currencies. Most of these revolve around it's decentralized structure. Some of the more frequently cited advantages include (Hochstein 2016):

- *Anonymity*. Even though transactions are public, there is nothing to tie a user's name to the particular encrypted address or signatures unless the user wants to make the connection public. It's also the case that users can have multiple addresses, even a new one for every transaction. This increases the anonymity. However, the shear fact that

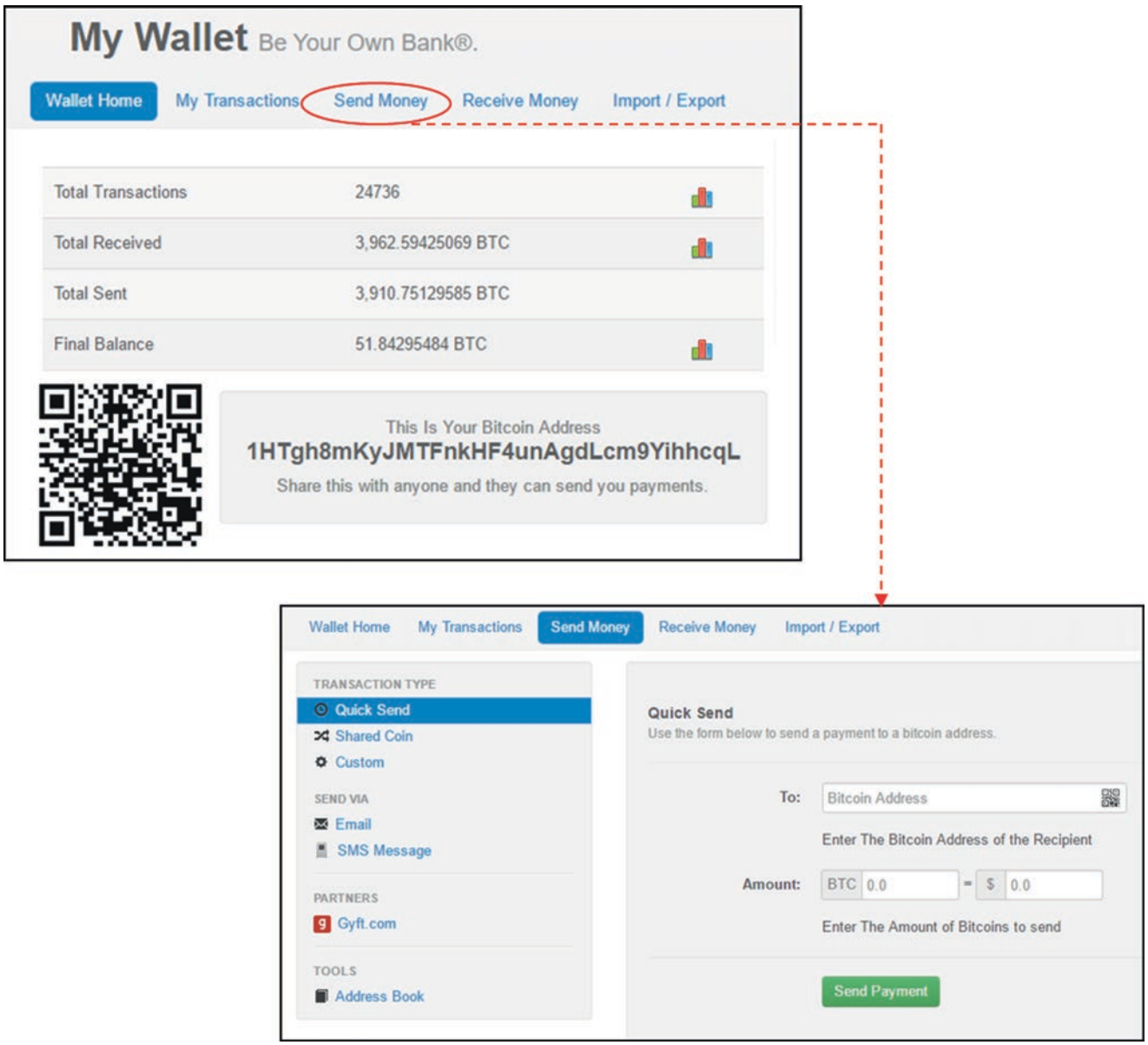

Figure 11.6 Bitcoin Web wallet (Drawn by D. King)

transactions and addresses are public leaves open the possibility of tying transactions to real-life identity. For this reason Bitcoin is often referred to as *pseudo-anonymous*.

- *Simplifies Financial Transactions*. There are no prerequisites and no minimum levels required to participate. Transactions between parties can transpire without the assistance of any bank or financial institution. Because transactions are basically frictionless, fees are held to a minimum.
- *Merchant Friendly*. For merchants, it's easy to set up a payment system without relying on third-party gateways or intermediaries. The setup costs are minimal and there are none of the chargebacks associated with cards.
- *Support Cross-Border Commerce*. Architecturally, Bitcoin can easily support cross-border transactions simply because it utilizes the Internet. Also, it's an open system that allows anyone to join regardless of their location. In most countries they can operate pretty much with impunity largely because of the regulatory confusion over virtual currencies. However, it is the case that Bitcoin is outlawed in a handful of countries (e.g., Russia) and is increasingly subject to the regulations governing banks and institutions in a number of countries, especially those dealing with money laundering and financing terrorism.

- *Free from Government Manipulation.* In many developing countries and a number of developed countries, the currencies have been subject to governmental fraud and illegal manipulation. On an individual level, accounts have been frozen or expropriated by national governments. On a national level, governments have illegally manipulated the circulation of currency, defaulted on debts, etc. all of which impact currency valuations. In Bitcoin no one, governments or otherwise, has direct control of accounts, the bitcoins in circulation, nor their valuation.

On the other side of the coin, Bitcoin has equally vociferous detractors and opponents. The list of disadvantages they cite include (CoinReport 2014):

- *Not yet widely accepted*. Even though there has been substantial growth in the number of merchants accepting Bitcoins, the number of transactions, and the valuations of the currency, it has yet to reach the "critical minimum." The pace may get increasingly slower as governments move to place regulatory controls on aspects like the anonymity of accounts which provides cover for money-laundering and the finance of terrorism.
- *Fluctuating valuation*. While all currencies have swings in valuation, the value of a bitcoin has had a history of volatile swings. This means there is substantial risk for owners, much like the risk associated with stock investments. For example, the value went from $120 in October 2013 to $600 in January 2014 to $225 in July 2015, to $408 in November 2015, to $367 in January 2016, to $462 in April 2016. While it's been on the rise lately, there's no assurance that it will continue this way in the future. Besides the risk, this also makes it hard for merchants to know how many bitcoins to charge and how to handle returns. For merchants it is more like dealing with the exchange rates for a foreign currency rather than the domestic currency.
- *Transactions are irreversible*. This is both good and bad. It's bad in the sense that if a buyer makes a purchase and the merchant fails to deliver the goods, there is no recourse because the transactions will already be committed. A variety of external controls have been suggested but many of them are an anathema to the underlying tenets on which the system operates.
- *Private keys can be lost*. As noted earlier, if a user loses his or her private key(s), they are simply out of luck. Keys can be lost in a variety of inadvertent ways (e.g., disk crashes, file corruption, stolen hardware, and the like). Even though the transactions and public account numbers are visible, there is no way to sign a message to execute a transaction, and there is no central authority or administrator who can issue a new key. It's not like losing a password. This is why users are encouraged to back up their private keys to paper or some other medium.
- *Problems with everyday use.* Traditional currencies and cards are easier to use both off-line and online and are accepted virtually everywhere. Virtually every online retailer who accepts bitcoins sets their prices in conventional currencies and determines the bitcoin cost based on exchange rates against those same currencies. So, from the perspective of everyday use, bitcoins offer little advantage.
- *Network latency and issues of scalability*. While the system is designed to verify transactions on average every 10 min, sometimes it can take hours. It is hard to image how this could support the transaction volume of even a reasonable sized retailer or replace a system like Visa that handles thousands of transactions per second.

Bitcoin Competitors and the Future of Math-Based Currencies

There are over 700 cryptocurrencies being traded in online markets. Only ten of them have market caps above $10 million and only three have market caps above $100 million (recall that Bitcoin's was about $7 billion). The three include (**coinmarketcap.com**):

- *Ethereum* (**ethereum.org**). Valued at close to $750 million, Ethereum was crowdfunded in 2014 and developed by Ethereum Foundation, a Swiss nonprofit. While Ethereum is a decentralized blockchain technology that is traded as a virtual currency, it is actually a development platform with its own language that can be used to create other distributed applications like SmartContracts that can be run "without any downtime, fraud or third party control." In contrast to Bitcoins, it confirms blocks in seconds not minutes. Recently, Ethereum has partnered with Microsoft to offer Ethereum Blockchain as a service on Microsoft's Azure cloud.
- *Ripple* (**ripple.com**). Ripple has 35 billion shares versus Bitcoin's max of 21.5 million. Each share is valued at $.007 per share for a market cap close to $230 million. Ripple was originally targeted as a distributed, open source, consensus ledger with its own currency XRP (ripples). More recently, the system has been repurposed for banks and payment networks as a real-time cross-currency settlement system that can support applications like international money transfer.
- *Litecoin* (**litecoin.com**). Valued at $170 million, this distributed, peer-to-peer cryptocurrency is almost a clone of Bitcoin. Where it differs is its speed (about 4X faster), its proof-of-work algorithm (called "scrypt" vs. 'SHA-256'), and the maximum units of currency (84 million vs. 21.5 million).

While individual cryptocurrencies (including Bitcoin) may fade away, the underlying platforms and algorithms will likely morph to other uses similar to the types of shifts that have occurred with Etherum and Ripple. For other potential uses in banks, see Roberts (2016).

SECTION 11.7 REVIEW QUESTIONS

1. Distinguish electronic money, virtual currency, and digital currency.
2. What is the difference between convertible and nonconvertible virtual currency?
3. What are the major product categories in the virtual currency market?
4. What characteristics does Bitcoin possess that make it a currency?
5. What is a blockchain?
6. What is a bitcoin miner?
7. How are a Bitcoin private key, public key, and address interrelated?
8. What are the key advantages of Bitcoin? Key disadvantages?
9. Who are some of the main competitors of Bitcoin?

11.8 ORDER FULFILLMENT AND LOGISTICS: AN OVERVIEW

Comparatively speaking, taking orders and payments over the Internet may be the easy part of B2C. Fulfilling orders and delivering the ordered items to the customers' doors can be the tricky part. For example, consider Amazon.com that initially started out as a totally virtual company accepting orders and payments but relying on third parties to fulfill and deliver the orders. Eventually, they came to realize that they needed physical warehouses with thousands of employees in order to expedite deliveries and substantially reduce order fulfillment costs. In order to understand the importance of order fulfillment and delivery in EC, as well as the complexities and problems associated with each, you first have to have a general understanding of these concepts.

Basic Concepts of Order Fulfillment and Logistics

Regardless of the type of product and the type of commerce involved—online or off, **order fulfillment** refers to all the operations a company undertakes from the time it receives an order to the time the items are delivered to the customers, including all related customer services. For example, a customer must receive assembly and operation instructions with a new appliance. This can be done by including a paper document with the product or by providing the instructions on the Web. In addition, if the customer is dissatisfied with a product, an exchange or return must be arranged.

Order fulfillment encompasses a number of *back-office operations*, which are the activities that support the fulfillment of orders, such as packing, delivery, accounting, inventory management, and shipping. It also is strongly related to the *front-office operations*, or *customer-facing activities*, such as advertising and order taking, that are visible to customers.

Obviously, the overall objective of order fulfillment is to deliver the right product, to the right customer in a timely, cost-effective, and profitable manner. The way these objectives are achieved varies between e-tailing and off-line retailing because e-tailers are focused on delivering smaller numbers of items directly to the individual consumer, while many retailers are focused on delivering volumes of products to the store shelf. Of course, these days e-tailing and conventional retailing are intertwined because most retailers have multiple sales and services channels—Web, mobile, in store, call center, etc. This requires them to integrate the various channels, enabling customers to order anywhere and pick up or receive anywhere.

The EC Order Fulfillment Process

In order to understand why there are problems in order fulfillment, it is beneficial to look at a typical EC fulfillment process, as shown in Figure 11.7. The process starts on the left, when an order is received, and after verification that it is a real order, several activities take place, some of which can be done simultaneously; others must be done in sequence. These activities include the following steps:

1. Order and pay
2. Payment authorization
3. Check for in-stock availability. Notify if and when available
4. Determine whether inventory should be replenished (and whether additional production is required)
5. Locate warehouse where order can be handled. Transmit order to warehouse
6. Pick and pack order for shipment
7. Dispatch order
8. Receipt of goods
9. Manage returns

Order fulfillment processes may vary, depending on the types product (e.g., by size, perishability), whether third parties are involved in warehousing and shipping, whether the business is primarily B2C or B2B, and on the company's

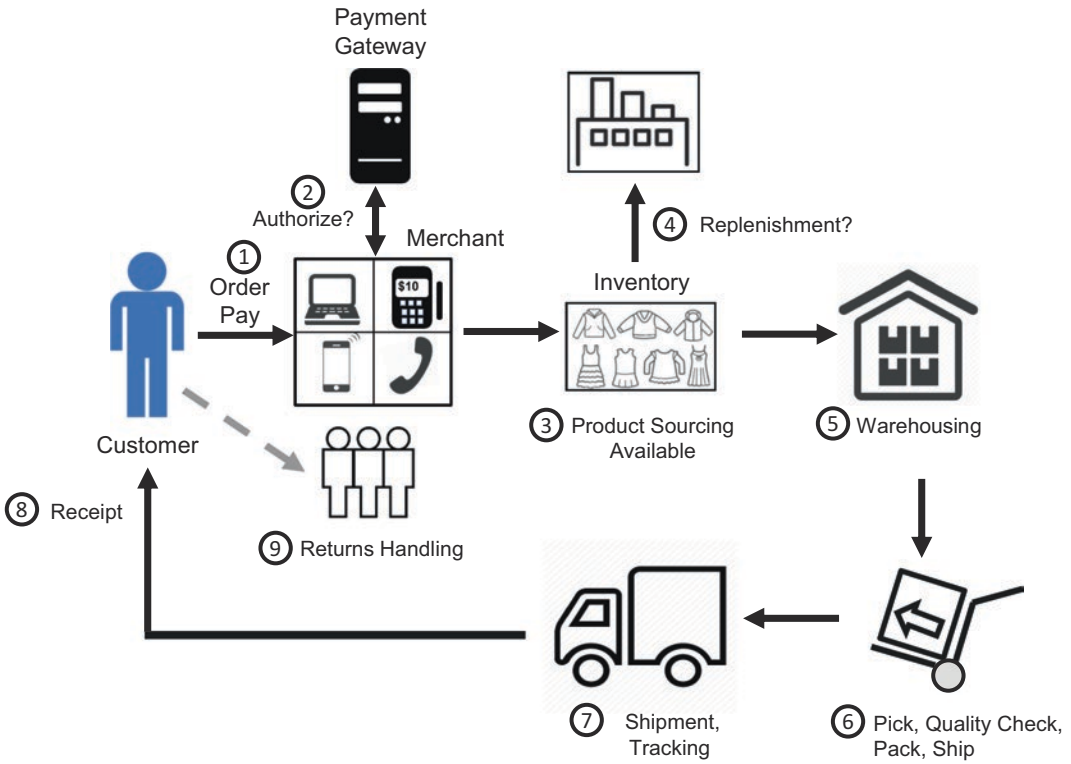

Figure 11.7 Order fulfillment (Drawn by D. King)

strategies and operations models. Often retailers and the manufacturing partners are differentiated by these strategies and models. The basic operations models, which predate EC by 20 years, are well known to supply chain experts and practitioners and include:

- **Engineer-to-Order (ETO).** Here, the product is designed and built to customer specifications; this approach is most common with one-off products (e.g., customized jewelry).
- **Make-to-Order (MTO)**. Aka *Build-to-Order* (BTO) is used with low demand products that are manufactured to customer specifications. They are only built after the order is actually in hand.
- **Assemble-to-Order (ATO).** Aka *Assemble-to-request*, these are products built to customer specifications from a stock of existing components. This requires a modular product architecture for the finished products. The best known example of this approach is the way in which Dell manufactures their computers.
- **Make-to-Stock (MTS).** For standardized products that sell in high volumes. The product is built against a sales forecast and sold to the customer from finished goods. This means that demand can be quickly met. For example, many of the CPG in the goods in grocery stores are of this sort.
- **Digital Copy (DC)**. Where products are digital assets and inventory is created from a digital master. Copies are created on-demand, downloaded to a customer's storage device.

Because clothing and apparel, (packaged) food, and electronics equipment are the largest selling B2C categories, the most frequently used models are MTS and ATO. While managing and fulfilling orders for these types of products would seem straightforward, they too can suffer from the vagaries of the supply chain because of spikes in demand (e.g., Black Friday), or disruptions caused by a shortage of source component parts or materials, or the sudden comings and goings of popular styles.

Order Fulfillment and the Supply Chain

The nine-activity order fulfillment process is an integral part of the *supply chain*. The flows of orders, payments, information, materials, and parts need to be coordinated among all the company's relevant department participants, as well as with and among all relevant external partners. The procedures of supply chain management (SCM) must be considered when planning and managing the order fulfillment process, which due to its complexity may have problems. Many of these factors are covered in Case 11.2 which describes how Amazon.com fulfills its orders. It provides a brief look at their underlying strategies, the processes

involved and some of the issues that are encountered. These issues are discussed in detail in Section 11.9 and the solutions to many of these issues are found in Section 11.10.

CASE 11.2: EC APPLICATION AMAZON THE "KING OF SUPPLY CHAINS"

The Problem

With traditional retailing, customers go to a physical store and purchase items that they then take home. Large quantities are delivered to each store or supermarket; there are not too many delivery destinations. With e-tailing, customers want the goods quickly and to have them shipped to their homes. Deliveries of small quantities need to go to a large number of destinations. Also, items must be available for immediate delivery. Therefore, maintaining an inventory of items becomes critical. Maintaining inventory and shipping products costs money and takes time, which may negate some of the advantages of e-tailing. Let us see how Amazon.com, the "king" of e-tailing, handles the situation.

In 1994, Amazon started with "virtual retailing" as a business model—no warehouses, no inventory, and no shipments. The idea was to take orders and receive payments electronically and then let others fill the orders. It soon became clear that this model, although appropriate for a small company, would not work for the world's largest e-tailer.

The Solution

In 1997, Amazon.com decided to change its business model and handle its own inventory and logistics. Furthermore, for a fee the company provides logistics services to any seller even its competitors. The company spent billions of dollars to construct their own distribution network around the USA and the world and in the process became a world-class leader in warehouse management, warehouse automation, packaging, and inventory management.

In 1994, they began by opening their own fulfillment centers (warehouses) in Seattle and Delaware, both occupying a few 100 thousand square feet. This rapidly expanded to eight more in 1999 including three centers in Europe. Because of economic issues, they slowed their growth until 2005 when they began a period of incredible facility expansion.

The expansion started with a series of larger distribution centers that were located in states with favorable tax breaks and incentives, especially states where they did not have to pay sales tax because technically they were not a retail store. This provided them with a substantial economic advantage over the "brick and mortar" retailers until the states started reinterpreting their laws and treated Amazon like any other retailer. In 2013, Amazon shifted their supply chain strategy to optimize their delivery speed so they could support new programs aimed at 1 day delivery and home delivery of food items.

Picking and Packing

How is Amazon.com able to efficiently fulfill many millions of orders every month? Part of the answer lies in the way they operate their centers. For the larger facilities, fulfillment of an order goes sort of like this:

- **Step 1.** When you place an order at Amazon.com and designate a destination, the computer program knows from where it is going to be shipped. It is usually shipped from Amazon's fulfillment center, or from the sellers' locations. Sellers have an option to ship their merchandise to Amazon.com for storage and processing. Amazon lists the products in its online catalog and may advertise the product(s). When an order arrives, a computer program will route the order to where it will be fulfilled. Amazon.com has dozens of distribution centers. In general, a typical Amazon.com distribution center operates in the follow way:
- **Step 2.** All orders received are routed electronically by the dispatcher to specific parts pickers for fulfillment.
- **Step 3.** The items (such as books, games, and CDs) are stocked in the warehouse in bins. Each bin is equipped with a red light. When an item in the bin needs to be picked up, the red light turns on. Pickers then pick up the items from the bins with red lights and then turn off the lights.
- **Step 4.** Each picked item is placed in a basket with a barcode designating the order number. The baskets are placed on a 10-mile long winding conveyor belt in the warehouse. Each basket is directed automatically to a specific destination point guided by barcode readers.
- **Step 5.** Each full basket is checked to assure that the barcodes are matched with a specific order. Then the items are moved to appropriate chutes, where they slide into delivery boxes. The system arranges for multiple items to reach this same box if there are several items in one order.
- **Step 6.** The boxes are then sealed for delivery. If gift wrapping was selected, this is done by hand.
- **Step 7.** The full boxes are then taped, weighed, labeled, and routed to one of the truck bays in the warehouse for shipment; some are owned by UPS, the U.S. Postal Service (USPS), and other shippers.

Del Rey (2013) provides a photo slideshow of the operation of one of Amazon.com's largest centers located in Phoenix, AZ.

Specialization of Distribution Centers

Yet, that's only part of the story. The real optimization comes from the division of labor and specialization of the various centers, especially their new "sortation" centers. For a detailed discussion of the changes, see Wulfraat (2014, 2016).

Today, the facilities include:

- *Fulfillment Centers* differentiated by the size of the products being packaged
- *Replenishment Centers* for receiving incoming goods from vendors
- *Customer Return Centers* obviously dedicated to returns
- *Sortation Centers* receiving pallets of packages from Fulfillment Centers, then aggregating and sorting the pallets by zip code so they can be distributed to the USPS facility handling the associated zip codes. The USPS is the one who delivers the packages the "last mile"
- *Delivery Stations*, which are mid-sized centers, networked together with smaller *Amazon Fresh and Pantry* sites to handle same-day home delivery in urban areas of groceries and general merchandise
- *Speciality Sites* for dealing with smaller packages of textbooks, clothing, jewelry, and shoes
- *Prime Now* and *Flex Hubs* that are smaller facilities for handling a limited number of high demand items (especially for *Prime* customers) to be delivered in 1–2 h in urban areas

The Results

Table 11.2 provides some sense of the distribution of the centers across the various types, as well as the size of the various facilities. Overall, there are around 290 facilities occupying over 110 million square feet. The majority of these (160) are *Fulfillment Centers* taking up the majority of the square footage (around 100 million).

Table 11.2. Amazon distribution center network

	Type	Active	SqFt (M)	Future	FSqFt (M)
US	Fulfillment	76	59.9	17	12.7
	Sortation	26	7.1	3	0.8
	Prime Now	43	0.7	0	0
	Delivery/sort	16	1.3	0	0
	Subtotal	161	69.0	20	13.5
RoW	Fulfillment	83	41.4	6	5
	Prime Now	23	0.1	1	0.1
	Delivery/sort	24	1.6	0	0
	Subtotal	131	43.1	7	5.1
Global	Total	292	112.1	27	18.6

Source: Based on data from Wuulfraat (2016)

While all of these serve key roles, the ones with probably the greatest impact have been the (26) *Sortation Centers*. These have not only helped Amazon to accomplish their goal of same-day delivery, but, more importantly, they have also enabled Amazon to substantially reduced their reliance on UPS and FedEx transportation and gain control over their shipping and delivery. Unlike off-line retailers who have their own carriers and fleets, Amazon has had to utilize UPS, FedEx, and other third-party carriers. During peak selling seasons (e.g., the winter holidays) this means that they have to vie with other retailers for UPS and FedEx services. The *Sortation Centers* have cut much of that reliance by substituting USPS delivery. The cost reductions have been massive and there is no competition with other retailers. There is little doubt that they are laying the ground work for their own fleet—not only on the ground but also in the air.

The success of Amazon's supply chain has been amazing. They have been a first mover on a number of supply chain fronts, especially in the EC world, and continue to do so (see Section 11.10). This past year, not only did they become the fastest company to reach $100 billion in annual sales, but they were recognized (by their peers) as #1 on the Gartner (2015) rankings of the Top 25 supply chain companies. They are also packaging this success in a program called *Fulfillment by Amazon*. In their words, "You sell it, we ship it." Amazon has created one of the most advanced fulfillment networks in the world, and your business can benefit from our expertise. With Fulfillment by Amazon (FBA), you store your products in Amazon's fulfillment centers, and we pick, pack, ship, and provide customer service for these products. Best of all, FBA can help you scale your business and reach more customers." Toward this end they have recently taken a large minority stake in Atlas Air who has the largest fleet of 747 freighter aircraft.

Sources: Del Rey (2013), Wulfraat (2014 and 2016, and the Amazon *Annual Report* 2015 at **services.amazon.com/fulfillment-by-amazon/how-it-works.htm** (accessed May 2016).

Questions

1. What were the drivers of the centralized warehousing?
2. Amazon.com is using third-party companies for delivery. Can you guess why?
3. Can Amazon.com use RFID in its warehouses? If yes, where and when? If no, why not?
4. Find how Amazon.com handles returned merchandise.
5. Draw Amazon.com's supply chain for books.
6. Where do you think there are intelligent (software) agents in Amazon.com's order fulfillment/logistics?

SECTION 11.8 REVIEW QUESTIONS

1. Define order fulfillment and logistics.
2. Compare traditional logistics with e-logistics.
3. List the nine activities of the order fulfillment process.

11.9 PROBLEMS IN ORDER FULFILLMENT ALONG SUPPLY CHAINS

Order fulfillment is considered a critical success factor for e-commerce. A relatively recent study of close to 600 top supply chain executives conducted by Peerless Research Group (2013) revealed the order fulfillment was much more intricate and that management and delivery performance is slipping. As a consequence, customer satisfaction has suffered. The main challenges that these executives and their companies are facing include (VanLandingham 2014):

- **Order Expectations**. EC orders require higher levels of service and attention. The delivery times are much shorter, and the order changes and cancellations are usually last minute.
- **Order Accuracy**. If the deliveries to a store are off by a couple of units either way, it is no big deal. If the same thing happens to an EC customer, a merchant might lose the customer's business.
- **Multi-Channel Order Management**. Because most companies have separate systems for the various channels, it is very difficult to present one view of the company to consumers.
- **Complex Distribution**. In contrast to off-line orders and deliveries, each EC order is usually small with a few units, and there are many more of them. Packing and shipping is harder. Because consumers cannot "touch, see, and feel" the products before they buy, there are numerous returns.

As a consequence, surveys (e.g., Kinnison 2015) frequently show that customer satisfaction suffers because of the fulfillment process. Dissatisfaction is usually the result of: (1) inaccurate orders; (2) the lengthy time of the order process; (3) missed delivery schedules; and (4) the lack of visibility as the order moves as it move across the process.

These issues and problems are typical of the types of challenges that continue to confront both off-line and online businesses. The problems are exacerbated in EC, especially omni-channel EC, because of the mismatch between standard supply chain structures and processes and the special nature and requirements of EC. For example, most manufacturers' and distributors' warehouses are designed to ship large quantities to a set number of stores; they are not designed to optimally pack and ship small orders to a large number of customers' doors. Improper inventory levels are typical in EC, as are poor delivery scheduling and mixed-up shipments.

At the root of many of the problems and challenges are deficient planning and execution practices. These are some of the key causes:

- **Uncertainties in Demand.** Many problems along the EC supply chain stem from demand uncertainties and the difficulties that ensue across the supply chain in trying to meet this uncertain demand. This is where demand forecasting comes into play. Here the major goal is to forecast at a very detailed level the number of products (at the SKU level) of a certain type that will be needed to meet the demand at specific locations at particular points or time intervals in the future. These forecasts rest on statistical (time series) estimates from historical patterns, trends in sales or order data, and causal factors like the weather or promotions. These factors can all change quickly, which is why demand forecasting is as much an art as it is a science. The basic issue is that if the demand plan is wrong it will ripple across the chain impacting that planned needs for inventory, raw materials, works in progress, factory capacity, etc. Companies try to address these problems by making adjustments to the forecasts and by sharing the forecasts with the major players in the chain.
- **Lack of Information Sharing.** In today's world the flow of information across the supply chain is almost as critical as the flow of goods and services. Information systems support this flow, enabling communication and coordination of the various players and systems in the chain. A good example of the types of issues that arise with poor information flow is the *bullwhip effect* which is a mismatch between the actual demand for goods and the inventory supplied upstream in the supply chain to meet the assumed demand. The mismatch results in excess inventory and safety stock that is used as a buffer against underestimated demand. In practice the mismatch grows as you move up the chain from the retailer to the distributor to the supplier to the manufacturer so that variability in inventory and safety stock increases along the way. One way to reduce the mismatch is to ensure that information and, thus visibility, about demand flows to all the parties involved, so that there is only "one version of the truth." The bullwhip effect is described in Online File W11.1.
- **Inadequate Logistical Infrastructure.** Pure play EC companies are likely to have more problems because they do not have a logistics infrastructure already in place and are forced to use external logistics services rather than in-house departments for these functions—much like Amazon has done with UPS and FedEx. These external

logistics services are often called **third-party logistics suppliers (3PL)**, or *logistics service providers*. Outsourcing logistics services can be expensive, and it requires more coordination and dependence on outsiders who may not be reliable. For this reason, large virtual retailers usually have their own physical warehouses, shipping and distribution systems.

- **Inefficient Financial Flows.** Note that supply chain problems and improvements refer not only to the flow of goods but also to the flow of information and money. Money flow includes invoicing, payment, collection, and so forth. In spite of the availability of computer-based systems, many suppliers, manufacturers, distributors, and retailers rely on manual and paper-based systems to conduct financial transactions. These inefficient financial processes not only slow the flow of cash across the supply chain but halt the flow of goods and services and put the various partners at a competitive disadvantage.

SECTION 11.9 REVIEW QUESTIONS

1. What are some of the challenges facing order fulfillment?
2. What are the results of these challenges?
3. What are some of the root causes of poor order fulfillment?
4. Describe the bullwhip effect.
5. Describe the role of 3PLs.

11.10 SOLUTIONS TO ORDER FULFILLMENT PROBLEMS ALONG THE SUPPLY CHAIN

Many EC logistics problems are generic; they can be found in the non-Internet world as well. Therefore, many of the solutions that have been developed for these problems in brick-and-mortar companies also work for e-tailers. IT and EC technologies facilitate most of these solutions. They also provide for automation of various operations along the supply chain that usually improve its operation. In this section, we will discuss some of the specific solutions to EC order fulfillment problems along the supply chain.

Improvements in the Order-Taking Activity

One way to excel in order fulfillment is to improve the order-taking activity and its links to fulfillment and logistics. Order taking can be done via e-mail or on a webstore and it may be automated. For example, in B2B, orders can be generated and transmitted automatically to suppliers when inventory levels fall below a certain threshold. It is a part of the *vendor-managed inventory* (VMI) strategy described in Chapter 4. The result is a fast, inexpensive, and more accurate (no need to rekey data) order-taking process. In B2C, Web-based ordering using electronic forms expedites the process, making it more accurate (e.g., automated processes can check the input data and provide instant feedback), and reduces processing costs for sellers. When EC order taking can interface or integrate with a company's back-office system, it shortens cycle times and eliminates errors.

Order-taking improvements also can take place within an organization, for example, when a manufacturer orders parts from its own warehouse. When delivery of such parts runs smoothly, it minimizes disruptions to the manufacturing process, reducing losses from downtime.

Warehousing and Inventory Management Improvements

Although it seems like a misnomer, one way to manage inventory is with a **warehouse management system (WMS)**. On the surface, WMS refers to a software system that helps manage warehouses, which it does. However, any market-leading WMS also provides:

- **Inbound functions** such as yard management, appointment scheduling, multi-method receiving, cross-docking, put-to-store, quality assurance, staging, and put-away.
- **Inventory functions** such as inventory visibility, lot-serial control, multi-level holds, counts, replenishments, value-added services (VAS) processing, work order processing, internationalization, and slotting.
- **Resource management** such as dynamic pick location assignment, equipment utilization, facility utilization, task management, automation interfaces, and workforce management.
- **Outbound functions** such as shipment order management, multi-method order picking, retail in-store and dark-store picking and processing of e-commerce orders, cartonization, shipping and parcel manifesting, sequenced staging and loading, and compliance of shipping documents.
- **3PL/divisional support** such as multi-client architecture, client billing, client-based process modeling, cross-client optimization, client visibility and reporting.

See, for example, **jda.com** for a description of the detailed capabilities of a WMS.

A WMS is useful in reducing inventories and decreasing the number of out-of-stock incidents. Such systems also are useful in maintaining an inventory of repair items so repairs can be expedited; picking items out of storage bins in the

warehouse; receiving items at the receiving docks; and automating the warehouse operations. For example, introducing a make-to-order production process and providing timely and accurate demand information to suppliers can minimize inventories and out-of-stock incidents. In some instances, the ultimate inventory improvement is to have no inventory at all; for products that can be digitized (e.g., software), order fulfillment can be instantaneous and can eliminate the need for inventory.

Changing the Structure and Process of the Supply Chain

An efficient solution to many supply chain problems is to change the supply chain structure from a linear to a hub structure as illustrated in Figure 11.8. Notice that in a hub structure connection between supply chain partners and elements is much shorter. Also, coordination and control is done at the center of the hub, making the management more efficient, and the structure increases visibility. Long supply chains are usually more susceptible to problems. Also, the hub structure management is usually fully digital, making order fulfillment faster, less expensive, and less problematic.

Speeding Up Deliveries: From Same Day to a Few Minutes

As discussed earlier, a major success factor in EC is the speed within which shoppers receive their orders. And indeed, the competition for fast delivery is intensifying.

FedEx initiated the concept of "next day" delivery in 1973. It was a revolution in door-to-door logistics. A few

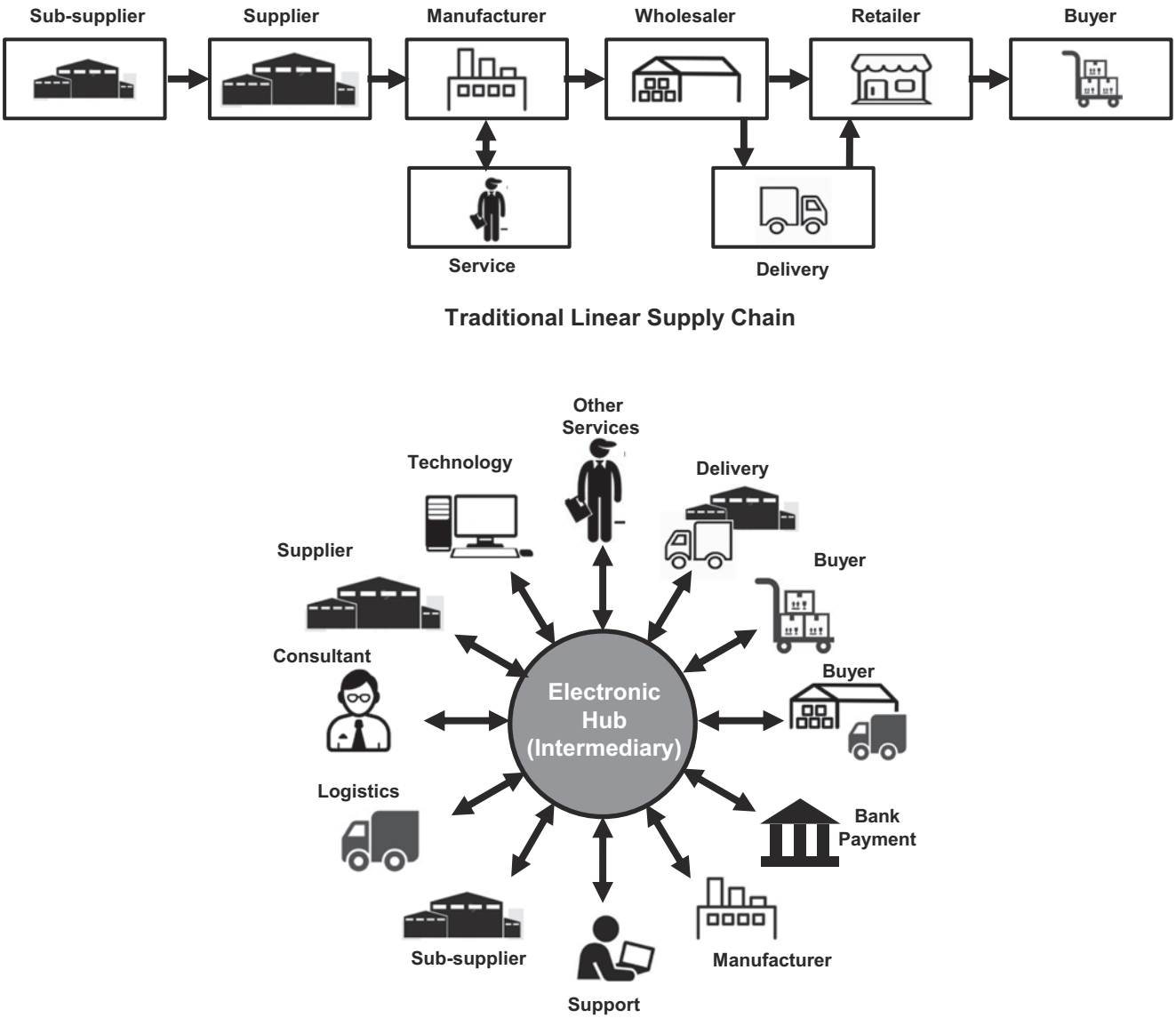

Figure 11.8 Changes in the supply chain (Drawn by D. King)

years later, FedEx, introduced its "next-morning delivery" service. In the digital age, however, even the next morning may not be fast enough. Today, we talk about same-day delivery and even delivery within an hour. Deliveries of urgent materials to and from hospitals, shipping auto parts to car service shops, and delivering medicine to patients are additional examples of such a service. Case 11.2 described the restructuring of Amazon.com's distribution centers for the expressed purpose of achieving same-day and even hourly delivery service for most U.S. households. Two other newcomers to this area are eFulfillment Service (**efulfillmentservice.com**) and OneWorld Direct (**owd.com**). These companies have created networks for the rapid distribution of products, mostly EC-related ones. They offer national distribution systems across the United States in collaboration with shipping companies, such as FedEx and UPS.

Delivering groceries is another area where speed is important, as discussed in Chapter 3. Quick pizza deliveries have been available for a long time (e.g., Domino's Pizza). Today, many pizza orders can be placed online. Also, many restaurants deliver food to customers who order online. Examples of this service can be found at **gourmetdinnerservice.com.au** and **grubhub.com** company. Some companies even offer aggregating supply services, processing orders from several restaurants and then making deliveries (e.g., **dialadinner.com.hk** in Hong Kong).

Supermarket deliveries are often done same day. Arranging and coordinating such deliveries may be difficult, especially when fresh or perishable food is to be transported. Buyers may need to be home at certain times to accept the deliveries.

Delivery by Drones

Ideally, e-tailers want to deliver faster than you can get products by going to a store and buying them. The futuristic solution is delivery of packages by drones in minutes. A dream? Amazon originally touted that it would come true in 2015. However, 2015 has come and gone and still no drone delivery. Obviously, this is going to take longer because of legal, technological (sensors' capabilities), and other constraints.

Example: Amazon Prime Air

One day we may see a fleet of Prime Air vehicles in the sky, delivering packages to customers' doors. For how the delivery is envisioned, see the video and text at **amazon.com/b?node=8037720011**. With Amazon Prime Air, drone delivery is currently being designed and test for commercial outdoor use under an exemption from FAA regulations. Amazon's current models are designed to deliver packages under 5 lbs. within a 15–20 mile radius. The weight limit covers about 85% of the products they deliver and the 20 miles covers about 50–65% of the "retailer's core" "same-day addressable market" (French 2015a).

At the present time, commercial use is banned under FAA regulations unless they have given a company an exception. A few years back, Congress asked the FAA to come up with a new set of rules for commercial use. They are expected to issue the rules by mid-year 2016.

Amazon is not alone in their quest. Other companies are working on their own tests for small parcel delivery. Some of the more notable efforts include:

- Matternet (**mttr.net**). Working with groups like Unicef and Doctors Without Borders, a Bay area start-up called Matternet, has been using drones to deliver medical supplies and specimens in Switzerland, Haiti, and the Dominican Republic since 2011. Drones provide autonomous transportation. They don't need drivers, aren't impeded by traffic congestion, and are low cost and efficient. Currently, their drones can handle loads up to 2 lbs., transport items about 10 miles at 40 mph so that the journey takes just under 20 min. Matternet thinks that the medical uses my sway regulators to approve the technology for commercial uses. For a step-by-step description of how the Matternet drones are used, see (French 2015b).
- Walmart (**walmart.com**) has some of the same interests in drones as Amazon. They have already tested their use inside their warehouses, and now they have applied for a permit to test them for outdoor package delivery. Initial tests will be focused on deliveries from their retail distribution centers to their own store parking lots within the same locale. From there the tests will grow to include delivery in small residential neighborhoods. These latter deliveries are of interest because there is a Walmart within 5 miles of 70% of the U.S. population. Walmart is using Chinese-made DJI (**dji.com**) drones in their tests.
- Flirtey (**flirtey.com**). An Australian start-up recently conducted the first FAA-approved drone delivery in the USA. Using GPS guidance, the drone delivered bottled water, emergency food supplies, and a first aid kit to an unoccupied house in Hawthorne, NV. The delivery tested the drone's ability to navigate around buildings, power lines, and streetlights to make the drop in a populated area. Flirtey drones have previously been used to deliver textbooks in Australia and auto parts in New Zealand (Boyle 2016).
- Google Project Wing. Google X has been working on drone delivery since 2014 under the umbrella of a project called Project Wing (Grothas 2016). Recently, they were awarded a patent for a "mobile receptacle on wheels." The basic idea is to have the drones deliver packages to the receptacles which will in turn deliver them to the recipient.

Same-Day Delivery

We covered this topic in Chapter 3 as it related to groceries. Also cited there is the increased competition. In addition to Amazon Fresh many other companies are active in the market. Notable are Instacart, Postmates, and Google Express. But, same-day delivery does not only apply to groceries. Amazon is starting same-day delivery of everything in several large cities. Google Shopping Express is active too, and so are eBay, Uber Rush, and others (Bowman 2014). For a discussion of one hour delivery, see Halkias (2015).

Partnering Efforts and Outsourcing Logistics

An effective way to solve order fulfillment problems is for an organization to partner with other companies. For example, several EC companies have partnered with UPS or FedEx; others with Fulfillment by Amazon and Alibaba's Tmall (as discussed in the Opening Case of this chapter).

Logistics-related partnerships can take many forms. For example, marketplaces may be managed by one of many freight forwarders such as A & A Contract Customs Brokers, a company that helps other companies find "forwarders." Forwarders help prepare goods for shipping and work with carriers to determine the optimal way to ship. Forwarders can also find the least expensive prices on air carriers, and the carriers bid to fill the space with forwarders' goods that need to be shipped.

Using Robots for Order Fulfillment

In 2012, Amazon bought a robot company called Kiva Systems for $775 million. Today, 30,000 Kiva robots have been deployed to about 15 of Amazon's larger fulfillment centers. The robots are used to assist workers with picking and packing activities. There are several videos on the Web that illustrate how they go about their work (e.g., **vimeo.com/113374910**).

They operate a bit differently than one might think (Valerio 2015). The items to be picked and packed reside in bins on moveable pallets called pods. A single pod can hold hundreds of items. Fully loaded the pods can weigh up to 3000 lbs. At first blush, the logical thing to do would be to use the *man-to-goods* method. In other words, if you need an item, simply send a bot to retrieve it. In reality, Kiva works the other way around—the *goods-to-man* method.

There are two types of bots both of which look sort of like big Roombas, the robot vacuum cleaners, except they are square not round. One type, the S model, is 2 × 2.5 × 1 foot and can lift close to 1000 lbs. The other type, a G model, is a bigger version and can lift up to 3000 lbs. Both of them can fit under the bottom section of the pods. When an item order is received, it is entered into a database on the computer that controls the robots. Software on the same computer searches for the bot that is closest to the pod, and directs the bot via wifi to retrieve the pod holding the item. At this point, the bot follows a series of QR code reflectors placed on the floor (like lane markers on a road) to find the correct pod, the bot slides under the pod, lifts it, and carries it back to a specified human operator. The operator picks out the correct item and puts it in a shipment package. Hence, the moniker *goods-to-man*. At this point the bot is ready to go again. Bots travel about 1.3 m a second and require recharging about every hour for 5 min.

Kiva's approach to automated handling systems for e-fulfillment also works well with in-store re-stocking, parts distribution, and medical device distribution operations. Thus far, the system has proven to be more accurate and efficient than humans.

At the time Kiva was originally purchased, it was also being used by other retailers like Walgreens, Staples, Crate & Barrel, and The Gap. Almost immediately, Amazon ended Kiva support for these outside companies. In the interim a series of new robot competitors moved to fill the void. Some examples are Swisslog's CarryPick (**swisslog.com/carrypick**), GrayOrange's Butler (**greyorange.com/products/butler**), and Grenzeback's Carry AGV (**grenzebach.com**). While there are some differences in terms of speed, strength, and delivery targets (e.g., conveyors), almost all operate on the same goods-to-man principle. See Tobe (2015) for details about these and other systems.

Another area where these seems to be interest in using robots is with make-to-order fulfillment. Robots have long been involved in manufacturing, especially in the auto industry. Most of the older versions deployed in auto factors were large, cumbersome, and dedicated to a single task like welding or painting. More recently, smaller bots are being produced that are "smarter, more mobile, more collaborative, and more adaptable" (Hagerty 2015). Some of these have been designed to handle the tricky job of assembling consumer-electronic items from standard parts (MTO) which is now mostly done by hand in Asia. They are also designed to assist humans rather than replace them. A case in point is a bot product from the partnership of ABB Ltd. and Rethink Robots, Inc. They are designed to handle small parts and to sense when parts are being assembled incorrectly. They are also more programmable so they can adapt very quickly to new requirements and uses. To see the bot in action, go to **rethinkrobotics.com**.

There is a strong belief among the proponents of these sorts of robotic applications that they enable small companies to better compete against larger companies, and for companies in higher wage countries to better compete against the likes of China and other lower wage countries.

Integrated Global Logistics Program

An increase in global trading created a need for an effective global logistics system. Order fulfillment problems described earlier tend to be even larger in longer supply chains that cross country borders. The number of partners in such situations is usually larger than in domestic logistics (e.g., customs brokers, global carriers), and so is the need for coordination, communication, and collaboration. Furthermore, such systems require a high level of security, especially when the Internet is the centric technology platform. Integrating separate segments of the supply chain can be very beneficial for minimizing problems in long global chains.

Order Fulfillment in Make-to-Order (MTO) and Mass Customization

As you may recall from Chapter 1, one of the advantages of EC is the ability to easily customize products and personalize services. Although taking customized orders is easily done online, the fulfillment of such orders may not be simple. Mass production enabled companies to reduce the price per unit. Customization is usually expensive, since each item must be handled separately. Customization also requires time, especially for large products like cars. However, consumers usually want customized products to be delivered in a timely fashion at price points that are not much higher than those of a similar product that is mass produced. So, the question is: how does a supplier, manufacturer or retailer do this at a reasonable cost to themselves and in a reasonable time for their customers?

Dell was a pioneer in providing customized products to end consumers in a timely and cost-effective fashion. They were able to do this using mass produced components that were assembled to meet the customized orders of their customers. This approach has been adopted by many other manufacturers. Most customized cars, shoes, toys, textbooks, and wedding rings are made this way. Of course, when you talk about millions of computers at Dell, the supply chain, the logistics, and the delivery of components were critical to its success and survival. For a detailed description of Dell's MTO system, see Online File W11.2.

With MTO you also need to closely collaborate with your suppliers. In addition, you need to have flexible production lines where changes are made quickly and inexpensively (e.g., painting cars at Toyota), and you need tools that enable quick and not-so-expensive changes (usually driven by computerized systems). This is usually a part of an *intelligent factory* or production line like those at Siemans AG, IBM, and General Electric. It's also like the distributed mass customization approach used at Etsy (**etsy.com**). Etsy is an online market for goods that are custom made by small producers and sold online in one electronic marketplace. For sources on intelligent factories and mass customization, see the *International Journal of Mass Customization* and Smart Factory KL (**smartfactory.eu**).

Handling Returns (Reverse Logistics)

Allowing for the return of defective or unsatisfactory merchandise and providing for product exchanges or refunds are necessary to maintaining customers' trust and loyalty. Some time ago, it was found that the absence of a good return mechanism was the number two reason for shopper reluctance to buy online. A good return policy is a must in EC.

Dealing with returns is a major logistics problem for EC merchants. Several options for handling returns are:

- **Return the item to the place of purchase.** This is easy to do with a purchase from a brick-and-mortar store, but not a virtual one. To return a product to a virtual store, a customer needs to get authorization, pack everything up, pay to ship it back, insure it, and wait up to two billing cycles for a credit to show up on his or her credit card statement. The buyer is not happy and neither is the seller, who must unpack, check the paperwork, and resell the item, usually at a loss. This solution is workable only if the number of returns is small or the merchandise is expensive (e.g., Blue Nile). Some vendors (e.g., Amazon.com) enable customers to print prepaid UPS or USPS shipping labels that make returns easier for the customers.
- **Separate the logistics of returns from the logistics of delivery.** With this option, returns are shipped to an independent returns unit and are handled separately. This solution may be more efficient from the seller's point of view, but it does not ease the return process for the buyer.
- **Completely outsource returns.** Several outsourcers, including UPS and FedEx, provide logistics services for returns. The services deal not only with delivery and returns but also with the entire logistics process. FedEx, for example, offers several options for returning goods.
- **Allow the customer to physically drop the returned item at a collection station or at a physical store of the same vendor.** Offer customers locations (such as a convenience store or the UPS Store) where they can drop off returns. In Asia and Australia,

returns are accepted in convenience stores and at gas stations. For example, BP Australia Ltd. (gasoline service stations) teamed up with **wishlist.com.au** (now closed), and Caltex Australia to accept returns at the convenience stores connected to its gasoline stations. The accepting stores may offer in-store computers for ordering and may also offer payment options, as at Japanese 7-Elevens (**7dream.com**). In Taiwan and some other countries, you can order merchandise (e.g., books), pay, pick up the item ordered, and return unwanted items, at a 7-Eleven store. Brick-and-mortar stores usually allow customers to return merchandise that was ordered online to their physical stores (e.g., **walmart.com** and **eddiebauer.com**).

- **Auction the returned items.** This option can go hand-in-hand with any of the previous solutions.

For strategy, guidelines, and other information on returns, see The Reverse Logistics Executive Council (**cscmp.org/product-type/reverse-logistics**).

Order Fulfillment in B2B

According to recent forecasts by Forrester Research (reported by Demery 2015), online revenues for B2B EC in 2015 were substantially higher than online revenues for B2C EC. The figures in the USA were close to $780 billion and $304 billion, respectively. The estimate is that B2B will climb to $1.1 trillion in 2020, while B2C will move to $500 billion. In spite of the sizeable difference, B2B EC is far less developed than B2C EC. The differences are found not only in the front-end experience but also in the back-office functionality including information management, Web content management, and order management.

Some of the major differences in order management capabilities were pinpointed in an earlier survey sponsored by Honeywell and conducted by Peerless Research Group (2013) for *Logistics Management* and *Supply Chain Management Review*. Based on responses from 469 supply chain managers, most of whom were responsible for either B2B or a combination of B2B and B2C EC systems across a range of industries, the survey revealed that:

- The most important missions for their systems were increasing the volume and speed of fulfillment while reducing costs per order, increasing profitability, and improving customer service.
- Many of the inefficiencies and increased costs in order fulfillment were due to increased transportation, packaging, and materials costs.
- The keys to addressing the inefficiencies and costs rest with improved supply chain software applications, re-engineered (fulfillment) operations, and adoption of supply chain analytics.

B2B fulfillment tends to be more inefficient than B2C because it is usually more complex. Typically, the shipments are larger, there are multiple distribution channels, the shipment frequency is more varied, the breadth of the carrier services is more uneven, there are fewer EC carrier offerings, and the EC transaction paths are much more complicated. The types of improvements in applications and re-engineering of processes needed to resolve these sorts of complications revolve around the automation of physical systems, as well as the use of business process management (BPM) software to automate processes.

Using E-Marketplaces and Exchanges to Ease Order Fulfillment Problems in B2B

In Chapter 4, we introduced a variety of e-marketplaces and exchanges. One of the major objectives of these entities is to improve the operation of the B2B supply chain. Let us see how this works with different business models.

- A company-centric marketplace can solve several supply chain problems. For example, CSX Technology developed an extranet-based EC system for tracking cross-country train shipments as part of its supply chain initiative, and was able to effectively identify bottlenecks and more accurately forecast demand.
- Using an extranet, Toshiba America provides an ordering system for its dealers to buy replacement parts for Toshiba's products. The system smooths the supply chain and delivers better customer service.
- HighJump Software suggested taking into account a number of key elements for optimal order fulfillment including the automation of picking, packing and shipping, the transformation of paper-based processes, and the inclusion of sales and marketing input into various supply chain processes.

For additional discussion on how fulfillment is done in B2B, see **fedex.com/us/supply-chain/services/fulfillment-services** and Demery (2012).

Order Fulfillment in Services

Thus far, we have concentrated on order fulfillment with physical products. Fulfilling service orders (e.g., buy or sell stocks, process insurance claims) may involve additional information processing, which requires more sophisticated EC systems.

Innovative E-Fulfillment Strategies

Several innovative e-fulfillment strategies exist. For example, supply chain partners can transmit information flows and hold off shipping physical goods until a point in time when they can make more direct shipments. An example of logistics postponement is merge-in-transit.

Merge-in-transit is a model in which components for a product need to arrive from two or more physical locations. For example, in shipping a desktop PC, the monitor may come from the East Coast of the United States and the CPU from the West Coast. Instead of shipping the components to a central location and then shipping both together to the customer, the components are shipped directly to the customer and merged into one shipment by the local deliverer (so the customer gets all the parts in one delivery), reducing unnecessary transportation.

Supply Chain Planning and Execution Software

Order fulfillment is only one segment of the overall supply chain planning and execution processes carried out by organizations. Many companies—off-line, online, and hybrid—rely on commercial enterprise software systems to support these processes, rather than building the capabilities in house. In this case there are usually three systems involved. First, there are systems that support the SC planning aspects—like demand planning, fulfillment, inventory optimization, etc. In the software market these are now called Supply Chain Planning Systems of Record (SCP SOR). Next, there are systems that support supply chain execution. Some of these deal with warehouse management, appropriately named Warehouse Management Systems (WMS), which we discussed earlier. Others deal with various aspects of transportation and shipping management, also appropriately named Transportation Management Systems (TMS). While there are other major aspects of supply chain planning and execution (e.g., procurement), these three systems cover much of the supply chain landscape. A detailed description of the capabilities of each of these systems, as well as the software companies selling them, can be found in the associated Gartner Magic Quadrant report including:

- **SCP SOR**—*Gartner's Magic Quadrant for Supply Chain Planning System of Record* (**gartner.com/doc/reprints?id=1-2VC3GOR&ct=160105&st=sb**)
- **WMS**—*Gartner's Magic Quadrant for Warehouse Management Systems* (**gartner.com/doc/reprints?id=1-2WV2YCO&ct=160122&st=sb**)
- **TMS**—*Gartner's Magic Quadrant for Transportation Management Systems* (**gartner.com/doc/reprints?id=1-2WTC5VO&ct=160121&st=sb**)

Some software vendors have offerings in all three areas. Others provide one or two. Whether a company should buy all three from the same vendor is an open question—there are pros and cons both way.

Regardless, it is a multi-year undertaking to implement even one of these systems because they each touch so many areas of a company's operations, as well as a company's other information systems (e.g., their sales systems, customer systems, finance systems, merchandising systems, manufacturing systems). Even when many of these other systems are managed by a single enterprise resource planning system (ERP) that can be more easily integrated with a SCSOR, WMS, or TMS, it is still a long, time consuming and expensive undertaking.

SECTION 11.10 REVIEW QUESTIONS

1. What are some general ways that order fulfillment can be improved?
2. What is a warehouse management system? List some of its key functions.
3. List solutions for improved delivery.
4. What is Amazon Prime Air?
5. How are robots being used in order fulfillment?
6. How does mass customization impact order fulfillment?
7. What are some of the options for handling returns?
8. How does B2B order fulfillment differ from B2C order fulfillment?
9. Give an example of how e-marketplaces are used to alleviate problems with B2B order fulfillment.
10. What are the major enterprise software systems used to support supply chain planning and execution?

MANAGERIAL ISSUES

Some managerial issues related to this chapter are as follows:

1. **How will you address the omni-channel imperative?** Today, most "brick and mortar" retailers have multiple sales channels—stores and branches, catalogs, call centers, kiosks, vending machines, websites, and mobile apps. Historically, these channels have been managed as silos with separate personnel, practices, and information systems (both front office and back) with the lead channel getting preferential treatment. In the past this was sufficient because the customers were less demanding. This has changed. Customers expect a seamless experience across all these channels. They want to buy what they want, where they want, receive it when and where they want, and return it where they want. To meet these expectations retailers will have to accept orders and payments

from any channel, as well as fulfill orders from anywhere (e.g., distribution centers, stores and branches, manufacturers (drop-ships), 3PLs, and vending machines). For most retailers, this will obviously require substantial redesign of their payment and order fulfillment systems, as well as the redesign a number of processes and systems along their supply chains.

2. **What payment methods should you support?** Many EC merchants in the USA who are focused primarily on domestic sales can get by supporting only payments made by card or PayPal. It's the same way for many merchants in other parts of the world, although the alternative to cards is likely to be some other digital payment system besides PayPal. However, there are a number of exceptions like China where cards are rarely used and other countries where cash payments (COD or direct withdrawals) are widely used. The implication is that if you plan to expand your EC business by encouraging cross-border purchases, then at a minimum you will need to accept a variety of payment methods. The studies also point out that successful sites support multiple languages, currencies, and access devices along with pages customized for particular countries, simplified checkout processes, and free shipping to name a few.
3. **What micropayment strategy should your e-marketplace support?** If your EC site sells items priced less than $10, credit cards are not a viable solution. Many digital content products cost less than $1. For small-value products, micropayments should be supported. Fees may be taken from a prepaid account that is connected to the buyer's bank account or credit card, or the fee may be charged to the buyer's cell phone bill. The use of stored-value smart cards on the Internet has emerged, but has not widely penetrated the market because buyers need to install the card reader/writer. Companies should support multiple options so that customers can choose their preferred payment method.
4. **Which mobile systems could influence your business?** Over the next few years, the market for smartphones will continue to grow and may eventually become the primary way that people pay for digital and physical goods, both online and off. Mobile payments have the potential to replace the direct use of credit and debit cards, as well as cash. At the present time, mobile payment technologies and protocols are in a state of flux, making it difficult to decide which systems to adopt. The key is to determine which forms of mobile payment are required for a particular business—remote or proximate—and, in the short term, rely on those vendors and organizations that already have a strong presence in the online world (for instance, PayPal or the protocols and systems supported by major credit card vendors).
5. **Should we outsource our payment gateway service?** It takes time, skill, money, software, and hardware to build and maintain a comprehensive self-payment system. For this reason, even a large online business usually outsources its e-payment service. Many third-party vendors provide comprehensive payment gateways. Furthermore, if a website is hosted by a third party (e.g., Yahoo! Stores), an e-payment service will already be provided by the host.
6. **Should we accept virtual currencies as a form of payment?** Even though there a variety of virtual currencies, this question really translates into "should we accept Bitcoin?" A number of merchants have answered in the affirmative because the transaction fees are minimal and there are no charge backs. Yet, the lower cost does not eliminate the facts that bitcoins are not backed by any government agency, that there are potential issues with determining the taxes assessed to bitcoin payments, and that the exchange rates can fluctuate substantially and depend on the usage and country of payment. Bottomline, if you plan to accept bitcoins, then you need to carefully determine the associated risks.
7. **How secure are e-payments?** Security and fraud continue to be major concerns in different online e-payments. This is true with regard to the use of credit cards for online purchases, especially for cross-border purchases. B2C merchants are employing a wide variety of tools (e.g., address verification and other authentication services) to combat fraudulent orders. These cannot be used in isolation but need to be an integral part of a business security program (Chapter 10). For more on payment security, see European Banking Authority (2014).
8. **If you are an EC vendor, what are the bottlenecks in your order fulfillment process?** Order fulfillment is an important task, especially for e-tailers. Issues arise with order fulfillment along the entire supply chain, not just with the physical shipment of the order. To enhance the order fulfillment process, vendors need to identify the specific bottlenecks impeding various steps in their process. Potential issues are delayed delivery date, high return rate, high inventory cost, high shipping cost, and poor integration along the supply and demand chains.
9. **How should we manage returns?** Dealing with returns is important for CRM, yet may not be simple. Reverse logistics is very costly, and most companies will fail if the return rate is too high. Use the CRM system to identify the items with higher return rates and resolve the reason or stop the online sales of these items. A company should estimate its percentage of returns and plan a process for receiving and handling them. The logistics of returns may be executed through an external logistics service provider.

SUMMARY

In this chapter, you learned about the following EC issues as they relate to the chapter's learning objectives.

1. **Cross-Border EC.** Many B2C companies are looking to grow their businesses by increasing sales to international customers. These sales are part of what is called cross-border EC. The problem is that most B2C companies are ill-prepared to engage in cross-border commerce. As demonstrated by B2C companies that already have strong international sales, those companies that want to successfully engage in cross-border EC will have to "think local," meaning that they need to treat international customers as if they were domestic. More specifically, their online sites will need to: (1) provide support for multiple languages, currencies, payment systems, and input devices (especially mobile); (2) customize Web pages based on country (e.g., handle international addresses and phone numbers); (3) simplify checkouts by eliminating the need for detailed user profiles; and (4) offer free shipping and rewards to encourage repeat traffic. Because this is such a daunting task for most companies, they usually rely on third-party partners who have successfully done this to assist with the transition. For example, this was what Costco did a couple of years back when they decided to start selling online to Chinese consumers. Instead of establishing their own in-country operation, they partnered with Alibaba's Tmall Global EC marketplace which provided access to a substantial percentage China's online consumers, immensely simplified the handling of payments from these consumers, and eliminated many of the logistical issues that confront businesses trying to deliver orders originating from outside the country to Chinese consumers. Besides removing many of the barriers to cross-border EC, working with a partner enables a business to more easily test an international market and experiment with its product offerings without having to make very large up-front investments and incurring substantial card usage fees and logistical costs.
2. **Changing retail landscape**. In the rapidly changing retail landscape, retailers are faced with a series of conundrums. First, while EC retail sales are growing much faster than in-store sales, the overwhelming majority of sales are not online. This means that those retailers who support multiple sales channels will have to determine how to best combine the channels so that customers are provided with a seamless omni-channel experience. Second, cards continue to be the payment method used in most EC transactions. Yet, cash is still used in the vast majority of retail sales, and in some regions of the world other forms of EC payment predominate. The implication is EC retailers who sell worldwide will have to support alternative methods of payment including cash on delivery and cash transfers. Finally, although payment by smartphones is growing substantially faster than payments by other devices, overall purchases made by PCs swamp the number of purchases made by smartphones. This suggests that for the near term, most EC retailers will have to provide interfaces that support different devices including smartphones, tablets, and PCs.

   The various dilemmas facing e-tailers indicate that the models on which EC was originally built are undergoing rapid transformation. This has given rise to a literally hundreds of new payment initiatives, especially in the areas of closed-loop cards and mobile payments, digital wallets, mobile money of all sorts, and virtual currencies. Unfortunately, the vast majority will suffer the same fate as most of the predecessors—death from failure to reach a critical mass of buyers and sellers who are willing to adopt the new schemes and technologies.
3. **Using payment cards online**. The processing of online card payments is essentially the same as it is for brick-and-mortar stores and involves essentially the same players and the same systems—banks, card associations, payment-processing services, and the like. This is one of the reasons why payment cards are predominant in the online world. Even so, this doesn't mean that EC card payments don't present challenges to online merchants who accept them. First, the discount rate and interchange fees charged with each card transaction are substantial. This is one of the reasons merchants are always looking for ways to reduce these fees (like using third-party digital gateways such as PayPal). Second, online merchants experience more card fraud than off-line merchants. Surveys, such as those conducted annually by CyberSource, indicate that over the past few years, merchants have adopted a wide variety of methods including card verification services, address verification, customer order history, negative lists, and postal address verifications.
4. **Smart cards.** A smart card is a plastic payment card that contains data in an embedded microchip. Some cards have memory chips for read/write data. Smart cards can be rechargeable. Applications include telecom SIM cards, contactless financial payments and services, paying for mass transit, identifying cardholders for government services, verifying eligibility for healthcare. There are two types of smart cards—contact and contactless. With both types smart card readers are critical and a key element in determining the cost of a smart card application.

   Stored-value cards are a particular type of smart card where a monetary value is prepaid and can be loaded on the card once or several times. They can be used like a credit or debit card to make purchases online or off. They come in two forms—closed-loop and open-loop.

Closed-loop stored-value cards are issued for a single purpose by a specific merchant (e.g., a Starbucks gift card). In contrast, open-loop stored-value cards are more like standard credit or debit cards and can be used for multiple purposes (e.g., a payroll card).

5. **EC micropayments**. In the online world, most purchases are made with credit and debit cards. When the value of a purchase is under $10, it is called a micropayment. The problem is that the fees associated with card purchases make these low value transactions cost prohibitive. As an alternative, most merchants rely on one of five methods such as aggregation, direct payment, stored-value card, subscription, and à la carte to avoid the individual transaction costs. Aggregation adds the value of a number of purchases before submitting the transaction to the card companies; direct payments aggregates payments by adding them to an existing bill (e.g., mobile phone bill), a stored-value card enables upfront payments to a debit account from which purchases are deducted as they are made; a subscription is a single payment that covers access to content for a defined period of time; and with à la carte payments are made as they occur with reduced fees based on pre-negotiated volume discounts. Companies like Amazon and PayPal support micropayments and, while their fees are lower, they're still costly. More recently, Visa and MasterCard have started lowering their fees on low cost transactions primarily for those merchants with high volumes of card sales.
6. **PayPal and third-party payment gateways.** A third-party gateway is a company that provides electronic connections and transaction services among all the parties involved in electronic payments. Essentially, they eliminate the need for a merchant to deal with the intricacies and complexities of authorization and settlement in online payment. Among these gateways, PayPal is oldest and most successful worldwide. Recently, other gateways have started gaining market share in specific regions of the world including, for example, Alipay in China, Sofort in Germany, Yandex.money in Russia, and iDEAL in the Netherlands. In the USA, Amazon has recently entered the gateway market with their Amazon Payments which is modeled after their extremely successful "one click" payment system used by Amazon customers.
7. **Mobile payments.** The term refers to payment transactions initiated or confirmed using a person's mobile device, usually a smartphone although payments can be made with other mobile devices such as tablets and wearables. They generally fall into one of four payment types (distinguished by "who pays whom") including: (1) Consumer where a buyer pays a merchant for goods and services, often using either a device-based digital wallet like Apple Pay or a cloud-based wallet like Walmart Pay that is built on the cloud-based mobile platform called *CurrentC*: (2) Merchant mobile POS, such as Square's *Magstripe Reader*, that is used by merchants to take customer card payments instead of relying on stationary POS, and (3) Person-to-Person (P2P) systems, like Kenya's M-Pesa (see closing case), used for exchanging money between people both within and across country boundaries, and (4) Institutional used for managing and paying bills from an institution like a utility company (e.g. Finovera).
8. **Digital and virtual currencies.** Digital currency refers to the digital representation of money or currency. Electronic money is the digital representation of a national (fiat) currency. Virtual currency functions as a digital medium of exchange but has no legal status as a fiat currency. Virtual currencies are either convertible or nonconvertible meaning that either it can be converted thru exchange into a fiat currency (like Bitcoin) or it cannot be converted and only has value in a particular virtual world (like World of Warcraft Gold). Among the multitude of virtual convertible currencies, Bitcoin has garnered the most attention for a couple of reasons. First, it was the first decentralized virtual currency which means there is no central authority that issues or administers the currency, and as a consequence there are only very minimal fees even for international transactions. Instead, it is administered by a distributed peer-to-peer network of computers (called bitcoin miners). Second, the currency is pseudo-anonymous. This means that while all Bitcoin transactions are displayed in a public digital ledger call the blockchain, the recipients of any exchange are denoted by their encrypted public keys generated from their private keys, and the senders are designated by encrypted digital signatures again generated by their private keys. There is virtually no way to decipher these keys. Finally, through the combination of the distributed network along with the public (private) key cryptography Bitcoin has addressed the "double-spend problem" which prevents any participant from digitally copying their coins and spending them twice. Because of its success, Bitcoin has spawned a number of competitive currencies. None of these has attracted the same volume of investment. As a consequence, these groups have started ignoring the currency side and started promoting the use of these distributed, decentralized architectures for other types of transactions (e.g., legal contracts or international remittances).
9. **Order fulfillment process.** Once an item has been ordered and purchased online, the next major phase of the process is order fulfillment. Order fulfillment, encompasses all the activities a company undertakes from the time it receives an order to the time the items in the order

are delivered to the customer. These can include: checking inventory for availability; determining completeness and accuracy of order; locating a warehouse with the inventory; picking the items at the warehouse; arranging for shipment; loading and transporting items ordered; and receiving acknowledgement of receipt; as well as, handling returns (reverse logistics). These activities are part of a larger supply chain that also deals with demand planning, procurement, manufacturing, and replenishment to name a few of the other major activities. Ensuring that order fulfillment is well executed so that the right products are delivered to the right person and place in a timely and profitable manner is a complex task whose difficulty varies by the types of product, whether third parties are involved, and on the company's strategies and operations models (i.e., whether the company primarily engineers-to-order, makes-to-order, assembles-to-order, or makes-to-stock).

10. **Problems in order fulfillment.** Survey results indicate customer satisfaction has declined as a direct result of problematic order fulfillment. It is a challenge to companies because customers expect very short delivery times, as well as very accurate orders. They also want a seamless experience across all of a company's sales channels both online and off-line. In B2C retail most of these problems arise because of uncertainties in demand, lack of information sharing across all the companies supply chain, inadequate logistical infrastructure, and inefficient financial flows (invoicing, payment, collection, etc.).
11. **Solutions to order fulfillment problems.** There are a large number of solutions that are aimed at addressing the problems in order fulfillment. These involve major changes to the order-taking process, improvements to the warehousing and inventory systems, as well as major changes to the structure and process of the broader supply chain. It also involves solutions targeted to specific problems. A case in point is the changes designed to enable much faster fulfillment including novel approaches like Amazon Prime Air which envisions small package delivery by drones, or faster warehouse picking, packing, and delivery enabled by using robots to assist in the process, or using mass customization in make-to-order fulfillment, or even faster and more efficient handling of EC returns (e.g., return to store or special collection stations).

    While some of these solutions apply equally well to B2B EC, B2B tends to be more inefficient because it is more complex—larger shipments, multiple distribution channels, varied shipment frequency, more complicated transaction paths, to name a few. Often solutions to these complexities require major changes to business processes, as well as the incorporation of software systems that can automate the processes.

    Regardless of the type of EC or source of the problems, many companies rely on supply chain planning and execution software systems to help address the problems—both structure and processes. Included among the key systems are supply chain planning system of record (SCP SOR), warehouse management (WMS), and transportation management (TMS). Given the complexity of most supply chain problems (order fulfillment included), it can be a multi-year undertaking even with the aid of these systems.

KEY TERMS

Address Verification System (AVS)
Authorization
Bitcoin address
Bitcoin private key
Blockchain
Card verification number (CVN)
Contact card
Contactless (proximity) card
Convertible virtual currency
Cross-border e-commerce
Digital currency
Discount rate
Electronic money
Fiat currency
Interchange rate
Merge-in-transit
Micropayments (e-micropayments)
Mobile payment
Mobile (digital) wallet
Non-convertible virtual currency
Order fulfillment
Payment cards
Settlement
Smart card
Smart card reader
Stored-value card
Third-party logistics suppliers (3PL)
Virtual currency
Warehouse management system (WMS)

DISCUSSION QUESTIONS

1. Five years from now do you think credit and debit cards will still be the primary payment method for online purchases? What about cash for off-line purchases? In both instances explain why or why not.
2. What type of payment service does Boku (**boku.com**) provide? How does it work? What are some of the countries where it works? Who are some of the companies

that utilize the service? What is their chance of success? What factors do you think will pay a role in its success or failure? Start by reading the press release at **boku.com/#merchants** and **boku.com/#carriers**.

3. In B2C EC criminals may use fake or stolen credit cards to pay merchants. What steps should the merchants take to combat the fraud?
4. A metropolitan area wants to provide users of its public transportation system with the ability to pay transit fares, and make retail purchases, using a single contactless smart card. What sorts of problems can it encounter in setting up the system, and what types of problems could the riders encounter by using the cards?
5. Discuss the differences between Litecoin and Bitcoin? How likely is it that Litecoin will become a widely used global virtual currency? What will be the key reasons for its success or failure.
6. A retailer wants to move into cross-border commerce. What types of payments will they need to accept and why?
7. Discuss the problem of reverse logistics in EC. What types of companies may suffer the most from this problem?
8. Differentiate order fulfillment in B2C from that of B2B.
9. Watch **youtube.com/watch?v=OTnSXMhqQ-g** to gain a better understanding of the *bullwhip* effect and potential factors that cause can cause it. Based on your understanding, what sorts of factors should demand forecasting incorporate to mitigate these factors?
10. Describe the importance of providing a single demand forecast for improving control along the entire supply chain.
11. Investigate and discuss how artificial intelligence can be used to manage warehouse operations. Begin with **yahoo.com/tech/meet-the-new-boss-the-worlds-first-128660465704.html**.

TOPICS FOR CLASS DISCUSSION AND DEBATES

1. Several years ago Facebook declared that all Facebook applications, including games, would have to use Facebook Credits as their currency. A short time later they rescinded this policy. Why would Facebook issue such a policy? Why did they rescind it? Do you agree with their actions?
2. Besides music and apps, what are some of the other places where EC micropayments could be used?
3. Which would you prefer, paying for goods and services with a physical debit or credit card or paying with your smartphone? What are some of the benefits and limitations of each?
4. What is MasterPass™ and how does it work? Some question the longer-term viability of MasterPass™. Find pro and con information and debate the issue.
5. Discuss the differences between convertible and nonconvertible virtual currencies. What are some examples of each? Contrary to the strict definition, are there some instances where the nonconvertible virtual currencies have actually been used as a medium exchange in the "real" world?
6. Chart the supply chain portion of returns to a virtual store. Check with an e-tailer to see how it handles returns. Prepare a report based on your findings.
7. Some say outsourcing B2B services may hurt the competitive edge. Others disagree. Discuss.
8. Which activities are most critical in order fulfillment of B2C (check Table 12.1). Which are for B2B? Discuss the differences.
9. Write a report about the status of Amazon.com's same-day delivery projects.

INTERNET EXERCISES

1. Select a major retail B2C merchant in the United States and one outside of North America. Detail the similarities and differences in the e-payment systems they offer. What other payment systems could the sites offer? Write a short report.
2. A number of companies are providing digital (mobile) wallet systems. What is a digital wallet? Make a list of these companies and their products. Compare their various capabilities. Do you think any of these products will be popular in the near future? Why or why not?
3. Go to **smartcardalliance.org/smart-cards-applications-transit-open-payments-resources**. The site lists a number of existing transit systems that are using contactless smartcards effectively. Select two of the systems and compare and contrast them.
4. Read about Starbucks' gift cards and stored-value mobile app. In recent years these have been victimized by cybercriminals. What types of cybercrimes have been committed, what has been the impact, and how have the problems been addressed?
5. Download the lastest version of the CyberSource Fraud Benchmark Report at **cybersource.com**. In the report, is mobile commerce more or less susceptible to fraud than nonmobile EC, which mobile operating systems are most susceptible to fraud, and what techniques are most often used to combat it.
6. The U.S. Postal Service (USPS) has working relations and special programs with Amazon, UPS, Fedex, and most recently with the Chinese firm Alibaba. What is the

nature of these relationships, how do they differ, and are they successful?

7. Visit **freightquote.com** and the sites of two other online freight companies. Compare the features offered by these companies for online delivery.
8. Enter **efulfillmentservice.com**. Review the products you find there. View the video about their operation. How does the company organize the network? How is it related to companies such as FedEx? How does this company make money?
9. Enter **kewill.com**. Find the innovations offered there that facilitate order fulfillment. Compare it with **shipsmo.net**. Write a report.
10. Visit **b2b-today.com**. Go to the B2B Communities area and identify the major vendors there. Then select three vendors and examine the services they provide to the B2B community.
11. Go to **ariba.com**. What is Sap Ariba and what supply chain solutions does it provide? Prepare a report describing the solutions they offer in the procurement arena.
12. "The food industry has been the slowest major consumer sector to expand into e-commerce." First, read **foodlogistics.com/article/12021908/food-and-beverages-push-into-e-commerce-raising-questions-for-the-supply-chain**. Based on the article what are some of the major issues that the food industry faces with EC? What are some of the solutions that have tried to address these issues?

TEAM ASSIGNMENTS AND PROJECTS: ASSIGNMENT FOR THE OPENING CASE

1. Read the opening case and answer the following questions:
   (a) What is cross-border research and under this definition is trade between two member countries of the European Union cross-border or not? Explain.
   (b) Describe the current and estimated size of the cross-border market.
   (c) What are the key elements of success for a EC company wanting to expand into global markets?
   (d) What is the basic approach that Costco used in entering the Chinese EC market?
   (e) Would the approach used by Costco work for a company like Walmart? Explain.
2. The competition within the mobile payment reader industry is very intense. Each team selects a company in this field (e.g., Square, PayPal, Groupon) and presents the company's capabilities and weaknesses.
3. Write a report comparing smart card applications in two or more European and/or Asian countries. In the report, discuss whether those applications would succeed in North America.
4. Have one team represent MasterCard® Pay Pass™ (**mastercard.us/paypass.html**) and another represent Visa payWave (**usa.visa.com/personal/security/card-technology/visa-paywave.jsp**). The task of each team is to convince a company that its product is superior to the other.
5. Research and write a report on the differences among the cloud-based and device-based digital wallets, giving examples of each and noting the pros and cons of each approach.
6. Each team should investigate the order fulfillment process offered at an e-tailer's site, such as **gap.com**, **staples.com**, or **walmart.com**. Contact the company, if necessary, and examine any related business partnerships. Based on the content of this chapter, prepare a report with suggestions for how the company can improve its order fulfillment process. Each group's findings will be discussed in class. Based on the class's findings, draw some conclusions about how companies can improve order fulfillment.
7. FedEx, UPS, the U.S. Postal Service, DHL, and others are competing in the EC logistics market. Each team should examine one such company and investigate the services it provides. Contact the company, if necessary, and aggregate the team's findings into a report that will convince classmates or readers that the company is the best. (What are its best features? What are its weaknesses?)
8. The competition on "same-day delivery" is intensifying with more and more competitors entering the race. Investigate the status of the competition including delivery by drones (e.g., FAA's approval). Start with Bowman (2014). Write a report.
9. Read about the warehouse management systems provided by JDA and Manhattan Associates (including some of their warehouse case studies) and answer the following:
   (a) What supply chain processes are supported by both systems?
   (b) What are the major benefits of each system?
   (c) What are the major differences in the capabilities provided?

CLOSING CASE: SEND MONEY HOME—M-PESA AND THE KENYA EXPERIENCE

The slang term *unbanked* refers to people who do not use banks or other financial institutions. Instead of using checks and cards, they conduct most of their financial transactions in cash. While there are many reasons for people to be unbanked, most of them are poor and either lack the credit standing to have a bank account or they are located in poorer regions where there are no banking services. In many countries around the world, moving from the ranks of the unbanked is almost a necessary step for getting out of poverty.

From 2011 to 2014, the number of "unbanked" adults declined an astounding 20% to two billion (World Bank 2015). The drop was not the result of declines in the number of unbanked living in the more advanced or growing economies. Instead it was almost solely attributable to shifts in the number unbanked residing in sub-Saharan Africa and more specifically in Kenya. It was due to a program called M-Pesa originally intended to provide person-to-person international remittances conducted via cell phones. This closing case describes in detail the M-Pesa program including the problems it was designed to address, the structure and operation of the program, and its long-term results on the unbanked poor in Kenya and other parts of the world.

The Problem

In developing countries, immigration is "a way of life." When done voluntarily, people often migrate for the express purpose of finding work or taking advantage of opportunities outside of the countries or areas where they live. Worldwide, this migration results in a massive transfer of money from workers to their families and friends back home. These transfers are known as remittances. While any single remittance is usually small, the aggregate amounts are substantial. For example, according to figures from the World Bank (2016), "official" global remittances involving foreign workers from developing countries totaled over $430 billion in 2015. To put this in perspective, for many developing countries the yearly total is often more than the development assistance they receive from all sources and larger than the monies from direct foreign investments.

These sums not only represent big money from the developing countries perspective, they also represent big money for the Money Transfer Operators like Western Union who handle these transfers. The MTOs charge fees for their services, as well as making money from currency conversion. While most of these operators follow strict guidelines and rules, even small charges can have a major impact on the amounts received by the individual families.

In addition to these global remittances, developing countries also have sizeable "internal" remittances generated by workers who have moved from the rural parts of the country to take jobs in the cities. Because the workers and their families are unbanked, most of these remittances take place the old fashion way. Either the workers take the cash home themselves or they have someone do it for them. While this certainly avoids the fees charged by the MTOs, it still a costly and dangerous undertaking—it takes time to transport the money (usually by bus) and places both the person and the money at risk given the high rates of robbery in many of these countries. Also, because the transfers occur outside any formal financial system, there is no way to measure the numbers of people, cash, and transactions involved.

In the past a number of countries have sought to address either directly or indirectly the issues and inefficiencies in global and domestic remittances. Many of these programs revolved around the idea of somehow turning the "unbanked" into the "banked." Theoretically, if both the sender and the receiver had bank accounts, this could certainly simplify the domestic transfers of funds, and would open other possibilities for international transfers. It might also address the larger issues of poverty, thus alleviating the need for family members to separate in the first place. Ignoring the fact that it cost money to have a bank account and the fact that banking systems in many developing countries are suspect, this approach is a massive, costly, and long-term undertaking. As the last few years have demonstrated, the real answer might be in mobile money and the "un-banking" of the banking system. At least, that is what the experience in Kenya over the last few years has shown.

The Solution

The history of the M-Pesa is well documented in *Money, Real Quick* by Omwansa and Sullivan and touched on more recently by Runde (2016). The discussion that follows briefly covers some of the key events that these discussions highlight.

Kenya is an east African country of approximately 40 million people with high unemployment and poverty. Approximately 10 years ago, an in-depth survey of the Kenyan financial sector found, much to the surprise of their Central Bank of Kenya, that only 20% of the adults in the country were "banked." Basically, the bank was servicing urban elites and slowly dying in the process. The same could be said for the government owned telecom system which historically had provided landlines in urban areas. As a result, only 2% of the population had phone service. In contrast, Kenya's mobile operators, of which Safaricom Network Company was by far the largest, had managed in a relatively short period of time to get ten million mobile phones in the hands of the Kenyans (for a 35% penetration rate). So, instead of thinking about how to spread a dying landline business or branch banking business to the rural populace, or for that matter to the slums of the cities, maybe it would be easier to figure out how to use mobile phones to help bring financial services to the poor?

The original pilot for Kenya's mobile money system was run under the auspices of Britain's governmental development agency (DFID) and focused on reducing the costs of microfinance-loan repayments and lowering the associated interest rates. After the initial foray, control of the program was shifted to Safaricom and the focus morphed away from loan repayments toward person-to-person money transfer. The new system was called M-PESA—the "m" stands for Mobile and "pesa" is the Swahili word for money. The marketing slogan for the

new system was simply "Send money home," although the system had broader financial capabilities.

The task of sending money was relatively straightforward. First, the sender and the receiver had to have mobile phones that supported texting, which virtually every mobile phone has regardless of the underlying technology. Next, they had to get Safaricom SIM cards. Once they had the SIM cards, they had to register with an M-PESA agent. All that was required to register was an identity card, something that every Kenyan had. Once registered, the network sends an updated menu to the registered customer's mobile phone. At this point, the system is ready to go. To actually send money, a registered customer first deposits cash to his or her account. This is done by giving cash to an M-PESA agent who immediately credits it to the customer's account. The network sends a text message to verify the deposit. Once, it's in the customer's account, he or she can send money at any time by selecting "Send money" from the M-PESA menu and then entering the recipient's phone number. At this point, the sender is prompted for his or her M-PESA pin number and then selects "Ok." Next, the system sends a message to the sender confirming the transfer and the recipient's name. In turn the recipient receives a message with the sender's name and the amount transferred to his or her account.

On the other end, a recipient can now go to a local M-PESA agent to pick up the money. Actually, the recipient is basically making a cash withdrawal from his or her account. It's done by showing the agent his or her identity card, choosing "Withdraw" cash from the menu, entering the agent's ID number, and then entering his or her M-PESA pin number. Once the transaction is confirmed, the agent distributes the cash.

Obviously, a major key to the success of the system is the M-PESA agent network (Stahl 2015). It has been described as a network of "human ATMs." An agent might be a local grocer, or gas station owner, or a post person, etc. They were recruited through a thorough selection and vetting process. Many of them were also selling mobile airtime for Safaricom. They receive regular training and are frequently monitored. They are also restricted from doing business with other mobile operators. Outside of the due diligence process, the major hurdle for an agent is monetary. Agents have to prepurchase mobile money so they can sell it to customers for cash. Likewise, they have to sell cash for mobile money so customers can withdraw funds. Both the cash and the mobile money they manage are theirs, not M-PESA's. Some agents do well, but for the majority it is a part-time job.

Less obvious is the fact that M-PESA is modeled after a "prepaid" mobile phone system where consumers pay up-front for minutes rather than relying on credit and paying for minutes after they are used. In M-PESA you don't need credit approval up-front to open and use the system. Essentially, you open an account and then deposit money. There are no fees for making deposits nor are there fees for adding airtime to a phone. There are fees for transferring and withdrawing funds. They pale in comparison to fees charged by the MTOs and by ATM machines. There are also restrictions on the maximum amount of money you can store in your account and the amount of money you can transfer at any given time. There are a variety of reasons for these restrictions. First, a majority of customers are poor so the system is focused on their needs. Second, they don't want the system to be used for illegal purposes (e.g., money laundering). Third, and most importantly, M-PESA is not a bank. Monies that are held in a trust owned by Vodafone (the major shareholder) and deposited in commercial banks.

The Results

By virtually every measure, M-PESA has been a major success (Vodafone 2016). The program started in Kenya but now operates in 11 countries. In 2014/2015 it had 23.4 million customers, 240 K agents, and handled 3.4 billion transactions. In Kenya there are over 20 million subscribers (which is about 50% of the entire population and 90% of the adults). There are also over 80,000 M-PESA agents. The value of transactions flowing through the system in Kenya is around two trillion Kenyan Shillings (which converts to about 20 billion dollars U.S.).

The capabilities of the system have also expanded and now include: sending money to another M-PESA customer; paying bills (e.g., utilities); buying goods from merchants; withdrawing money from ATMs; receiving money from abroad; and receiving or paying salaries. Essentially, M-PESA has become a mobile e-wallet.

Additional systems have also been integrated to M-PESA to provide other financial services. For instance, the M-SHWARI system and a new entry (KCB M-PESA) offer M-PESA customers savings and loan capabilities. By early 2015, M-SCHWARI had about ten million customers.

As noted above, M-PESA now operates in other countries besides Kenya. This includes places inside of Africa (e.g., Tanzania), as well as outside of Africa like Afghanistan, India, South Africa, and Romania. In virtually all of these other countries, the Kenyan success has not been replicated, although the jury is still out in some of these (e.g., India). A number of critics have suggested that the success M-PESA of Kenya rests on a series of circumstances that are hard to replicate in other countries, including (Economist 2013):

1. The financial sector basically had a hands off policy that eliminated a number of regulatory hurdles encountered in countries.
2. Safaricom was close to a mobile monopoly in Kenya. In the other countries the competition is much greater which makes it harder, for example, to control things like the SIM cards used in phones or the mobile airtime.

3. Unlike a number of similar projects, Safaricom recognized that the biggest hurdles were people related not technological in nature. This was the reason for the original marketing theme, the simplified phone capabilities, and the establishment of network of agents located close to the potential customer base.
4. Finally, the percent of the "unbanked" population was close to 90% at the beginning of the project. In most of the other countries where M-PESA is present today, the percent is much higher (e.g., 30–50%).

Sources: Economist (2013), Omwansa and Sullivan (2012), Runde (2016), Vodafone (2016), and World Bank (2016).

Questions

1. What are remittances and why are they important in developing countries?
2. What is an MTO? What role have they historically played in remittances?
3. What is M-Pesa? Briefly describe how M-Pesa works.
4. What evidence is there that M-Pesa was successful?
5. What is the major benefit of owning a credit-based transportation card for commuters? What role did the M-Pesa agent network play in this success?
6. What has M-Pesa been successful in Kenya but not other countries?

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W11.1 The Bullwhip Effect
W11.2 Dell's World-Class Supply Chain and Order Fulfillment System

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Part V

E-Commerce Strategy and Implementation

Implementation Issues: From Globalization to Justification, Privacy, and Regulation

12

Contents

Learning Objectives

Upon completion of this chapter, you will be able to:

1. Describe the need for justifying EC investments.
2. Evaluate the issues involved in global EC.
3. Describe the reasons for success and failure of EC.
4. Describe how small and medium-sized businesses can use EC.
5. Understand the foundations for ethical issues in EC.
6. Describe intellectual property law and understand its adjudication.
7. Explain privacy and free speech issues and their challenges.
8. Describe the future of e-commerce.

OPENING CASE: TELSTRA CORPORATION HELPS ITS CORPORATE CUSTOMERS JUSTIFY EC INITIATIVES

Telstra Corp. is Australia's major telecommunication and information services company, which provides fixed line and mobile communications as well as digital TV and Internet access services. The company operates in a competitive market (e.g., against Vodafone and Optus Corp.). Telstra has expanded its services to several countries in Asia and Europe.

The Problem

The company is very active in the e-commerce and social media markets, mainly through Telstra Digital and its wireless units. For example, it provided its corporate customers with Facebook apps so they can manage their Telstra accounts. One area where the company saw an opportunity but had some marketing difficulties was m-commerce. In particular, the company offered its corporate customers applications that had many intangible benefits. The customers had difficulty getting approval from their own top

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management for paying for Telstra's services without detailed *justification*.

Telstra was interested in promoting the following four lines of applications:

1. **Fleet and field service management.** This topic, involving enterprise mobility applications, was described in Chapter 6.
2. **Video conferencing.** This application uses video conferencing in order to save on travel expenses to meeting places, and helps expedite decision-making. Both fixed line and mobile services can support this initiative.
3. **Web contact centers.** This application is designed to improve CRM as described in Chapter 8 and in Online Tutorial T1.
4. **Teleworking.** Allows employees to work off-site. *Teleworking* (also known as telecommuting) requires sophisticated technology to enable effective communication, collaboration, and collaborative commerce activities.

Both the infrastructure and the software for the above applications are expensive. Many Telstra customers were interested in learning about how to *justify* the investment, but they did not know how to go about it.

The Solution

Telstra developed a white paper to illustrate the use of ROI calculators in each of the above four lines of applications. The unique property of the calculators is that they compute benefits to the users' organizations, to the employees, and to society. Telstra is known for its concerns for SMEs. In 2015, it took a majority ownership in Neto, an EC platform provider for SMEs (Murtagh 2015). Here, we provide some of the highlights.

Justifying Video Conferencing

Benefits include reduction in travel expenses, work time lost by employees, and so forth. This calculator uses the Net Present Value (NPV) approach.

The cost–benefit analysis calculates the savings to a company (seven variables), some of which are intangible (such as faster decision-making). The benefits are compared with both the fixed and variable costs. The benefits to employees are measured by five variables, some of which are intangible (e.g., better job satisfaction). Finally, benefits to society include variables such as reduced car emissions and traffic congestion.

Justifying Teleworking

The benefits to the companies range from reduced office footprints to higher employee retention. Again, some benefits are intangible. The costs are detailed (e.g., cost of equipment). Employees save travel time when they work at home but they need to pay for the energy used at home. Society enjoys reduced vehicle emissions when people telecommute.

Justifying Web Contact Centers

The above approach is used here, too: The calculator includes savings, benefits, and costs to the company, employees, and society. Both tangible and intangible variables are considered in the calculations.

Justifying Fleet and Field Force Management

The structure of this calculator is similar to those above: Savings, benefits, and costs to the company, employees, and society.

The white paper provides comprehensive calculations with sample data for a hypothetical company.

Telstra offers other calculators including one for data usage for mobile devices.

The Results

Telstra believes that Australian companies have an opportunity to develop a sustainability strategy using the above technologies that need to be justified. Telstra provides proof of substantial cost–benefits. While the savings to companies are substantial in many cases, the benefits to employees and society should not be ignored.

As far as Telstra itself, the introduction of the calculators helped the company increase its market share and profitability. Also the market value of Telstra stock doubled from 2010 to 2015.

A note: Telstra is known for its EC and IT innovations. For how it is outpacing the USA in IoT adoption, see Barbaschow (2016).

Sources: Based on and AIIA Report (2009), Murtagh (2015), and Barbaschow (2016).

LESSONS LEARNED FROM THE CASE

The Telstra case demonstrates the need for organizations to justify EC-related projects and the fact that this may not be easy to do. Telstra provided calculators to their clients to help them with the justification of IT and EC investments. The case points to intangible benefits, which are difficult to measure and quantify. It also raises the issue of sharing costs among several projects, and the need to consider the benefits to employees

and to society. These are only some of the topics presented in this chapter. Other topics deal with the use of EC metrics. This chapter also provides a discussion of successes and failures in e-commerce. Other implementation issues covered are the implementation of EC by SMEs and the strategy of going global online. Finally, privacy, ethical issues, and intellectual property are covered. The chapter ends with an assessment of the future of e-commerce.

- Companies now realize that EC is not necessarily the solution to all problems. Therefore, EC projects must compete with other internal and external projects for funding and resources. The answer usually is provided by ROI.
- Some large companies and many public organizations mandate a formal evaluation of requests for funding.
- Companies are required to assess the success of EC projects after their completion.
- The pressure by top management for better alignment of EC strategy with the business strategy.
- The success of EC projects may be assessed in order to pay bonuses to those involved with the projects.

12.1 WHY JUSTIFY E-COMMERCE INVESTMENTS? HOW CAN THEY BE JUSTIFIED?

Companies need to justify their EC investments for a number of different reasons.

Increased Pressure for Financial Justification

Today, companies are careful with EC expenses and budgets. Technology executives feel the pressure for financial justification and planning from top executives. However, there is still a long way to go as demonstrated by the following data:

- Most companies lack the knowledge or tools to do ROI calculations for EC projects.
- The vast majority of companies have no formal processes or metrics in place for measuring ROI for EC projects.
- Many companies do not measure how completed EC projects compare with their promised benefits.

At the same time, the demand for expanding or initiating e-business projects is high. Therefore, it is recommended to calculate the projected value of proposed EC projects in order to gain approval for them. For further discussion, see TeamQuest (2014).

Note that in some cases, following the competitors is a major reason to embark on EC projects. In such cases, you still need to do a formal justification, but it may be more of a qualitative in nature.

Other Reasons Why EC Justification Is Needed

The following are some additional reasons for conducting EC justification:

EC Investment Categories and Benefits

Before we look at how to justify EC investments, let us examine the nature of such investments. One basic way to categorize different EC investments is to distinguish between investments in infrastructure and investments in specific EC applications.

IT infrastructure provides the foundation for EC projects or applications in the enterprise. IT infrastructure includes servers, intranets, extranets, data centers, data warehouses, knowledge bases, and so forth. In addition, it is necessary to integrate the EC applications with other applications throughout the enterprise that share the infrastructure. Infrastructure investments are made for the long term.

EC applications are specific projects and programs for achieving certain objectives. The number of EC applications can be large. They may be in one functional department, or several departments may share them, which makes the assessment of their costs and benefits more complex.

Note: Cloud computing may provide a low-cost IT infrastructure and EC applications and must be considered.

The major reasons that companies invest in IT and EC are to improve business processes, lower costs, increase productivity, increase customer satisfaction and retention, increase revenue and market share, reduce time-to-market, and gain a competitive advantage.

How Is an EC Investment Justified?

Justifying an EC investment means comparing the costs of each project against its benefits in what is known as a **cost–benefit analysis**.

A number of different methods are available to measure the *business value* of EC and IT investments. Traditional methods that support such analyses are *net present value* (*NPV*) and ROI (see **nucleusresearch.com/research**).

Cost–Benefit Analysis and the Business Case

The cost–benefit analysis and the business value are part of a *business case*. The business case's cost benefit includes three major components: *Benefits* (e.g., revenue increase, cost reduction, customer satisfaction), *costs* (investment and operating costs), and *risks* (e.g., obsolescence, employee resistance). Several vendors provide templates, tools, guidelines, and other aids for preparing the business case in specific areas. For example, IT Business Edge (**itbusinessedge.com**) provides a Business Case Resource Kit (see **itbusinessedge.com/downloads**).

What Needs to Be Justified? When Should Justification Take Place?

Not all EC investments need to be justified formally. In some cases, a simple one-page qualitative justification is sufficient. The following are cases where formal evaluation may not be needed:

- When the value of the investment is relatively small for the organization.
- When the relevant data are not available, are inaccurate, or are too volatile.

When the EC project is mandated—*it must* be done regardless of the costs involved (e.g., when mandated by the government, or when it is necessary to match the competition).

However, even when formal analysis is not required, an organization should conduct at least some qualitative analysis to explain the logic of investing in the EC project.

Using Metrics in EC Justification

Metrics can be used to designate the ratio between costs and benefits or the total costs or do comparisons. They are used not only for justification but also for other economic activities (e.g., to compare employee performance in order to reward those who do the best job). Metrics can produce very positive results in organizations by driving behavior in a number of ways. Metrics can:

- Be the basis for setting up specific goals and plans.
- Describe and measure the value proposition of business models (Chapter 1).
- Align the goals of individuals, teams, departments, and other organizational units with the enterprise's objectives.
- Track the characteristics and/or performance of EC systems, including usage, types of visitors, page visits, conversion rate, and so forth.
- Assess the health of companies by using tools such as *balanced scorecards* and *performance dashboards*.

Metrics, Measurements, and Key Performance Indicators

Metrics need to be defined properly with a clear way to measure them. Figure 12.1 shows the process of using metrics. The

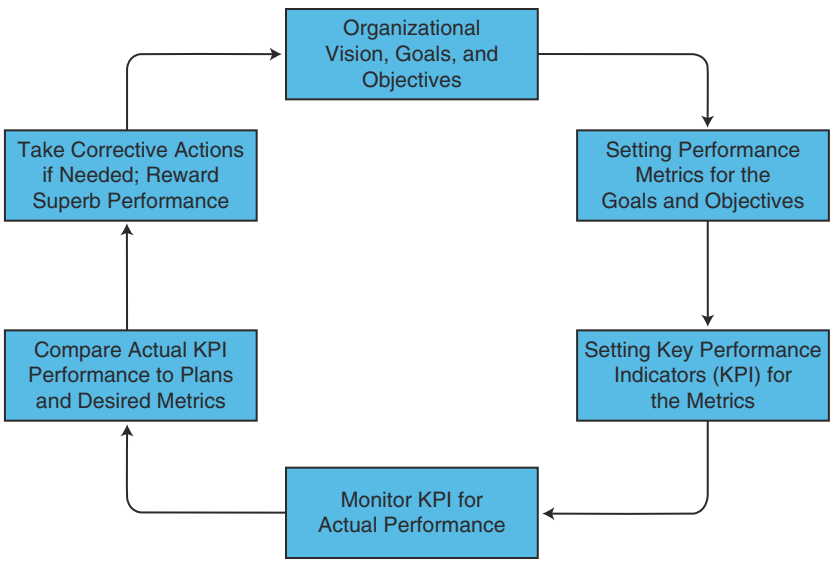

Figure 12.1 How metrics are used in performance management

cyclical process begins with setting up goals and objectives for organizational and EC performance, which is then expressed by a set of metrics. The metrics are expressed by a set of **key performance indicators (KPIs)**, which are the quantitative expressions of critically important metrics. Often one metric has several KPIs.

The KPIs are continuously monitored by the organization (e.g., via Web analytics, financial reports, marketing data, and so forth). As shown in Figure 12.1, the KPIs that reflect actual performance are compared to the desired KPIs and planned metrics. If a gap exists, corrective actions take place and then goals, objectives, and metrics are adjusted if necessary.

Another example of metrics is shown in the *balanced scorecard method.* This method uses four types of metrics: *customer*, *financial*, *internal businesses processes*, and *learning growth*.

One of the most useful tools for EC management is Web analytics. Web analytics are closely related to metrics.

Web Analytics

Web analytics refers to tools and methods that are used to measure, analyze, and optimize Web usage and other Internet activities. A common usage of Web analytics is to evaluate website traffic, but it can also be used as a tool for EC market research. The outcomes of advertising campaigns can also be assessed with Web analytics. For additional information, see Beasley (2013).

Now that we understand the need for conducting EC justification and the use of metrics, let us see why EC justification is difficult to accomplish.

The Process of Justifying EC and IT Projects

The major steps of this process are:

1. Establish an appropriate basis for analysis with your vendor, and then conduct your ROI.
2. Investigate what metrics to use (including internal and external metrics) and be sure about their accuracy.
3. Justify the cost–benefit under appropriate assumptions.
4. Verify all data used in the calculation.
5. Include strategic benefits, including long-term ones. Find contributions to competitive advantage. Make sure not to underestimate costs and overestimate benefits (a tendency of many managers).
6. Make data as realistic as possible, and include cost avoidance and risk analysis.
7. Commit all business partners, as well as suppliers and major customers to your plans.

Justifying Social Networking and the Use of Web 2.0 Tools

Justifying social networking initiatives and the use of Web 2.0 tools can be difficult due to the intangible benefits and the potential risks. However, in many cases, the cost is relatively low and so companies embark on such projects without formal justification. The major issue could be that of risk assessment. Some of the tools are available for free or are being added by vendors to communication and collaboration tools. For a comprehensive e-book, see Petouhoff (2012). Also, watch two videos from Salesforce.com: "How to Build a Business Case for Social Media" and "How to Measure Social Media ROI" (**connectedtimes.com/2012/04/09/how-to-build-a-business-case-for-social-media**). For a comprehensive coverage, see Turban et al. (2016).

SECTION 12.1 REVIEW QUESTIONS

1. List some of the reasons for justifying an EC investment.
2. Describe the risks of not conducting an EC justification study.
3. Describe how an EC investment is justified.
4. List the major EC investment categories.
5. When is it unnecessary to formally justify EC investments?
6. What are metrics? What benefits do they offer?
7. Describe KPI.
8. Describe the cyclical use of metrics as it relates to organizational performance.
9. What is Web analytics, and what role does it play in the justification of EC projects?
10. Describe the process of justifying EC projects.

12.2 A STRATEGY FOR GLOBAL E-COMMERCE

Deciding whether to "go global" is a strategic issue. The statistics regarding Internet and smartphone usage worldwide illustrate the enormous potential that exists for companies to expand their market share globally using EC.

The decision to go global is made for many reasons, both reactive and proactive. Reactive reasons include factors such as competitors that are already selling internationally. Proactive reasons include sellers that are seeking economies of scale, looking for new international markets, gaining access to sufficient or new resources, cost savings, and local government incentives. Regardless of the reasons, expanding globally to realize a company's strategic objectives requires extensive planning and responding quickly to opportunities.

A global electronic marketplace can be an attractive opportunity in an EC strategy. Going global means access to new and possibly larger markets, opportunity to minimize taxes, and flexibility to employ a less expensive workforce anywhere. However, going global is a complex and strategic decision process for several reasons. Geographic distance is an obviously important issue in conducting business globally; however, frequently, it is not the most important issue. Cultural differences and political, legal, administrative, and economic issues must be considered. This section briefly examines representative opportunities, problems, and solutions for companies that are going global with EC.

Benefits and Extent of Global Operations

A major advantage of EC is the ability to conduct business at any time, from anywhere, and at a reasonable cost. These are also the drivers behind global EC, and there have been some incredible success stories in this area. For example:

- eBay conducts auctions in hundreds of countries worldwide.
- Alibaba.com (Chapter 4) provides B2B trading services to millions of companies worldwide.
- Amazon.com sells books and millions of other items to individuals and separate retail websites for 13 countries, including the USA, the UK, France, and Brazil.
- Small companies, such as ZD Wines (**zdwines.com**), sell to hundreds of customers worldwide. HotHotHot (**hothothot.com**) is a success story from the past. The company is no longer in business. Global sales now are done via HotSauce.com service.
- Major corporations, such as GE and Boeing, have reported an increasing number of international vendors participating in their electronic RFQs. These electronic bids have resulted in a 10–15% cost reduction and more than 50% reduction in cycle time.
- In 2013, the NFL opened an e-commerce shop for the Chinese market (**nfl.tmall.com**), which partners with 25 regional TV broadcasters and digital media outlets across China (see *PR Newswire* 2013).
- By recruiting online via social networks (e.g., **xing.com** and **linkedin.com**), many international corporations have considerably increased their success in recruiting employees to work in international locations.

Globalization and Social Networking

Globalization of EC has benefitted greatly from social networking. For example, there are about five times more international Facebook members than in the USA. Furthermore, companies such as Amazon.com, Google, Groupon, and Yahoo! are very active globally.

Barriers to Global E-Commerce

Despite the benefits and opportunities offered by globalization, there are several barriers to global EC. Some of these barriers face any EC venture but become more difficult when international impacts are considered. These barriers include authentication of buyers and sellers (Chapter 10), generating and retaining trust (Chapter 9), order fulfillment and delivery (Chapter 11), security (Chapter 10), and domain names. Others are unique to global EC. In this chapter, we will discuss only some of these barriers.

iGlobal stores (**iglobalstores.com**) and Alibaba.com offer suggestions on what to offer international customers: country-specific checkout experience, up-to-the-minute currency conversion and foreign settlement, global fraud and risk and its protection, calculation of duty and tax, and integration with existing information systems.

Cultural Differences

The Internet is a multifaceted marketplace made up of cross-cultural users. The multicultural nature of global EC is important because cultural attributes (such as social norms, local habits, and spoken languages) determine how people interact with companies, agencies, and with each other. Cultural and related differences include spelling differences (e.g., American versus British spelling), information formatting (e.g., dates can be mm/dd/yy or dd/mm/yy), graphics and icons (e.g., mailbox shapes differ from country to country), measurement standards (e.g., metric versus imperial system), and so forth. Many companies are globalizing their websites by creating different sites for different countries, taking into account site design elements, pricing and payment infrastructures, currency conversion, customer support, and language translation.

Language Translation

Although the world population is over 7.4 billion (2016), only about one billion people speak English as their native or second language. In contrast, more than 1.5 billion people speak Chinese. In their study of 1000 top websites, Sargent and Kelly (2010) found that more than 72% of consumers would be more likely to purchase a product with

the description in their native language, and 56.2% agreed that price is not as important as being able to access information in their native language. In order to reach 80% of the world's population, a website would have to be translated into 83 of the world's 6912 languages. Therefore, a website offered in only one language can only reach 20–30% of the total online population at the most. We assume the situation is similar today.

Clearly, these single language websites are severely limiting their customer base. It is not surprising then, that language translation is one of the most obvious and most important aspects of creating and maintaining global websites. In 2014, Byte Level Research reviewed 150 corporate global websites, identifying the 25 top "amazing global gateways"—leaders, laggards, and best practice companies (**bytelevel.com/reportcard2014/#25top**).

The number one global website in 2016 is Facebook. Other large global sites are Alibaba and Google. Facebook's representative innovations include multilingual plug-ins, an improved global gateway, and multilingual user profiles. The primary problems with language translation are speed and cost. It may take a human translator a week to translate a medium-sized website into another language. For large sites, the cost can be more than $500,000, depending on the complexity of the site and the number of languages for translation and can be a lengthy process.

Machine Translation

Some companies address the cost and time problems by translating their Web pages into different languages through what is called *machine translations* such as Google Translator. A list of free translation programs can be found at **xmarks.com/site/www.humanitas-international.org/newstran/more-translators.htm** and **websites.translations.com**. For examples on how Lionbridge Technologies, Inc. uses machine translation to help their clients, see **lionbridge.com/clients**. For example, in November 2013, Lionbridge was selected by Net-A-Porter (Case 1.1, Chapter 1) to develop and maintain translated content for Net-A-Porter's global websites. Net-A-Porter ships its luxury fashion products to 170 countries and operates several non-English sites (e.g., Mandarin, French, German). For real-time translation of conversations via Skype, see Skype (2015).

Lionbridge Technologies integrates its machine translation with Zendesk Customer Service platform to deliver real-time multilingual online support (see Company News 2015).

Example: Ortsbo, Inc.

The company that enables real-time global communication claims more than 212 million unique users in over 170 countries. Telus International teamed up with Ortsbo in a customer care program to enable Telus's customer service agents to chat in real-time online to almost anyone in their native language (as of 2013, the software is available in 66 languages). Telus can offer multilingual support at a lower cost because they do not have to hire additional agents for each language. (See Bach 2013 for details.)

The Droid Translator app, launched in June 2014, offers the capabilities to transform personal and business chat by translating phone, video, and text chat in 29 languages (see Petroff 2014). The company was acquired by Yappan Corp. in August 2015.

Legal Issues

One of the most contentious areas of global EC is the resolution of international legal issues. An ambitious effort to reduce differences in international law governing EC is the United Nations Commission on International Trade Law (UNCITRAL) Model Law on Electronic Commerce. Its purpose is to provide national legislators with a set of guidelines that are internationally acceptable, which specify how to overcome some of the legal constraints in the development of e-commerce. It also provides for a safer legal platform to be constructed through the design of fair, current, and consistent guidelines in e-commerce transactions (see **uncitral.org**). The Model Law has been adopted in some form or another in many countries and legal jurisdictions, including Singapore, Australia, Canada, Haiti, and the United States.

Geographic Issues and Localization

Barriers posed by geography differ based on the transportation and communication infrastructures between and within countries and the type of product or service being delivered. For example, geographic distance is almost irrelevant with online software sales.

Example: Clarins Group

Clarins Group (**clarinsusa.com**), a major player in the skin care, makeup, and fragrance business sector, is significantly increasing its global online presence and its e-commerce analytics to optimize online performance of its trading platform. Its brands, such as Clarins, and Azzaro, are advertised and sold on websites using the EC vendor Intelligent Trader, in more than 15 countries, while the challenges of multichannel, multilanguage, and multicurrency are addressed.

Web Localization

Many companies use different names, colors, sizes, and packaging for their overseas products and services. This practice is referred to as *localization.* In order to maximize the benefits of global e-commerce, the localization approach also should be used in the design and operation of the supporting information systems. For example, many websites offer different language or currency options, as well as

special content. Europcar (**europcar.com**), for example, has a global presence in over 150 countries, each with an option for one of ten languages. The company has a free iPhone app, which is available in eight languages.

Payments in Global EC Trades

The issues facing global payments vary from fraud to banking regulations. Some solutions were discussed in Chapter 11. Companies such as Elavon (**elavon.com**) provide global EC gateway solutions.

Economic and Financial Issues

Economic and financial issues encompassing global EC include government tariffs, customs, and taxation. In areas subject to government regulation, tax and regulatory agencies have attempted to apply the rules used in traditional commerce to e-commerce, with considerable success. Exceptions include areas such as international tariff duties and taxation. Software shipped in a box would be taxed for duties and tariffs upon arrival. However, software downloaded online may rely on self-reporting and voluntary payment of tax by the purchaser, something that does not happen very often. Note that Amazon.com and other e-tailers have started charging sales tax in many U.S. states for digital downloads (see **taxes.about.com/od/statetaxes/a/sales-tax-for-digital-downloads.htm**).

A major financial barrier to global EC is electronic payment systems. To effectively sell online, EC firms must have flexible payment methods that match the ways people in different countries pay for their online purchases. Although credit cards are used widely in the United States, many European and Asian customers prefer to complete online transactions with off-line payments. Even within the category of off-line payments, companies must offer different options depending on the country. For example, French consumers prefer to pay with a check, Swiss consumers expect an invoice by mail, Germans commonly pay for products only upon delivery, and Swedes are accustomed to paying online with debit cards.

Pricing is another economic issue. A vendor may want to price the same product at different prices in different countries based upon local prices and competition. However, if a company has one website, differential pricing will be difficult or impossible. Similarly, what currency will be used for pricing? What currency will be used for payment?

E-Commerce in Developing Countries

Economic conditions determine the degree of the development of countries. Some developing countries are using EC as a springboard to improve their economies (e.g., China, Malaysia, India). Other developing countries are making strides. For a story, see Pittaway (2016). For a case study about Thailand, see **bangkokpost.com/tech/local-news/884152/e-commerce-set-to-flourish-in-five-years**.

Breaking Down the Barriers to Global E-Commerce

A number of international organizations and experts have offered suggestions on how to break down the barriers to global EC. Some of these suggestions are:

- **Be strategic.** Follow the entire strategy life cycle. A company must consider what countries to target and which languages, and how the users in the target countries will react. These considerations need to be included in the strategy.
- **Know your audience.** Consider cultural issues and legal constraints, which vary around the world.
- **Localize.** Websites need to be localized. In certain countries (e.g., Japan, China, Russia), local languages are essential (e.g., Yahoo! has a specific website for Japan: "Yahoo! Japan;" **yahoo.co.jp**); products are priced in local currencies; and local terms, conditions, and business practices are based on local laws and cultural practices.
- **Think globally, act consistently.** An international company with country-specific websites should be managed locally and must make sure that areas such as brand management, pricing, ad design, and content creation and control are consistent with the company's strategy.
- **Value the human touch.** Human translators are preferred over machine translation programs. The quality of translation is important because even a slight mistranslation may drive customers away.
- **Clarify, document, explain.** Pricing, privacy policies, shipping restrictions, contact information, and business practices should be well documented, located on the website, and visible to the customer.
- **Offer services that reduce trade barriers**. It is not feasible to offer prices and payments in all currencies, so provide a link to a currency exchange service (e.g., **xe.com**) or to a currency conversion calculator. In B2B e-commerce, integrate EC transactions with the accounting/finance information system of the major buyers.

SECTION 12.2 REVIEW QUESTIONS

1. Describe globalization in EC and the advantages it presents.
2. Describe the major barriers to global EC.
3. What can companies do to overcome the barriers to global EC?
4. Discuss the pros and cons of a company offering its website in more than one language.

12.3 E-COMMERCE STRATEGY FOR SMALL AND MEDIUM-SIZED ENTERPRISES

E-commerce can be one of the most effective business strategies for small and medium-sized enterprises (SMEs). The potential for SMEs to expand their markets and compete with larger firms through EC is enormous. Some of the first companies to take advantage of Web-based e-commerce were small and medium-sized enterprises (SMEs). While larger, established, tradition-bound companies hesitated, some forward-thinking SMEs initiated online presence and opened webstores because they realized there were opportunities in marketing, business expansion, cost-cutting, procurement, and a wider selection of partner alliances. An example of an active SME is: The Mysterious Bookshop (**mysteriousbookshop.com**).

Clearly, SMEs are still finding it difficult to formulate or implement an EC strategy, mainly because of their inability to handle large volumes of products, lack of knowledge or IT expertise in the SME, and limited awareness of the associated opportunities and risks. As a result, many SMEs create static websites that are not used for selling. However, a growing number of SMEs are adopting the EC strategy. SMEs can join marketplaces such as Alibaba, Amazon.com, and Net-a-Porter to sell their products there. According to TrueShip (2016) consumers like to buy in marketplaces with the variety of products they can find there.

In her article, Burke (2013) describes how a 15 year old girl created a successful business inventing special flip-flops, which are now sold online, in various off-line boutiques, and at Nordstrom. For the future of EC for small businesses, see Mills (2014).

Choosing an EC approach is a strategic decision that must be made in the context of the company's overall business strategy. On the positive side, the nature of EC lowers the barriers to entry, and it is a relatively inexpensive way of reaching a larger number of buyers and sellers who can more easily search for, compare prices, and negotiate a purchase. However, there are also some inherent risks associated with the use of EC in SMEs. Table 12.1 provides a list of major advantages and disadvantages of EC for SMEs.

Table 12.1 Advantages and disadvantages of EC for small and medium-sized businesses

Advantages/benefits	Disadvantages/risks
• Inexpensive sources of information. A Scandinavian study found that over 90% of SMEs use the Internet for information search (OECD 2001)	• Lack of funds to fully exploit the potential of EC
• Inexpensive ways of advertising and conducting market research. Banner exchanges, newsletters, chat rooms, and so on are frequently cost-free ways to reach customers	• Lack of technical staff or insufficient expertise in legal issues, advertising, etc. These human resources may be unavailable or prohibitively expensive to an SME
• Competitor analysis is easier. A Finnish study found that Finnish firms rated competitor analysis third in their use of the Internet, after information search and marketing	• Less risk tolerance than a large company. If initial sales are low or the unexpected happens, the typical SME does not have a large reserve of resources to fall back on
• Inexpensive ways to build (or rent) a webstore. Creating and maintaining a website is relatively easy and cheap	• When the product is not suitable or is difficult for online sales
• SMEs are less locked into legacy information technologies and existing relationships with traditional retail channels	• Reduced personal contact with customers
• Image and public recognition can be generated quickly. A Web presence makes it easier for a small business to compete against larger firms	• There is an inability to afford entry, or purchase enough volume, to take advantage of digital exchanges
• An opportunity to reach worldwide customers. Global marketing, sales, and customer support online can be very efficient	

Globalization and SMEs

In addition to increasing their domestic market, EC opens up a vast global marketplace for SMEs, but only a small percentage of them conduct a significant part of their business globally. However, a growing number are beginning to use EC to tap into the global marketplace in some way, but even then, SMEs are more likely to purchase globally than to sell globally. This situation is changing, thanks to Alibaba.com and similar online directories that help small companies sell globally. For details, see Vega (2014). Very important is the advice provided by Alibaba Group (see Fan 2015).

For resources for SMEs going global, see **sbecouncil.org/resources/going-global**.

Resources to Support SME Activities in EC

SME owners often lack strategic management skills and consequently are not always aware of changes in their business environment with respect to emerging technologies. Fortunately, SMEs have a variety of private and public support options (e.g., **sba.gov**, **business.gov.au**).

In addition, vendors realize that the large number of small businesses means an opportunity for acquiring more customers. Thus, many vendors have created service centers that offer both free information and fee-based support. Examples are IBM's Small and Medium Business Solutions (**ibm.com/midmarket/us/en**) and Microsoft's Business Hub (**microsoftbusinesshub.com**). Professional associations, Web resource services (e.g., **aabacosmallbusiness.com**) and small organizations that are in the business of helping other small businesses, go online today.

Resources to assist SMEs in going global are also emerging as helpful tools for SMEs that want to expand their horizons. For example, the Global Small Business Blog (GSBB) (**globalsmallbusinessblog.com**) was created in 2004 by Laurel Delaney to help entrepreneurs and small business owners expand their businesses internationally.

A good source regarding SMEs' use of e-markets to conduct international business is **emarketservices.com/start/Case-studies-and-reports/index.html**. Also see Goldberg (2016).

SMEs and Social Networks

Social commerce is one of the fastest growing EC technologies that is being adopted by SMEs.

Small businesses can utilize social network sites to interact with peer groups outside their immediate geographical area in order to exchange opinions about topics of mutual interest and help each other solve problems. SMEs can find websites that are dedicated to small businesses. These sites provide SMEs with opportunities to make contacts, get start-up information, and receive advice on e-strategies. Not only can sites such as LinkedIn be used to garner advice and make contacts, they can be used in B2B to develop networks that can connect SMEs with other small businesses or foster relationships with partners.

Table 12.2 lists ten steps to success when using social media in SMEs. Note that, social networks facilitate interactions and relationship building, which are very important for SMEs. For tips on how to use YouTube to promote the online content of SMEs, see **masternewmedia.org/online_marketing/youtube-promote-content-viral-marketing/youtube-video-marketing-10-ways-20070503.htm**.

SMEs are following the growing popularity of social networking sites and using social media to build connected networks, enhance customer relationships, and gather feedback about their services and products.

For implementation issues of social commerce, see Chess Media Group (2012).

Table 12.2 Ten steps to a successful social media strategy

Step	Description
1	Understand what social media is and what the benefits of using it are
2	Identify the audience you want to reach and where to find it
3	Identify the resources you currently have available for use for social networking and social networks
4	Identify the most appropriate technologies to use
5	Start a blog and create a social culture in your business
6	Build social media profiles for your business on Facebook, LinkedIn, Twitter, YouTube, Instagram, Pinterest, etc.
7	Make your blog social media friendly
8	Build relationships with your target market
9	Turn friends and followers into customers
10	Decide how you will monitor and measure the performance of your social media initiatives

SECTION 12.3 REVIEW QUESTIONS

1. What are the advantages or benefits of EC for small businesses?
2. What are the disadvantages or risks of EC for small businesses?
3. What are the advantages and disadvantages for small businesses online?
4. How can social networks help SMEs become more competitive?

12.4 OPPORTUNITIES FOR SUCCESS IN E-COMMERCE AND AVOIDING FAILURE

Now that EC has been around for over 20 years, it is possible to observe certain patterns that contribute to the success or failure of EC projects. By examining these patterns, one can find indications of the opportunities that lie ahead and avoid pitfalls along the way. It is not easy to assure success in e-commerce as shown in the case of Aldi supermarket (Case 12.1).

CASE 12.1: EC APPLICATION ALDI SUPERMARKET TRYING E-COMMERCE IN THE UK

The Problem

Aldi Supermarket is a large Germany-based supermarket chain which is also active in the UK and Ireland. The grocer is known to be active, inspiring to open 1000 stores in the UK.

The company is a discounter, so profitability is difficult to achieve. The profit margin is very low. The competition is very strong, especially against well-known brands in the UK (e.g., Primark).

The Solution

Aldi's major competitors do not offer online services. Aldi decided to go online since the company concentrates on selling nonperishable goods such as wines and non-foods. By going online, the company hopes to reach more customers and have its brand more be more familiar. The first product went online in early 2016 (it was wine). Clothing and electrical products will go online in 2017.

The Results

Given that the EC experiment started in late 2015 and it is the first of its kind in the UK, the results are not known. According to Hobbs (2015), the move is both a risk and an opportunity. The company may increased its cost and turn to EC to be profitable only in several years.

Sources: Based on Hobbs (2015), Baldwin (2015), and on Chapman (2016).

Questions

1. Read information about the case and identify all the risks and opportunities.
2. The company decided against EC in 2014, but changed its mind a year later. Find the reasons why.
3. What factors can determine the success and what factors can determine the failure in this venture.

Note: You need to read the sources to answer the questions.

Factors that Determine E-Commerce Success

The economic capabilities of EC described earlier influence some industries more than others do. The success factors of EC depend on the industry, the sellers and buyers, and the products sold. Furthermore, the ability of sellers to create economic value for consumers will also determine EC success. When deciding to sell online, looking at the major factors that determine the impact of EC can assist in evaluating the chances for success.

Four categories of e-market success factors exist: *product*, *industry*, *seller*, and *consumer* characteristics.

E-Commerce Failures

By examining the economic history of previous innovations, the failure of EC initiatives and EC companies should come as no surprise. Three economic phenomena suggest why this is the case.

Some of the specific reasons for failure in B2C EC are: lack of profitability, excessive risk exposure, the high cost of customer acquisition, poor performance, and poor website design. Two additional financial reasons are lack of funding and incorrect revenue models. An example of a failure is the Webvan case—an express delivery company that lost $1.2 billion—the largest of any other bankrupt dot-com. Another bankrupt company is Kozmo, whose story is available in Online File W12.1.

E-Commerce Successes

Despite the failure of hundreds of start-ups and thousands of EC projects, EC is alive and well, and continues to grow rapidly (after a short pause from 2000 to 2002), as discussed throughout the text.

EC success stories abound, primarily in the specialty and niche markets. One example is Puritan's Pride, Inc. (**puritan.com**), a successful vitamin and natural health care product store. Another is GrubHub, Inc. (**grubhub.com**), which allows people to order food online for either pickup or delivery (previously CampusFood.com). Also doing very well are travel sites, such as Expedia, Trip Advisor, and Priceline.

Alloy Apparel (**alloy.com**) is a successful shopping and entertainment portal for young adults. As pointed out in Chapter 3, online services such as stock trading, travel and hospitality, online banking, and more are commanding a major part of the transactions in their industries. For a comparison of how these and other thriving online businesses have translated critical success factors (CSFs) from the old economy into EC success, see Table 12.3. EC successful companies such as Priceline, Netflix, Amazon.com, Facebook, and Google are becoming major players in their industries, making their shareholders very rich.

Following are some of the reasons for EC success and suggestions from EC experts and consultants on how to succeed in EC.

Strategies for EC Success

- Thousands of brick-and-mortar companies are adding online marketing and/or procurement channels with great success. Examples are Uniglobe Travel (**uniglobetravel.com**), Staples (**staples.com**), Target (**target.com**), Home

Table 12.3 Critical success factors: old economy and EC

Old economy CSFs	EC CSFs
Vertically integrate or do it yourself	Create new partnerships and alliances; stay with core competency
Deliver high-value products	Deliver high-value service offerings that encompass products
Build market share to establish economies of scale	Optimize natural scale and scope of business; look at mass customization
Analyze carefully to avoid missteps	Approach with urgency to avoid being left out; use proactive strategies
Leverage physical assets	Leverage intangible assets, capabilities, and relationships—unleash dormant assets
Compete to sell product	Compete to control access to markets, and build relationships with customers; compete with other websites

Depot (**homedepot.com**), Walmart (**walmart.com**), FIS (**fisglobal.com/Solutions/Payments/Digital-Payments**), **1-800-Flowers.com** (1800flowers.com), and Southwest Airlines (**southwest.com**). A group of Asian CEOs recommend the following EC CSFs: select proper business models, project, predict, and prepare for the EC company, encourage e-innovation, co-brand marketing, and focus on younger customers (e.g., see **alloy.com** and **bolt3.com**).

- For an EC exchange to be successful, it has to create value for *all* participants. A vivid example is Alibaba.com.
- Pricing in EC has continued to be a challenge for sellers because of shipping and handling costs. Often, the seller and market maker will see the potential for profits and ignore the fact that the buyers will subscribe to EC only if they see a benefit in price or product variety. For example, free shipping is available at Dell, Newegg, and many other e-tailers.
- New technologies can boost the success of EC. For example, RFID has great potential for improving the supply chain; however, it will take a large investment in EC infrastructure and applications to realize its full potential.
- Digital partnerships can drive business success (McCafferty 2016b).

Additional Guidelines for EC Success

A number of experts and consultants have proposed many more keys to success. Several studies identified success factors such as:

- Effective marketing and advertising
- User-friendly website
- Good relationships between customers and merchants
- Proper supply chain management and order fulfillment
- Integration with internal and external information systems
- Use of appropriate business models (including revenue models)
- Effective and efficient infrastructure
- Organization culture regarding becoming an e-business and social business
- Effective leadership of the digital business team (Raskino and Waller 2016)

At this still-early stage of the EC revolution, success cannot be guaranteed, and failure rates remain high. However, if companies learn from the mistakes of others and follow the guidelines offered by experts and researchers, their chances for success are greatly enhanced.

Cultural Differences in EC Successes and Failures

Here, we add the issue of *cultural differences* so that appropriate strategies can be developed when doing business globally.

One of the strengths of EC is the ease with which sellers and buyers can reach a global population of consumers or suppliers. However, they must recognize existing cultural differences and act upon them. Even the content of online ads can mean different things in different cultures. Due to these differences, the transaction costs, including coordination costs, may vary among the consumer base.

EC success factors as well as adoption strategies differ among countries (see Online File W12.2).

Can EC Succeed in Developing Economies?

Similar to cultural differences, developed and developing economies vary in how EC is used and whether the economics favor electronic commerce. Developing economies struggle with various issues taken for granted in developed economies (e.g., use of credit cards).

Developing economies often face power blackouts, unreliable shipments, unstable political and social environments, lack of regulations that protect customers, and insufficient payment options. Such limitations make it difficult for firms to predict whether EC investments will pay off, and when. However, developing economies, such as in China and India, represent a significant opportunity for EC to connect businesses to customers, as well as other businesses. The potential volume of transactions in developed countries can make EC investments more attractive for established firms. This is because much of the cost of EC systems development would have already been recovered because EC initiatives frequently can use existing IT infrastructures.

The traditional EC assumption is that every computer user has the ability to own a computer and afford Internet connection, as is the case in developed economies. In developing economies, this assumption will have to be revised to include the existence infrastructure, poverty levels, and technology availability and affordability. A major booster for EC in developing countries is the increasing use of low-cost laptop computers and tablets in a wireless environment. With simple computers costing less than $100 (and declining), and the widespread use of cell phones with Internet access and free access in public places, it is likely that EC use will increase significantly in developing countries. For comprehensive coverage of e-commerce in developing countries, see **wto.org/english/res_e/booksp_e/ecom_brochure_e.pdf**.

As discussed in Chapter 6, the mobile revolution enables developing countries to leap frog EC deployment, especially in the areas of mobile banking (finance) and mobile marketing.

SECTION 12.4 REVIEW QUESTIONS

1. Describe product characteristics in EC.
2. What are industry characteristics in EC?
3. What are seller characteristics in EC?
4. What are consumer characteristics in EC?
5. List three reasons why EC failure should not come as a surprise.
6. What are some reasons for EC success?
7. Relate EC to cultural differences.
8. Discuss some factors of implementation in developing countries.

12.5 ETHICAL CHALLENGES AND GUIDELINES

Ethics is a set of moral principles or rules of how people are expected to conduct themselves. It specifies what is considered by society to be right or wrong.

Issues of privacy, ownership, control, and security must be confronted in implementing and understanding the ethical challenges of EC.

Ethical Principles and Guidelines

Public law embodies ethical principles, but the two are not the same. Acts that generally are considered unethical may not be illegal. Lying to someone may be unethical, but it is not illegal. Conversely, the law is not a collection of ethical norms, and not all ethical codes are incorporated into public law. Online File W12.3 shows a framework for ethical issues.

One example of an ethical issue is the Facebook class action lawsuit of 2009, described next.

Example: Who Owns User-Generated Content?

In August 2009, five Facebook users filed a class action lawsuit against Facebook, claiming that Facebook violated privacy laws by gathering online users' activity and providing their personal information to third parties without the users' permission. They also alleged that Facebook engages in data mining, without informing the users.

The objective of the data collection was to enable Facebook to sell their users' data to advertisers because Facebook needed more revenue sources. The Electronic Privacy Information Center filed a complaint with the FCC, alleging that Facebook's changes in privacy settings made users' information publicly available without giving the users the option to opt out. Facebook was found to be liable for violating the privacy of their users and amended their rules. Facebook has continuously been modifying and changing its privacy settings, letting its users decide how much they want to share with the public.

Business Ethics

Business ethics (also known as *corporate* or *enterprise ethics*) is a code of values, behaviors, and rules, written or unwritten, for how people should behave in the business world. These ethics dictate the operations of organizations. For implementation considerations, see Business for Social Responsibility (**bsr.org**).

The Issues of Internet Abuse in the Workplace

The actual time wasted and productivity losses due to employees spending time on the Web during working hours is very high. In general, employees spent more than 1 h per week on social media alone, followed by online games and e-mails. Many companies have banned access to social networks such as Facebook, Twitter, and LinkedIn. In 2013, *SFGate* (per Gouveia 2013) conducted a survey in which they found that 69% of the employees were wasting time for 30 min to several hours per day. The top four employee "time wasters" were: checking news (37%), social networking (14%); online shopping (12%), and online entertainment (11%). For an article, see **salary.com/2014-wasting-time-at-work**.

Managing Internet Abuse

Instead of banning the use of social networks in the workplace, some employers are following less draconian measures by setting the following policies in place: employees are encouraged to check their social networks only once or twice a day, consolidate their social networking streams, develop a clear social networking policy, and utilize technology made for consolidation. A social networking policy should communicate clear guidelines from employers to employees. For example, employees should not spend more than 20 minutes per day of company time browsing social networks.

Table 12.4 Typical safeguards to minimize exposure to risk of criminal or civil charges

1. Does the website clearly post shipping policies and guarantees? Can the selling company fulfill its policies and guarantees? Does it comply with Federal Trade Commission (FTC) rules?
2. Does the website clearly articulate procedures for customers to follow when returning a shipment or when seeking a refund for products or services not received, or received in bad or damaged condition?
3. Has the company checked partners' backgrounds before entering into agreements with third-party vendors and supply chain partners? Do those agreements include protection of the company against all possible risks?
4. Is there sufficient customer support staff, and are they knowledgeable and adequately trained to process customers' inquiries?

Monitoring Employees: Is It Ethical?

Google and several other software application providers have incorporated new spyware on company smartphones given to employees, which enables employers to monitor the whereabouts of their employees using the smartphones' built-in GPS tracking systems. Google's Latitude enables companies to know their employees' location at all times. The ethical question is, whether this new power will be used by governments to invade the privacy of an individual's real-time whereabouts. In other words, rules and procedures for ethical behavior are needed for business people practicing EC. Two major risks are criminal charges and civil suits. Table 12.4 lists examples of safeguards to minimize exposure to those risks.

EC Ethical and Legal Issues

There are many EC- and Internet-related ethical issues that are related to legal issues (see Lewis 2014). These issues are often categorized into intellectual property rights, privacy, free speech versus censorship, and fraud protection methods.

- **Intellectual property rights.** Ownership and value of information and intellectual property. Intellectual property is difficult to protect on the Web. Owners are losing a substantial amount of money due to piracy.
- **Privacy.** Because it is so difficult to protect the privacy of individuals on the Web, there are some countries that do not regulate privacy issues while others have strict anti-invasion rules.
- **Free speech versus censorship.** Free speech on the Web may result in offensive and harmful attacks on individuals and organizations. Therefore, some countries have decided to censor material on the Internet.
- **Consumer and merchant protection against fraud.** For e-commerce to succeed, it is necessary to protect all transactions and participants against fraud.

Examples of ethical issues discussed elsewhere in this book are channel conflict (Chapter 3), pricing conflict (Chapter 3), disintermediation (Chapters 3 and 4), and trust (Chapter 9). Two additional EC-related ethical issues are Internet use that is not work-related and code of ethics. See also **investopedia.com/terms/c/code-of-ethics.asp**. For legal considerations of e-commerce, see Zottola (2014).

Internet Use that Is Not Work-Related

As described earlier, a majority of employees use e-mail and surf the Web for purposes not related to work. The use of company property (i.e., computers, networks) for e-mail and Internet use may create risk and waste time. The degree of risk depends on the extent to which the company has implemented policies and procedures to prevent and detect illegal uses. For example, companies may be held liable for their employees' use of e-mail to harass other employees, participate in illegal gambling, or distribute child pornography.

SECTION 12.5 REVIEW QUESTIONS

1. List seven ethical issues related to EC.
2. List the major principles of ethics.
3. Define business ethics.
4. Give an example of an EC activity that is unethical but not illegal.
5. How can employees abuse the Internet? How do small companies handle this?
6. Describe the issues of monitoring employees.

12.6 INTELLECTUAL PROPERTY LAW AND COPYRIGHT INFRINGEMENT

The legal system is faced with the task of maintaining a delicate balance between preserving social order and protecting individual rights. In this section, we explain some types of intellectual property laws and the issues arising from EC.

Intellectual Property in E-Commerce

Intellectual property (IP) refers to property that derives from the creative work of an individual, such as literary or artistic work. Intellectual property can be viewed as the ownership of intangible assets, such as inventions, ideas, and creative work. It is a legal concept protected by patents, copyrights, trademarks, and trade secret law (known as **Intellectual Property Law**).

There are various intellectual property law specialties, as shown in Table 12.5. Those specialty laws are interrelated and may even overlap.

Table 12.5 Intellectual property laws and the protections of intellectual property

Laws	Protection provided by the law
Intellectual property law	Protects the creative work of people
Patent law	Protects inventions and discoveries
Copyright law	Protects original works of authorship, such as music and literary works, artistic design and writing computer codes
Trademark law	Protects trademarks, logos, etc.
Trade secret law	Protects proprietary business information
Law of licensing	Enables owners of intellectual property to share it via licensing
Law of unfair competition relating to counterfeiting and piracy	Protects against those who use illegal or unfair methods, or methods not available to others. Also against those pirating intellectual property

Recording Movies, Shows and Other Events

A common method of infringement is to bring video cameras and video-capable cell phones to movie theaters and record the performances. PirateEye (**pirateeye.com**) is one of the companies that manufacture devices that discover and identify the presence of any digital recording device, monitor remotely in real time, and much more.

For intellectual property in social media, see Kankanala (2015).

Copyright Infringement and Protection

Numerous high-profile lawsuits already have been filed regarding online copyright infringement related to EC and the Web. A **copyright** is an exclusive legal right of an author or creator of intellectual property to publish, sell, license, distribute, or use such work in any desired way. In the United States, content is automatically protected by federal copyright laws as soon as a work is produced in a tangible shape or form. A copyright does not last forever; it is good for a set number of years after the death of the author or creator (e.g., 50 years in the United Kingdom). After the copyright expires, the work reverts to the public domain (or becomes publicly available). See **fairuse.stanford.edu/overview/public-domain** and **thepublicdomain.org**. In many cases, corporations own copyrights. In such a case, the copyrights will last 120 years, or even longer. The legal term for the use of a work without permission or contracting for payment of a royalty is **copyright infringement**.

Example

An artist made $90,000 by selling someone's Instagram photo without permission. See Instagram (Instagram 2015).

File Sharing

One of the major methods of violating copyrights is *file sharing*. File sharing became popular in the late 1990s through facilitating companies such as Napster. One of the players in this area is The Pirate Bay (see the closing case to this chapter). The loss to copyright holders is estimated to be several billion dollars annually. The Recording Industry Association of America (RIAA) is fighting back.

Examples

The file-sharing business is a major target of the RIAA, which shut down popular sites LimeWire LLC and Kazaa. Additionally, another popular file-sharing site, Megaupload.com, was shut down in January 2012. However, the site was re-launched in January 2013 under the domain name **mega.co.nz**.

Legal Aspects of Infringement

In November 2010, the U.S. Senate Judiciary Committee approved the controversial Combating Online Infringement and Counterfeits Act (COICA) that provides the Attorney General with the power to shut down websites without a trial or court order if copyright infringement is considered to be the "central activity of the site." The problem is that, under this bill, most business websites are considered publishers (e.g., even when publishing an online sales brochure), and may be subject to disruptive investigations.

The RIAA Industry Versus the Violators

To protect its interests, the RIAA uses selective lawsuits to stamp out rampant music piracy on the Internet. However, the RIAA spent more than $58 million in pursuit of targeted infringers between 2006 and 2008, yet collected less than $1.4 million (less than about 2%) from judgments.

Note, since 2009, the number of lawsuits has been declining for several reasons. Viacom sued YouTube (Google) for $1 billion copyright violation. In 2013, Viacom lost its case against YouTube (the appellate court ruled in favor of Google). Finally, pending copyright infringement lawsuits are not favored because they are lengthy and very costly. As an alternative to direct lawsuits, the entertainment industry has begun developing digital rights management (DRM) policies to be enforced through the court system as well through federal legislation.

Globalization

Much of the media piracy occurs in other countries (e.g., Russia, China, and Sweden, and many developing countries). Therefore it is difficult to combat piracy, as per the closing case of Pirate Bay.

Digital Rights Management (DRM)

Digital rights management (DRM) describes a system of protecting the copyrights of data circulated over the Internet or digital media. These arrangements are technology-based protection measures (via encryption or using watermarks). Typically, sellers own the rights to their digital content. For details, see **eff.org/issues/drm**. However, DRM systems may restrict the *fair use* of material by individuals. In law, **fair use** refers to the limited use of copyrighted material, without paying a fee or royalty, for certain purposes (e.g., reviews, commentaries, teaching).

Patents

According to **fedcirc.us**, a **patent** is "an exclusive right to a particular invention. Patents are granted by states or governments to the creator of an invention, or to someone who has been designated by them to accept the rights over the invention. The holder of the patent has sole rights over the invention for a specified period of time" (e.g., 20 years for applications filed on or after June 8, 1995 in the United States and 20 years in the United Kingdom). Patents serve to protect the idea or design of the invention, rather than any tangible form of the invention.

There is some discrepancy between the USA and Europe over the way certain patents are granted. For example, in 1999, Amazon.com successfully obtained a U.S. patent for its "1-Click" ordering and payment procedure. Using this patent, Amazon.com sued Barnes and Noble in 1999, alleging that its rival had copied its patented technology. Barnes and Noble was enjoined by the courts from using their "Express Lane" payment procedure. However, on May 12, 2006, the USPTO ordered a reexamination of the "1-Click" patent. In March 2010, the Amazon patent was rewritten in the USA to include only a shopping cart, and was approved as such. Nevertheless, Expedia and many other e-tailers use similar "checkout" systems today. See **en.wikipedia.org/wiki/1-Click**.

Another example of a legal case involving patents is when Canadian firm i4i Corporation sued Microsoft, for patent infringement, alleging that Microsoft had infringed i4i's patent relating to text manipulation software. Microsoft wanted the standard changed by which patents would be deemed invalid. Microsoft took the case all the way to the U.S. Supreme Court and lost.

Oracle Versus Google

In following its legal right of enforcement, Oracle has been mining its newly acquired patent portfolio and actively seeking and suing infringers. In 2012, Oracle sued Google over its Android product for using Oracle's Java technology (copying Java code) without a license. While the trial court ruled that APIs are not subject to copyright, the appeals court disagreed, holding that Java's API packages were copyrightable, although it sent back the case to the trial court to determine whether or not Google's copying was a violation of the Fair Use Doctrine. In 2014, Oracle won the case (see McLaughlin 2014).

Trademarks

According to the USPTO, a *trademark* is "a word, phrase, symbol, and/or design that identifies and distinguishes the source of the goods of one party from those of others." A trademark is used by individuals, business organizations, or other legal entities to notify consumers of a unique source, and to tell the difference between a company's products or services and those of others. Although federal registration is not necessary, there are several advantages, such as informing the public that the trademark belongs to the registrants, and giving them exclusive right of use (see **uspto.gov/trademarks/basics/definitions.jsp**).

In 2008, eBay won a landmark trademark case against Tiffany, a leading jewelry retailer, who had sued eBay alleging that many of the items being advertised on eBay as Tiffany merchandise were actually fakes. The U.S. court ruled in 2008 that eBay cannot be held liable for trademark infringements "based solely on their generalized knowledge that trademark infringement might be occurring on their websites."

SECTION 12.6 REVIEW QUESTIONS

1. What is intellectual property law? How is it helpful to creators and inventors?
2. Define DRM. Describe one potential impact on privacy and one drawback.
3. What is meant by "fair use"? How does the "jailbreaking" of iPhones fall under "fair use"?
4. Define trademark infringement and discuss why trademarks need to be protected from dilution.

12.7 PRIVACY RIGHTS, PROTECTION, AND FREE SPEECH

Privacy has several meanings and definitions. In general, privacy is the state of not being disturbed by others, being free from others' attention, and having the right to be left alone and not to be intruded upon. (For other definitions of privacy, see the Privacy Rights Clearinghouse at **privacyrights.org**.) Privacy has long been a legal, ethical, and social issue in most countries.

Privacy in E-Commerce

The reason for privacy concerns stems from the fact that in using the Internet, users are asked to provide some personal data in exchange for access to information (such as getting coupons and allowing downloads). Data and Web mining companies receive and gather the collected data. As a result, users' privacy may be violated (see the slide presentation titled "Your Data, Yourself" by Justyne Cerulli at **prezi.com/fgxmaftxrxke/your-data-yourself**).

Privacy rights protection is one of the most debated and frequently emotional issues in EC and social commerce. According to Leggatt (2012), in a survey conducted by TRUSTe, 90% of Internet users "were found to worry about their online privacy." Many EC activities involve privacy issues ranging from collection of information by Facebook to the use of RFID. Here is an example. For issues of EC privacy, see Kenyon (2016).

Here we explore the major aspects of the problem as it relates to social networking.

Example: Google Glass

In May 2013, eight lawmakers, concerned about Google Glass (and other smart glasses), wrote a letter to Google asking what the company planned do to protect people's privacy. See Guynn (2013) for a description. A similar example is that stores can see where you go while you are in the store or shopping mall.

Social Networks Changing the Landscape of Privacy and Its Protection

Today's youth seem to be less concerned about privacy than young people were in the past. The younger generations are more interested in blogs, photos, social networking, and texting. Attitudes about what constitutes private information are changing. As a result, there are new opportunities for marketers and marketing communication, mainly in offering experiences that are better personalized, which do not violate Internet user privacy.

This problem has been articulated by Andrews (2012), who studied privacy protection in social networks and concluded that very little privacy protection exists (e.g., college applicants are being rejected because of what they posted on the social networks; criminals read posts about vacations to know when to break into an empty house).

However, in May 2014, Facebook announced the addition of the "Anonymous Login" feature and changes in login procedures, which allow users to try apps without sharing personal information from Facebook.

Information Pollution and Privacy

Information pollution, the adding of irrelevant, unsolicited information, may raise privacy issues such as the spreading of misinformation about individuals. In addition, polluted information used by decision makers or by UGC may cause invasion of privacy.

Global View

Note that the issue of privacy on the Internet is treated differently in different countries. For example, in November 2009, Google was sued in Switzerland over privacy concerns regarding its Street View application. In 2012, the Swiss highest court ruled that Google may document residential street fronts with its Street View technology (now Google Maps), but imposed some limitations on the kinds of images the company can take (e.g., lowering the height of its Street View cameras so they would not peer over garden walls and hedges). For more about the court's decision and the reaction of the parties, see O'Brien and Streitfeld (2012). In June 2013, the European Union highest court determined that government agencies cannot force Google to remove links to personal material. However, in May 2014, Europe's highest court ruled that people should have the right to say what information is available when someone Googles them. The ruling applies to 28 nations and all search engines (Google, Bing) in Europe. The decision does not apply to the USA or any other country outside Europe (see Sterling 2014).

Privacy Rights and Protection

Today, virtually all U.S. states and the federal government (and many other countries) recognize the right to privacy, but few government agencies actually follow all the statutes (e.g., citing reasons of national security). One reason is that the definition of privacy can be interpreted quite broadly. However, the following two rules have been followed closely in past U.S. court decisions: (1) the right to privacy is not absolute. Privacy must be balanced against the needs of society; (2) the public's "right to know" is superior to the individual's right to privacy. The vagueness of the two rules shows why it is sometimes difficult to determine and enforce privacy regulations.

Section 5 of the Federal Trade Commission Act protects privacy. For an explanation of the FTC Act, see **ftc.gov/news-events/media-resources/protecting-consumer-privacy**. Those practices extend to protecting consumer privacy, including the "do not track" option, protecting consumers' financial privacy, and the Children's Online Privacy Protection Act (COPPA).

In 2016, the Federal government sued Apple in order to force the company to allow the government to open the secured iPhone of a terrorist. Apple refused to cooperate. The government dropped the suit after it was successful in breaking into the phone.

Opt-In and Opt-Out

Privacy concerns have been overshadowed by post-9/11 counterterrorism activities, but consumers still want their data protected. One way to manage this issue is the *opt-in* and *opt-out* system, generally used by direct marketing companies. **Opt-out** is a method that gives consumers the choice to refuse to share information about themselves, or to avoid receiving unsolicited information. Offering the choice to opt-out is good customer practice, but it is difficult to opt out in some industries, either because consumer demand for opting out is low or the value of the customer information is high.

In contrast, **opt-in** is based on the principle that consumers must approve in advance what information they receive from a company, or allow a company to share their information with third parties. That is, information sharing should not occur unless customers affirmatively allow or request it.

See also the Direct Marketing Association (**thedma.org**) for information and resources on consumers' ad choices, opt-in and opt-out, privacy, identity theft, and more.

According to IBM, the following 6 practices for implementing a successful privacy project are:

1. **Get organized.** This can be done by creating a cross-functional privacy team for guidance.
2. **Define the privacy protection needs.** Decide what needs to be protected.
3. **Conduct inventory of data.** List and analyze all data that need protection.
4. **Select solution(s).** Choose and implement a solution that protects privacy.
5. **Test a prototype system.** Create a prototype of the system and test it under different conditions.
6. **Expand the project scope.** Expand the project to encompass other applications.

For further information on privacy protection, see IBM and the International Association of Privacy Professionals (**privacyassociation.org**).

Some Measures of Privacy Protection

Several government agencies, communities, and security companies specialize in privacy protection. Representative examples in the USA include the Privacy Protection (**privacyprotect.org/about-privacyprotection**), Privacy Choice (**avg.com**), and Home PC Firewall Guide (**firewallguide.com/privacy.htm**). Finally, Cagaoan et al. (2014) describe the issue of privacy awareness in e-commerce. For a complete guide to Internet privacy, anonymity, and security, see Bailey (2015).

Free Speech Online Versus Privacy Protection

Although the First Amendment of the U.S. Constitution grants the right to free speech, as with many rights, the right to free speech is not unlimited. The First Amendment does not give citizens the right to say absolutely anything to anyone. Defamation laws (including privacy violations), child pornography, fighting words, and terrorist threats are some of the traditional restrictions on what may be said freely. For example, it is illegal to scream "fire" in a crowded theater or make bomb threats in an airport, but there is no law against taking pictures in public places. Free speech often conflicts with privacy, protection of children, indecency, and so forth. For a discussion of the First Amendment and the ten rights it does not grant, see **people.howstuffworks.com/10-rights-first-amendment-does-not-grant.htm#page=1**.

For a comprehensive coverage of the legal aspects of privacy vs. defamation, see Kenyon (2016).

Example

Anthony Graber, a motorcyclist in Maryland was stopped by a plainclothes state police officer driving an unmarked car. He filmed his own traffic stop by using a camera attached to his motorcycle helmet. He posted his video on YouTube in March 2010, and as a result, was charged with violating state wiretap laws for audio recording the officers and posting the video on the Internet without police consent. Graber was arrested and faced up to 16 years in prison for this undisclosed recording. He pled guilty to speeding, but fought the charge of illegal monitoring, citing Freedom of Speech as a defense. The court ruled that the state trooper had "no legal expectation of privacy," and that videotaping is protected under the First Amendment. The court dismissed all of Graber's charges, except for the traffic violations. See **youtube.com/watch?v=QNcDGqzAB30&feature=related**.

Free Speech Online Versus Child Protection Debate

The debate over free speech versus child protection began in December 2000, after the *Children's Internet Protection Act (CIPA)*, which mandated the use of filtering techniques in libraries and schools that receive federal funding, was signed into law. In June 2003, the Supreme Court handed down a ruling that the CIPA was constitutional, allowing Congress to require some kinds of blocking, but the filters must not block too much material. Their review represented the third time justices had heard arguments pitting free speech against attempts to protect children from offensive online content. See the FCC Children's Internet Protection Act at **fcc.gov/guides/childrens-internet-protection-act**.

The Price of Protecting an Individual's Privacy

In the past, gathering information about individuals, that was residing in government agencies' databases, was difficult and expensive to do, which helped protect privacy. The Internet, in combination with powerful computers, and targeting algorithms with access to large-scale databases, have in all practical terms, eliminated the barriers of protecting citizens' privacy.

In the UK in 2010, Heathrow airport security officials were caught circulating printouts of a Hollywood star's full naked body scans downloaded from the full-body security scanners. However, authorities feel that the scanning process is necessary for airport security. Today's technology even enables monitoring people's activities from a distance, which may be considered a violation of their privacy, as shown in Case 12.2.

CASE 12.2: EC APPLICATION SCHOOL ADMINISTRATORS USED WEBCAMS TO SPY ON STUDENTS AT HOME

Unbeknownst to the students in a Pennsylvania high school, administrators were caught spying on the activities of the underage students. The administrators did this by remotely activating webcams built into each laptop that was issued to the students by the Lower Merion School District, without the permission or knowledge of the students or their parents.

The continued surveillance of the students, even while they were at home, by school officials at Harriton High School revealed that one student was conducting what the school defined as "improper behavior." Based on the video taken at his home, the student was confronted at the school by the assistant principal, and shown "photographic evidence." The school told the parents that they can do such monitoring. As a result, one student filed a class action lawsuit representing all the students who received laptops, for invasion of privacy and illegal interception of private information. The case was settled in October 2010 and the school district paid $610,000. In 2011, the same school district was sued by a former student over the secret monitoring of laptops in 2009.

Sources: Based on **courthousenews.com/2010/02/18/Eyes.pdf** (accessed April 2016).

Questions

1. What legitimate excuse could be made to justify this behavior? Why should the school's actions be stopped?
2. What federal laws were broken? What rights in the U.S. Constitution were violated?
3. What precedent did this decision set? Can you see a way that schools will be allowed to continue this behavior for a narrowly construed purpose?
4. Find other similar cases.

How Information About Individuals Is Collected and Used Online

An individual's private data can be gathered in a number of ways over the Internet. Representative examples of the ways that the Internet can be used to find information about an individual are provided next; the first three are the most common ways of gathering information on the Internet.

- By a user completing a registration form including personal data
- By tracking users' movement on the Web (e.g., by using cookies)
- By using spyware, keystroke logging, and similar methods
- By website registration
- By reading an individual's blog(s) or social network postings
- By looking up an individual's name and identity in an Internet directory or social network profile
- By reading an individual's e-mail, IM, or text messages (hacking)
- By monitoring employees in real time
- By wiretapping conversations over communication lines
- By using wearables such as smart glasses (Chapter 6), including invisible ones

Cookies

A popular way for a website to gather information about an individual is by using cookies. *Cookies* enable websites to keep track of users' online movements without asking the users for permission.

Originally, cookies were designed to help with personalization and market research; however, cookies can also be used to disseminate unsolicited commercial information. Cookies allow vendors to collect detailed information about a user's online behavior. The personal data collected by cookies often are more accurate than information provided by users, because users have a tendency to falsify information while filling out registration forms. Although the ethical use of cookies is still being debated, concerns about cookies reached a peak in 1997 at the U.S. FTC hearings on online privacy. Cookies can be successfully deleted by informed users with programs such as Cookie Monster and CCleaner; to delete and manage flash cookies, see **flashcookiecleaner.com**. By setting the privacy levels on Web browsers very high, cookies from all websites are blocked, and existing cookies cannot be read.

Spyware as a Threat to Privacy and Intellectual Property

In Chapter 10, we described **spyware** as a tool that some merchants use to gather information about users without their knowledge. Spyware infections are a major threat to privacy and intellectual property.

Spyware may enter the user's computer as a virus or as a result of the user clicking some innocent looking, but harmful, links. Spyware is effective in illegally tracking users' Internet surfing habits. Using spyware clearly is an invasion of the computer user's privacy and may be illegal. It can also slow down computer performance. While specific spyware can harvest data, it can also be used to take pictures from an unsuspecting user's Webcam and e-mail or post the photos all over the Internet.

Unfortunately, antivirus software and Internet firewalls cannot always detect all spyware; therefore, extra protection is needed. Many free and low-cost antispyware software packages are available. Representative free antispyware programs are Microsoft security essentials (**windows.microsoft.com/en-us/windows/security-essentials-download**), and AVG (**avg.com**). Programs that charge a fee include Trend Micro (**trendmicro.com**) and Kaspersky Lab (**usa.kaspersky.com**). Upgraded versions of free programs are also available for a fee. Symantec and other companies that provide Internet security services also provide anti-spyware software.

RFID's Threat to Privacy

Although several states have mandated or are considering legislation to protect customers from loss of privacy due to RFID tags, as mentioned in Online Tutorial T2, privacy advocates fear that the information stored on RFID tags or collected with them may violate an individual's privacy.

Other Methods

Other methods of collecting data about people are:

- **Site transaction logs.** These logs show what users are doing on the Internet.
- **EC ordering systems and shopping carts.** These features permit sellers to know buyers' ordering history.
- **Search engines.** Search engines can be used to collect information about users' areas of interest.
- **Web 2.0 tools**. Blogs, discussion groups, chatting, social networks, etc. contain a wealth of information about users' activities and personalities.
- **Behavioral targeting.** Using tools to learn people's preferences (Chapter 9).
- **Polling and surveys.** People's demographics, thoughts, and opinions are collected in surveys.
- **Payment information and e-wallets.** These may include sensitive information about shoppers.

Monitoring Employees

There are several issues concerning Internet use at work and employee privacy. In addition to wasting time online, employees may disclose trade secrets and possibly make employers liable for defamation based on their actions on the corporate website. In response to these concerns, many companies monitor their employees' e-mail and Web surfing activities, including postings on social network walls. One tool that enables companies to monitor their employees is Google Location, which works in combination with a compatible device (e.g., Android, iOS).

For workplace privacy and employee monitoring, see PRC (2014).

The issue of monitoring employees is complex and debatable because of the possibility of invasion of privacy. For comprehensive coverage, see PRC (2014). For more about employers and Internet usage monitoring, see **wisegeek.org/how-do-employers-monitor-internet-usage-at-work.htm**.

Privacy Protection by Information Technologies

Dozens of software programs and IT policies and procedures are available to protect your privacy. Some were defined in Chapter 10. Representative examples are:

- **Platform for Privacy Preferences Project (P3P).** Software that communicates privacy policies (described later in this chapter).
- **Encryption.** Software programs such as PKI for encrypting e-mail, payment transactions, and other documents.
- **Spam blocking.** Built into browsers and e-mail; blocks pop-ups and unwanted mail.
- **Spyware blocking.** Detects and removes spyware and adware; built into some browsers.
- **Cookie managers.** Prevents the computer from accepting cookies; identifies and blocks specific types of cookies.
- **Anonymous e-mail and surfing.** Allows you to send e-mail and surf without leaving a history.

Privacy Policies

A useful practice for companies is to disclose their privacy policies to their customers. For an example, see **arvest.com/pdfs/about/privacy-and-security/privacy-policy-and-notice.pdf**.

Privacy Issues in Web 2.0 Tools and Social Networks

The rise in social network use raises some special issues of privacy and free speech. Here are a few examples.

Presence, Location-Based Systems, and Privacy

Establishing real-time connections in the social networking world is an important activity. For example, Facebook offers Nearby Friends, an app that enables users to know where their friends are.

IBM has presence capabilities in its Lotus Software Connections (now called IBM Connections; **ibm.com/software/products/en/conn**), while Microsoft offers similar capabilities with SharePoint (**office.microsoft.com/en-us/sharepoint**). Apple, Google, and other companies offer similar features. Several social networks enable people to share their location with others. What are the privacy implications of such capabilities if used by businesses to locate customers and goods? Who will be held responsible or legally liable for unforeseen harm resulting from so much awareness and connectivity?

Obviously, clear policies are needed to govern what social networks can do with all the data they collect about people.

Privacy Protection by Ethical Principles

Some ethical principles that exist for the collection and use of personal information also apply to information collected in e-commerce. Examples are: proper notification about the possible use of personal data, option of opting-in and/or opting-out, accessibility to stored data, keeping consumers' data secured, and the ability to enforce related policies.

The broadest law in scope is the Communications Privacy and Consumer Empowerment Act (1997), which requires, among other things, that the FTC enforces online privacy rights in EC, including the collection and use of personal data. For the status of pending legislation in the United States, see **govtrack.us/congress/bills/subjects/right_of_privacy/5910**.

Government Spying on Its Citizens

At issue here is the proper balance between personal privacy and national security, whereby innovation and commerce is not stifled. The claim is that social networking sites have technology that has outpaced government law enforcement capabilities. The laws on the books do not cover new communication methods (i.e., texting and social networking). Opponents see this as nothing more than unbridled government eavesdropping. During 2013 and 2014, it was found that the U.S. government did spy on its citizens. In 2014 and 2015, efforts were taken to minimize such government surveillance.

P3P Privacy Platform

The **Platform for Privacy Preferences Project (P3P)** is a protocol for privacy protection on the Web developed by the World Wide Web Consortium (W3C). According to W3C, an international standards organization for the Web, the "Platform for Privacy Preferences Project (P3P) enables websites to express their privacy practices in a standard format that can be retrieved automatically and interpreted easily by user agents" (per **w3.org/P3P**). The W3C also explains that P3P is useful because "P3P uses machine readable descriptions to describe the collection and use of data. Sites implementing such policies make their practices explicit and thus open them to public scrutiny." This exposure can increase users' trust and confidence in e-commerce sites and vendors. Figure 12.2 shows the process of P3P.

Privacy Protection in Countries Other than the United States

In 1998, the European Union passed a privacy directive (EU Data Protection Directive) reaffirming the principles of personal data protection in the Internet age. This directive protects privacy more than U.S. protection laws do.

In many countries, the debate about the rights of the individual versus the rights of society continues. In some countries, like China, there is little protection of an individual's Internet privacy.

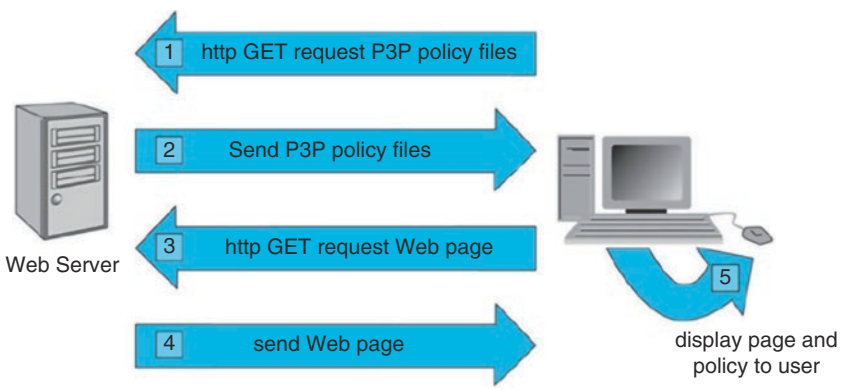

Figure 12.2 How P3P works

Note: According to Ranger (2016) the battle over privacy technologies could define the future of the Web.

SECTION 12.7 REVIEW QUESTIONS

1. Define privacy and free speech. Do your definitions depend on technology?
2. List some of the ways that the Internet can collect information about individuals.
3. What are cookies and spyware, and what do they have to do with online privacy?
4. Describe information pollution and privacy.
5. List four common ethical principles related to the gathering of personal information.
6. Describe privacy issues in social networks. What are the dangers?
7. Define P3P and describe its objectives and procedures.

12.8 THE FUTURE OF E-COMMERCE

Generally speaking, the consensus is that the future of EC is positive. EC will become an increasingly important method of trading, reaching customers, providing services, and improving organizations' operations. In addition, EC facilitates collaboration, innovation, and people-to-people interactions. Analysts differ in their predictions for the anticipated growth rate of EC and the length of time it will become a substantial portion of the economy. There is also disagreement about the identification of industry segments that will grow the fastest. However, there also is a consensus about the overall direction of the field: full speed ahead! Companies such as Amazon.com, eBay, Alibaba Group, Priceline, and Newegg.com are growing rapidly.

EC will grow all over the globe. For challenges and opportunities in China, see Clark (2015).

Some Key Factors for the Future of E-Commerce

The future of EC depends on how many factors will have impacts in the future. TrueShip (2016) made the following ten predictions:

1. Amazon will become bigger than Walmart.
2. EC will be 10% of all retail.
3. Facebook will overtake YouTube for branding.
4. Emotionally-driven shopping will become a standard.
5. In-store pickup will save the large retail chains (as in the case of Target).
6. Competitors will create Amazon Prime-like shopping portals.
7. Drones will start to deliver.
8. Marketplaces for selling goods will become very popular.
9. Mobile shopping will overtake desktop shopping. It may be required for survival.
10. Hassle free returns will be mainstreams in EC.

Other factors cited are:

- The shape of Net Neutrality.
- The extent of developing easy-to-shop and smart applications (e.g., Google's DeepMind).
- The competition between EC giants (e.g., Amazon, Alibaba) and large retailers that are going "brick-and-click" (e.g., Walmart) is intensifying.
- Multichannel shopping is increasing.
- Beacon technology integrates online and off-line systems.
- Huge images and videos deliver stunning homepages.
- Real-time analytics become the norm.

For comprehensive reports see Knight (2016) and McCafferty (2016a).

Integrating the Marketplace with the Marketspace

Throughout this book, we have commented on the relationship between the physical marketplace and the online marketspace. We have pointed out conflicts in certain areas, as well as successful applications. The fact is that, from the point of view of the consumer, as well as of most of the merchants and suppliers, these two entities exist, and will continue to exist, together.

Probably the most noticeable integration of the two concepts is in the click-and-mortar organization. In the near future, the click-and-mortar organization will be the most prevalent model (e.g., see Sears.com, Target.com, Costco.com, and Walmart.com), although the model may take different forms. Some organizations will use EC as just another sales channel, as most large retailers, airlines, and banks are doing today. Others will use EC only for some products and services, and sell other products and services the conventional way (e.g., LEGO Group).

The consumers prefer to have the choice of where to shop. As of 2015, consumers love the combination of ordering online and picking up the merchandise in the physical store.

Some believe that such a combination saves retailers from extinction (e.g., see Douglas 2014).

M-Commerce

There is almost a consensus that the role of m-commerce in e-commerce will increase significantly. There already are millions of innovative mobile apps and their numbers are growing rapidly. The area where we will see the fastest growth in EC is the proliferation of apps. Many m-commerce start-ups are entering the field. For details, see Kemp (2016).

Social Commerce

Recently, the use of mobile social networks has been accelerating. The increasing number of new wireless Web 2.0 services have assisted many social networks to go wireless, enabling more interactions between people. Nielsen's September 2012 release of its *Social Media Report* indicated that 4 out of 5 active Internet users visit social networks and blogs. The report also shows that nearly 82% of social media users access these websites using their mobile phones (Nielsen 2012). These numbers continue to grow with time.

Social commerce is growing rapidly on Facebook, Twitter, Google, and many other companies. Mobile advertising and promotions are major areas of growth. For details, see Turban et al. (2016) and Kemp (2016).

Future Technological Trends that May Accelerate the Speed of E-Commerce

The following are a few examples that will facilitate the use of e-commerce (based on Scollay (2015) and McCafferty (2016a):

- Much wider broadband of technologies and faster networks
- More powerful search engines (intelligent agent-based)
- Better batteries for mobile devices
- Development in quantum computing and the semantic Web
- The arrival of flexible computer screens
- Better cloud applications
- Wide use of smartphones and tablets
- Increased use of wearable devices
- Possibility of free Internet access
- Using augmented reality (e.g., in order fulfillment, see DHL 2015)
- Going further into IoT
- Next generation data centers

Future Trends That Are Limiting the Spread of EC

The following trends may slow down the growth of EC and Web 2.0, and may even cripple the Internet:

- **Security concerns.** Both shoppers and users of e-banking and other services worry about online security. The Web needs to be made safer.
- **Lack of net neutrality.** If the big telecom companies are allowed to charge more for faster access, small companies that cannot pay extra may be at a disadvantage.
- **Copyright violations.** The legal problems of YouTube, Wikipedia, and others may result in a loss of vital outlets of public opinion and creativity.
- **Lack of standards.** There is still a lack of standards for EC, especially for global trade.

In conclusion, many people believe that the impact of EC on our lives will be as much as, and possibly more profound than, that of the Industrial Revolution. No other phenomenon since the Industrial Revolution has been classified in this category. It is our hope that this book will help you move successfully into this exciting and challenging area of the digital revolution.

For a 537 slide show, see "Digital in 2016" at **slideshare.net/wearesocialsg/digital-in-2016** by Kemp (2016).

Enjoy Some Interesting Videos About the Future of E-Commerce

The following are some suggested videos about e-commerce:

1. "E-Commerce's Future Ain't What It Used to Be; It's Even Better" (7:48 min) at **youtube.com/watch?v=mJtw1027FYs**
2. "Future of E-Commerce: Trends, Challenges, and Opportunities for Telecom and the Mobile Industry" (7:41 min) at **youtube.com/watch?v=wCZXif3MUEw**

SECTION 12.8 REVIEW QUESTIONS

1. How is EC related to traditional commerce?
2. Describe the role of mobility in the future of EC.
3. How will social networks facilitate EC?
4. Which future trends will help EC?
5. Which trends slow down the growth of EC?

MANAGERIAL ISSUES

Some managerial issues related to this chapter are as follows:

1. **Which investment analysis method should we adopt for EC justification?** The precise estimation of total cost of ownership is a good starting point for financial investment analysis. If an intangible benefit such as enhanced customer service and quality assurance of purchased material is the primary contributor to productivity increase, management has to include it in the analysis. However, if the benefit can be measured quantitatively, such as creation of new revenue and/or reduced purchase cost, the net present value and ROI can be computed with tangible benefits and costs. Based on the investment analysis, the intangible factors may be considered additionally for managers' multicriteria judgments. Since there is high uncertainty in estimating future revenue creation, the best or worst case analysis may supplement the most likely analysis.
2. **Who should conduct the justification?** For small projects, the project team, possibly in cooperation with the finance department, can do the analysis. For a large or complex project, an unbiased outside consultant may be used, although it may be expensive. The justification should include both tangible and intangible benefits and costs. However, some vendors may provide ROI calculators as part of a proposal that might fit with your application without extra charge.
3. **How can EC go global?** Going global with EC is a very appealing proposition for companies of all sizes, but it may be difficult to do, especially on a large scale or for SMEs that lack the necessary resources. Companies need to identify, understand, and address the barriers to globalization such as culture, language, and law, as well as customers and suppliers. An e-business needs to decide on a localization strategy. Some companies, such as eBay, acquire or establish local companies to support local customers, whereas other companies only support the English language site. In B2B, a business may create collaborative projects with partners in other countries.
4. **What legal and ethical issues are of concern in an EC initiative?** Key issues to consider include the following: (1) What type of proprietary information should we allow and disallow on our site? (2) Who will have access to information that visitors post on our site? (3) Do the content and activities on our site comply with laws in other countries? (4) What disclaimers do we need to post on our website? (5) Are we using trademarked or copyrighted materials without permission? Regardless of the specific issues, an attorney should periodically review the website content, and someone should be responsible for monitoring legal and liability issues.
5. **What are the most critical ethical issues?** Negative or defamatory articles published online about people, companies, or products on websites or blogs can lead to charges of libel—and libel can stretch across countries. Issues of privacy, ethics, and legal exposure may seem tangential to running a business, but ignoring them puts the company at risk of fines, customer dissatisfaction, and disruption of an organization's operations. Privacy protection is a necessary investment.
6. **How can intellectual property rights be protected when it comes to digital content?** To protect intellectual property rights such as video, music, and books online, we need to monitor what copyrights, trademarks, and patents are infringed upon over the Internet. Portal sites that allow pirated video and music files should be monitored. This monitoring may require a vast amount of work, so software agents should be employed to continually inspect any pirated material. The risk to the business that can be caused by the infringement and the possibility of legal protection as well as technical protection by current regulation and potential new common law should be analyzed. Consider settling any suit for damages by negotiation.
7. **How can a patent in EC be purchased?** Some people claim that patents should not be awarded to businesses or computer processes related to EC (as is the case in some European countries). Therefore, investing large amounts of money in developing or buying EC patents may be financially unwise in cases where patents may not be granted or protected properly. Some companies that own many business model patents have been unable to create business value out of these patents.
8. **What is the ethical principle of protecting the privacy of customers?** To provide personalized services, companies need to collect and manage customers' profile data. In practice, the company has to decide whether to use spyware to collect data. Collecting data may make customers unhappy (as in the cases of Google Street View or Facebook privacy settings). The company needs well-established principles of protecting customer privacy: Notify customers before collecting their personal information; inform and get consent on the type and extent of disclosures; allow customers to access their personal data and make sure the data are accurate and securely managed; and apply some method of enforcement and remedy to deter privacy breaches. In this manner, the company can avoid litigation and gain the long-term trust of customers.

SUMMARY

In this chapter, you learned about the following EC issues as they relate to the chapter's learning objectives.

1. **The need for EC justification.** Like any other investment, EC investment (unless it is small) needs to be justified. Many start-up EC companies have crashed because of

incorrect or no justification. In its simplest form, justification looks at revenue minus all relevant costs. Analysis is done by defining performance and comparing actual performance to the desired metrics and KPI related to organizational goals.

2. **Issues in global EC.** Going global with EC can be done quickly and with a relatively small investment. However, businesses must deal with a number of different issues in the cultural, administrative, geographic, legal, and economic dimensions of global trading.
3. **Reasons for EC success and failure.** Products, industries, sellers, and consumer characteristics require different metrics of EC value. With the growing worldwide connectivity to the Internet, EC economics will play a major role in supporting buyers and sellers. Like other innovations, EC is expected to go through the cycle of enormous success, followed by speculation and then disaster before the reality of the new situation sets in. Some EC failures are the result of problematic website design, lack of sustained funding, and weak revenue models. Success in EC has come through automating and enhancing familiar strategies, such as branding, morphing, building trust, and creating value for all trading partners by enriching the human experience with integrated and timely information. EC investments can go beyond the traditional business models by creating digital options. To ensure success, complementary investments must be made in managing change and responding to cultural differences among EC users.
4. **Small and medium-sized businesses and EC.** Depending on the circumstances, innovative small companies have a tremendous opportunity to adopt EC at little cost and expand rapidly. Being in a niche market provides the best chance for small business to succeed. A variety of Web-based resources are available for small and medium-sized business owners to get help to ensure success.
5. **Understanding legal and ethical challenges and how to contain them.** The global scope and universal accessibility of the Internet create serious questions as to which ethical rules and laws apply. Ignoring laws exposes companies to lawsuits or criminal charges that are disruptive, expensive, and damaging to customer relations. The best strategy is to avoid behaviors that would expose the company to these types of risks. Important safeguards are a corporate code of ethics stating the rules and expected behaviors and actions and an Internet acceptable use policy.
6. **Intellectual property law.** EC operations are subject to various types of intellectual property (IP) laws, some of which judges have created in landmark court cases. IP law provides companies with methods of compensation for damages or misuse of their property rights. IP laws passed by Congress are being amended to better protect EC. These protections are needed because the theft or replication of intellectual works on the Internet is both simple and inexpensive. These actions violate or infringe upon copyrights, trademarks, and patents. Although the legal aspects seem clear, monitoring and catching violators remains difficult.
7. **Privacy, free speech, defamation, and their challenges.** B2C companies use CRM and depend on customer information to improve products and services. Registration and cookies are two ways to collect this information. The key privacy issues are who controls personal information and how private it should remain. Strict privacy laws have been passed recently that carry harsh penalties for any negligence that exposes personal or confidential data. There is ongoing debate about censorship on the Internet. The proponents of censorship feel that it is up to the government and various ISPs and websites to control inappropriate or offensive content. Others oppose any form of censorship; they believe that control is up to the individual. In the United States, most legal attempts to censor content on the Internet have been found unconstitutional. The debate is not likely to be resolved any time soon.
8. **The future of EC.** EC is growing steadily and rapidly, expanding to include new products, services, business models, and countries. The most notable areas of growth are the integration of online and off-line commerce, mobile commerce (mostly due to smartphone apps), video-based marketing, and social media and networks. Several emerging technologies, ranging from intelligent applications to wearable devices, are facilitating the growth of EC. On the other hand, several factors are slowing down the spread of EC such as security and privacy concerns; limited bandwidth, and lack of standards in some areas of EC.

KEY TERMS

Business ethics
Copyright
Copyright infringement
Cost–benefit analysis
Digital rights management (DRM)
Ethics
Fair use
Intellectual property (IP)
Intellectual Property Law Key performance indicator (KPI)
Opt-in
Opt-out
Patent
Platform for Privacy Preferences Project (P3P)
Spyware
Web analytics

DISCUSSION QUESTIONS

1. Your state government is considering an online vehicle registration system. Develop a set of EC metrics and discuss how these metrics differ from that of the existing manual system.
2. Enter **businesscase.com** and find material on ROI analysis. Discuss how ROI is related to a business case.
3. A craftsperson operates a small business making wooden musical instruments in a small U.S. town. The business owner is considering using EC to increase the business's reach to the nation and the world. How can the business owner use EC to increase richness to make the products more attractive to consumers?
4. How would you identify competitors of your small business who want to launch an EC project?
5. Discuss the pros and cons of going global online to sell a physical product.
6. Find some SME EC success stories and identify the common elements in them.
7. Submit three questions regarding EC strategy for small businesses to **linkedin.com** and **answers.yahoo.com**. Get some answers and summarize your experience.
8. After viewing the video "FiftyOne Global E-Commerce Demo"(2:08min)at**youtube.com/watch?v=2YazivwAm2o&fea-ture=related**, consider the following: FiftyOne Global E-Commerce (previously called Borderfree; now part of **pitneybowes.com**), claims to address all major issues associated with global EC. Check what they do.
9. Discuss how a company embarking on global e-commerce would approach each challenge such as payments or logistics, without the assistance of a company like Borderfree.
10. Would these challenges be insurmountable? For each challenge, explain why or why not.
11. Would the type or size of a business affect whether it could successfully navigate these challenges to global e-commerce? Explain your conclusions.
12. What can EC websites and social networks do to ensure the safeguarding of personal information?
13. Privacy is the right to be left alone and free of unreasonable personal intrusions. What are some intrusions that you consider "unreasonable"?
14. Who should control minors' access to "offensive" material on the Internet—parents, the government, or ISPs? Why?
15. Discuss the conflict between freedom of speech and the control of offensive websites.
16. Discuss the possible insufficient protection of opt-in and opt-out options. What measures would satisfy you?
17. Clerks at some convenience stores enter their customers' data (gender, approximate age, and so on) into the computer. These data are then processed for improved decision-making. Customers are not informed about this, nor are they being asked for permission. (Names are not keyed in.) Are the clerks' actions ethical? Compare this with the use of cookies.
18. Why do many companies and professional organizations develop their own codes of ethics? After all, ethics are generic and "one size may fit all."

TOPICS FOR CLASS DISCUSSION AND DEBATES

1. Debate: An airline offers extensive travel services online including hotels, car rentals, vacations, and so forth all over the globe. Its online business should be autonomous.
2. The stock market success of e-commerce and social commerce companies vary greatly from very successful (e.g., Google, LinkedIn) to poor (Groupon, Zynga). Examine the IPOs of 2013 through 2016 and try to explain the CSF. Write a report.
3. As the principal in a small business that already has an effective Web presence, you are considering taking your company global. Discuss the main issues that you will have to consider in making this strategic decision.
4. Discuss what the RIAA hopes to achieve by using lawsuits against college students for copyright infringement. Research the issue of how will the proposed Copyright Enforcement Bill, if enacted, support further RIAA lawsuits? Find the status of the bill. Write a report.
5. The proposed Copyright Enforcement Bill defines everyone that creates a website as a publisher and is liable under the Act. Enforcement under this proposed bill for unintentional use or distribution of copyrighted content on business websites could result in the confiscation of a company's domain name or server, which in turn could potentially disable the company's e-mail capability—substantially killing commerce. What steps should a business take to minimize the risk? Discuss.
6. Should shoppers turn off their smartphones when they visit a store or mall? Or does having the phones on lead to better shopping and shorter lines at cash registers? (See Kerr 2014).
7. Many hospitals, health maintenance organizations, and federal agencies are converting, or plan to convert, all patient medical records from paper to electronic storage (using imaging technology) in compliance with the Patient Protection and Affordable Care Act (PPAC), also known as "Obamacare." The PPAC mandates that all medical records shall be freely disseminated to insurance companies, the U.S. government, and government-approved third-party vendors. Once completed, electronic storage will enable expeditious access to most records anytime and from anywhere. However, the availability of these

records in a database or on networks or smart cards may allow people, some of whom are unauthorized, to view another person's private medical data. To protect privacy fully may cost too much money or may considerably slow down the speed of access to the records. What policies could healthcare administrators use to prevent unauthorized access? Discuss.

8. The Communications Decency Act (CDA), which was intended to protect children and others from pornography and other offensive material online, was approved by the U.S. Congress but then was ruled unconstitutional by lower courts. In 2015, it is still being debated. Discuss the implications of this Act. Also, check the Supreme Court ruling.
9. Debate the pros and cons of net neutrality.
10. Many sports-related leagues, including the NFL and UK Football Association, restrict the players' use of social networks. The NFL prohibits any use of social networks 90 min before and 90 min after games. Debate the issue.
11. Have two groups debate the issue of ownership of user-generated content (the Facebook example). One group should be for and one against.
12. Debate: Neutrality on the Internet is good for EC.
13. Debate: Should the exchange of songs between individuals, without paying royalties, be allowed over the Internet?
14. Debate: Are privacy standards strict enough to protect electronic health records?

INTERNET EXERCISES

1. Enter **salesforce.com/form/roi**. Register and download the free ROI kit. Summarize one case study. View two demos. Write a report.
2. One of the most global companies is Amazon.com. Find stories about its global strategies and activities (try **forbes.com**) and conduct a Google search. What are the most important lessons you learned?
3. Visit **business.com/starting-a-business/tech-toolkit-for-startups** and find some of the EC opportunities available to small businesses. Also visit the website of the Small Business Administration (SBA) office in your area. Summarize recent EC-related topics for SMEs.
4. Conduct research on small businesses and their use of the Internet for EC. Visit sites such as **microsoftbusinesshub.com** and **uschamber.com**. Also enter **google.com** or **yahoo.com** and type "small businesses + electronic commerce." Use your findings to write a report on current small business EC issues.
5. Enter **lwshare.languageweaver.com** and locate its product for language translation for multinational corporations. Write a report.
6. You want to set up an ethical blog. Using sites such as CyberJournalist.net: A Bloggers' Code of Ethics at **pcij.org/blog/bloggers-code-of-ethics**, review the suggested guide to publishing a blog. Make a list of the top ten ethical issues for blogging.
7. Conduct a Google search for industry and trade organizations involved in various computer privacy initiatives. One of these groups is the World Wide Web Consortium (W3C). Describe its Platform for Privacy Preferences Project (P3P) (**w3.org/P3P**). Prepare a table with ten initiatives and describe each briefly.
8. Find the status of the latest copyright legislation. Try **fair-use.stanford.edu** and **wipo.int/copyright/en**. Is there anything new regarding the international aspects of copyright legislation? Write a report.
9. Enter **scambuster.org** and identify and list its anti-fraud and anti-scam activities.

TEAM ASSIGNMENTS AND PROJECTS

1. **Assignment for the Opening Case**
   Read the opening case and answer the following questions:
   (a) What motivated Telstra to prepare the calculators?
   (b) Why do the calculators include benefits to employees and to the community?
   (c) Download the e-book at AIIA (2009), and examine the list of benefits in all four cases. Which benefits are intangible?
   (d) The case cites the use of NPV. Explain how it works in this case.
   (e) Find the appendices cited in AIIA (2009) case, and comment on the detailed examples.
2. Explore the business value of EC. Each member enters a different site (e.g., Nicholas G. Carr (**nicholascarr.com**), Baseline (**baselinemag.com**), Strassmann, Inc. (**strassmann.com**)). Prepare a presentation on issues, value, and directions.
3. The class will set up a webstore on Facebook. You can use the application from **ecwid.com** or from **bigcommerce.com**. Have several members place products there while others shop. Write a report on your experience.
4. Each team needs to find the latest information on one global EC issue (e.g., cultural, administrative, geographic, economic). In addition, check how leading retailers, such as Levi's, serve different content to local audiences, both on their websites and on their Facebook pages. Each team prepares a report based on their findings.
5. Compare the services provided by Yahoo!, Microsoft, and Web.com to SMEs in the e-commerce area. Each team should take one company and give a presentation.

6. Research the topic of going "global in the social world." Start with Adobe (2012). Identify the issues and the practices. Write a report.
7. The number of lawsuits in the United States and elsewhere involving EC has increased. Have each team prepare a list of 5 recent EC legal cases on each topic in this chapter (e.g., privacy, digital property, defamation, patents). Prepare a summary of the issues of each case, the parties, the courts, and dates. What were the outcomes of these cases? What was (or might be) the impact of each decision?
8. Form three teams. Have two teams debate free speech versus protection of children. The third team acts as judges. One team is for complete freedom of speech on the Internet; the other team advocates protection of children by censoring offensive and pornographic material. After the debate, have the judges decide which team provided the most compelling legal arguments.
9. It is legal to monitor employees' Internet activity, e-mail, and instant messages? Note that it is legal to open letters addressed to individuals sent to the company's address. Why is the monitoring necessary? To what extent is it ethical? Are employees' rights being violated? Have two teams debate these issues.
10. Smart computer programs enable employers to monitor their employees' movements online. The objective is to minimize wasting time and computing resources, and reduce theft by employees. These actions may invade privacy, and reduce confidence and loyalty. Find the various methods used to monitor employees (list their approaches) and list all possible negative aspects. Find case studies about the benefits (including increasing productivity) and the limitations and dangers. Relate monitoring to telecommuting and debate the issue.

CLOSING CASE: THE PIRATE BAY AND THE FUTURE OF FILE SHARING

What had been considered a landmark 2009 copyright law case involving the Motion Picture Association of America (MPAA) against illegal file sharing in Sweden appears to not have significantly deterred online file sharing. In fact, just the opposite may have occurred.

An Overview

The Pirate Bay (TPB) site was launched in 2003 by hackers and computer activists as a BitTorrent tracker, make it possible to get free access to most media content (including copyrighted material) using BitTorrent peer-to-peer (P2P) file-sharing protocol services (see **en.wikipedia.org/wiki/BitTorrent**). The Pirate Bay site includes links to websites where you can download movies, TV shows, music e-books, live sport games, software, and more. TPB has been ranked as one of the most popular websites in the world. The site generates revenue by advertisements, donations, and sales of merchandise. The site is probably the most well known among dozens of other sites that provide free access to copyrighted content.

The Legal Situation

The Pirate Bay has been involved in a number of lawsuits, both as a defendant and as a plaintiff. For an overview, see **torrentfreak.com/the-pirate-bay-turns-10-years-old-the-history-130810**. Here are some examples. In Sweden, The Pirate Bay company was raided by the Swedish police in 2006. The site was shut down, but reappeared a few days later with servers hosted in different countries. In 2008, the Swedish government began a criminal investigation against the founders of TPB for copyright theft. Three founders and a financier were charged with promoting copyright infringement by facilitating other people's breach of copyright law by using TPB BitTorrent technology. For 34 cases of copyright infringement, the damage claims could have exceeded US$12 million. The trial started on February 16, 2009, and ended on March 3, 2009, with a guilty verdict that carried a 1-year prison sentence and a fine of US$3.5 million. The four founders lost on appeal in 2010 but succeeded in getting reduced prison time; however, the copyright infringement fine was increased. The site is now blocked by several countries. The U.S. government considers TPB (together with the Chinese sites Baidu and Taobao Marketplace) a top market for pirated and counterfeit goods.

Current Operation

As of June 2014, TPB continues to offer torrent files and magnet links to facilitate file sharing for those using the BitTorrent system. The site also offers downloading, watching videos, and searching for all types of media. In fact, much public support for TPB was noted. In 2003, Piratbyrån (The Pirate Bureau), a Swedish organization, was established to support the free sharing of information (however, they disbanded in 2010). Political parties in many European countries have adopted the label "The Pirate Party," after a party in Sweden, which was formed in 2006. Other countries followed suit, creating their own Pirate Parties. The party supports the reform of copyright and patent laws, government transparency, and net neutrality. In 2006, the International Pirate Party Movement was formed as an umbrella organization. In 2009, the Swedish Pirate Party won a seat in the European Parliament and in 2013, Iceland gained three similar seats. The Pirate Bay advocates copyright and patent law reform and a reduction in government surveillance. In the meantime, in Sweden, TPB's founders have worked on several

other decentralized peer-to-peer file-sharing websites, which have flourished in filling the enormous global demand for P2P file sharing. TPB has plenty of defenders. In 2014, the supporters of TPB's jailed founder planned an online campaign to bring more attention to his situation.

All along, file-sharing technology has been one step ahead of enforcement. Since some countries block access to TPB, there are several proxy URLs now that provide indirect access to TPB website.

Despite losing its November 2010 appeal, TPB has kept growing. In 2011, TPB's founders launched a new website, called IPREDator, offering IP address anonymity to registered users by tunneling traffic into a secure server, which reassigns fake IP addresses to registered users so that they may access TPB or other BitTorrent tracking sites on the Web for file sharing without revealing their true IP addresses. Although TPB continues to thrive today as one of the most popular websites on the Internet, many countries are enacting new stricter copyright protection laws aimed directly at stopping this illegal activity. Note that Facebook blocks all shared links to TPB in both public and private messages (however, TPB does have a Facebook page). In 2012, a UK court ordered a blockade on TPB in the UK because of its violation of copyright law (see Dragani 2012). Some countries are allowing access to TPB. For example, in 2014, the Netherlands court ordered the ban on TPB lifted (see **bbc.com/news/technology-25943716**).

In 2012, The Pirate Bay, to protect itself from raids, moved its operation from physical servers to the cloud. Serving its users from several cloud hosting providers makes it impossible to raid because there are no physical locations; the site is more portable and thus makes it more difficult to shut down. Other benefits include reducing downtime, ensuring better uptime, and cutting costs (see Van Der Sar 2012).

Pirate Bay now uses many proxy sites and torrents. It is well and alive (Protalinski 2016).

Discussion

The Pirate Bay is one of a multitude of websites that specializing in pirated and counterfeit content. The Pirate Bay does not host content, in contrast to sites, which allow people to upload videos, included pirated ones. The Pirate Bay only provides links to possible illegal downloads. This strategy did not help the site much in its legal battles.

The Pirate Bay case is only one part of a much broader issue of protecting intellectual property on the Internet. An interesting related issue is the hosting of content by sites such as YouTube, which is more complicated.

Note that one aspect of this case is that the U.S. government is pushing the Swedish government to take a stronger stand against pirating.

Sources: Based on Stone (2011), Protalinski (2016), **en.wikipedia.org/wiki/The_Pirate_Bay** and **medlibrary.org** (both accessed April 2016).

Questions

1. Compare TPB's legal problems to those of Napster between 2000 and 2005, and to those of Kazaa (file-sharing companies).
2. Debate the issue of freedom of speech on the Internet against the need to protect intellectual property.
3. What is The Pirate Bay's business model? What are its revenue sources? (Find more information; start with Wikipedia.)
4. Explore the international legal aspects of this case. Can one country persuade another country to introduce stricter laws?
5. Read the Stone (2011) article and identify all the measures used to battle piracy of live sporting events. Which of these measures can be used in The Pirate Bay case? Which cannot? Why?
6. Find the status of the TPB website.

ONLINE FILES

Available at **ecommerce-introduction-textbook.com**

W12.1 Application Case: The Rise and Fall of Kozmo.com
W12.2 Application Case: The Success Story of E-Choupal
W12.3 Framework for Ethical Issues

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GLOSSARY

Access control A defense mechanism that determines who (person, program, or machine) can legitimately use the organization's computing resources (which resources, when, and how).

Ad views The number of times users call up a page that has a banner on it during a specific period; known as *impressions* or *page views*.

Address Verification System (AVS) System that detects fraud by comparing the address provided by the buyer at checkout with the address on file.

Affiliate network A network created as a marketplace where publishers (affiliates) and merchant affiliate programs can collaborate.

Affiliated marketing A type of "performance-based marketing" used mainly as a revenue source for the referring organization and as a marketing tool for the sellers.

Application controls Controls that guard applications.

Augmented reality "A live, copy, view of a physical, real-world environment whose elements are *augmented* (or supplemented) by computer-generated sensory input such as sound, video, graphics, or GPS data" (see **en.wikipedia.org/wiki/Augmented_reality**).

Authentication A process to verify (assure) the real identity of an EC entity, which could be an individual, software agent, computer program, or EC website.

Authorization The provision of permission to an authenticated person to access systems and perform certain operations in those specific systems; or the first phase of processing a credit card transaction that determines whether a buyer's card is valid (e.g., not expired) and whether the customer has sufficient credit or funds in his or her account.

Automated question–answer (Q&A) System used to find answers that match questions asked in a natural language (e.g., English, Chinese).

Availability The assurance that access to any relevant data, information websites, or other EC services and their use is available in real time, whenever and wherever needed.

Back end Where activities that are related to order aggregation and fulfillment, inventory management, purchasing from suppliers, accounting and finance, insurance, payment processing, packaging, and delivery.

Banking Trojan Malicious software programmed to create damage when users visit certain online banking or e-commerce sites.

Banner A display that is used for advertising on a Web page (words, logos, etc. embedded in the page).

Banner exchanges Marketplaces that allow multiple websites to barter space for banners.

Banner swapping Company A agrees to display a banner of company B in exchange for company B's displaying company A's banner.

Bartering The exchange of goods and services.

Bartering exchange A company submits its surplus to the exchange and receives points of credit, which the company can then use to buy items that it needs. A marketplace where an intermediary arranges barter transactions.

Behavioral targeting Targeting that uses consumer browsing behavior information to design personalized ads that may influence consumers better than mass advertising does.

Biometric One of an individual's unique physical or behavioral trait that can be used to authenticate an individual precisely (e.g., fingerprints).

Biometric authentication A technology that measures and analyzes the identity of people based on measurable biological or behavioral characteristics or physiological signals.

Biometric systems A system that can *identify* a previously registered person by searching through a database for a possible *match* based on the person's observed physical, biological, or behavioral traits, or the system can *verify* a person's identity by matching an individual's measured biometric traits against a previously stored version.

Bitcoin address An alphanumeric string that identifies the recipient of a Bitcoin transaction.

Bitcoin private key Key that is a randomly generated number between 1 and 2^{256} (i.e., 2 raised to the 256th power) that is used by the key's owner to initiate and digitally sign transactions and used by the network to verify those transactions.

Blockchain The Bitcoin public ledger containing a complete list of all transactions since the first bitcoin was issued.

Botnet Malicious software that criminals distribute, usually to infect a large number of computers.

E. Turban et al., *Introduction to Electronic Commerce and Social Commerce*,
Springer Texts in Business and Economics, DOI 10.1007/978-3-319-50091-1

Brick-and-mortar (old economy) organizations Purely physical organizations (corporations) doing business off-line.

Brick-and-mortar retailer A retailer that conducts business exclusively in the physical world.

Business continuity plan A plan that keeps the business running after a disaster occurs. Each function in the business should have a valid recovery capability plan.

Business ethics (corporate or enterprise ethics) A code of values, behaviors, and rules, written or unwritten, for conducting business. These ethics dictate the operations of organizations.

Business impact analysis (BIA) An analysis of the impact of losing the functionality of an EC activity (e.g., e-procurement, e-ordering) to an organization.

Business model A description of how an organization intends to generate revenue through its business operations.

Business social network A network that is built on social relationships, and can exist off-line or online. Business social networking can take place in traditional corporate physical environments.

Business-oriented social network A social network whose primary objective is to facilitate business.

Business-to-business (B2B) All transactions take place between and among organizations.

Business-to-business e-commerce (B2B EC) Transactions between businesses conducted electronically over the Internet, extranets, intranets, or private networks.

Business-to-business-to-consumer (B2B2C) A business (B1) sells a product to another business (B2). B2 then sells or gives away the product to individuals who may be B2's own customers or employees.

Business-to-consumer (B2C) Retail transactions of products or services from businesses to individual shoppers.

Business-to-employees (B2E) The delivery of services, information, or products from organizations to their employees.

Button A small banner that is linked to a website; may contain downloadable software.

Buy-side e-marketplace An e-marketplace owned by large buyers that invites sellers to browse and offers to fulfill orders. Where a company purchases from many potential suppliers; this type of purchasing is considered to be *many-to-one*, and it is a B2B activity.

Card verification number (CVN) Method for detecting fraud by matching the 3-digit verification number printed on the signature strip on the back of the credit card (or the 4-digit number on the front of the card, such as American Express cards) with the number stored by the cardholder's issuing bank.

Certificate authorities (CAs) Independent agencies that issue digital certificates or SSL certificates, which are electronic files that uniquely identify individuals and websites and enable encrypted communication.

Channel conflict Refers to the case in which online sales damage the well-being of existing channel partner.

CIA security triad (CIA triad) A point of reference used to identify problem areas and evaluate the information security of an organization that includes *confidentiality*, *integrity*, and *availability*.

Ciphertext An encrypted plaintext.

Click (ad click) A count made each time a visitor clicks on an advertising banner to access the advertiser's website.

Click-and-mortar (click-and-brick) organizations Organizations that conduct some e-commerce activities, usually as an additional marketing channel.

Click-and-mortar retailer A combination of both the traditional retailer and an online store.

Clickstream behavior A pattern of customer movements on the Internet, which can be seen in their transaction logs.

Clickstream data Data that describe which websites users visit, in what order, and the time spent on each. This is done by tracking the succession of "clicks" each visitor makes.

Click-through rate/ratio (CTR) The percentage of visitors who are exposed to a banner ad and click on it.

Collaboration hub (c-hub) The central point of interaction and of a company's supply chain. A single e-hub can host multiple *collaboration spaces* in which trading partners trade, collaborate, communicate, and share information.

Collaborative commerce (c-commerce) Refers to online activities and communications done by parties working to attain the same goal; or electronic support for business collaboration. It enables companies to collaboratively plan, design, develop, manage, and research products, services, and innovative business processes, including EC applications.

Collaborative filtering A method that attempts to predict what products or services are of interest to new customers without asking or viewing their previous records.

Communal shopping (collaborative shopping) A method of shopping where shoppers enlist friends and other people they trust to advise them on what products to shop for.

Company-centric EC One-to-many and many-to-one markets where one company does either all the selling (*sell-side market*) or all the buying (*buy-side market*).

Computer Fraud and Abuse Act (CFAA) Act passed in 1984 and amended several times, is an important milestone in EC legislation. Initially, the scope and intent of CFAA was to protect government computers and financial industry computers from criminal theft by outsiders. In 1986, the CFAA was amended to include stiffer penalties for violations, but it still only protected computers used by the federal government or financial institutions.

Confidentiality The assurance of data secrecy and privacy. Namely, the data is disclosed only to authorized people.

Consortium trading exchange (CTE) An exchange formed and operated by a group of major companies in one industry. They can be suppliers, buyers, or both.

Consumer-to-business (C2B) People use the Internet to sell products or services to individuals and organizations. Alternatively, individuals use C2B to bid on products or services.

Consumer-to-consumer (C2C) E-commerce category in which individual consumers sell to or buy from other consumers; or electronic transactions completed between and among individuals.

Contact card A smart card that is activated when it is inserted into a smart card reader.

Contactless (proximity) card A smart card that only has to be within a certain proximity of a smart card reader to process a transaction.

Context-aware computing A technology that is capable in predicting people's needs and providing fulfillment options (sometimes even before a request by the end user is made).

Conversion rate The percentage of clickers who actually make a purchase.

Convertible virtual currency A virtual currency that has an equivalent value in real currency, or acts as a substitute for real currency.

Cookie A data file that, without the knowledge of users, is placed on their computer hard drives.

Copyright An exclusive legal right of an author or creator of intellectual property to publish, sell, license, distribute, or use such work in any desired way.

Copyright infringement The use of a work without permission or contracting for payment of a royalty.

Corporate portal A gateway for customers, employees, and partners to reach corporate information and to communicate with the company.

Cost–benefit analysis A comparison of the costs of each project against its benefits.

CPM (cost per mille, i.e., thousand impressions) The fee an advertiser pays for each 1000 times a page with a banner ad is shown.

Cracker A malicious hacker who may be more damaging than a hacker.

Cross-border e-commerce Online purchases involving buyers and merchants or sellers who are in different countries.

Crowdsourcing Utilizing crowds to collectively execute tasks such as solving problems, innovating, or getting large projects done by dividing the work among many people.

Customer relationship management (CRM) A customer service approach that focuses on building long-term and sustainable customer relationships that adds value for both the customers and the merchants.

Cybercrime Intentional crimes carried out on the Internet.

Cybercriminal A person who intentionally carries out crimes over the Internet.

Darknet A separate Internet that can be accessed via the regular Internet and a connection to the TOR network (TOR is a network of VPNs that allows privacy and security on the Internet). The darknet has restricted access to trusted people (friends) by using non-standard protocols (IP addresses are not listed). Darknet allows anonymous surfing.

Data breach A security incident in which data are obtained illegally and then published or processed.

Denial-of-service (DoS) attack "A malicious attempt to make a server or network resource unavailable to users, usually by temporarily interrupting or suspending the services of a host connected to the Internet." (Incapsula, Inc.)

Desktop purchasing Purchasing done by employees without the approval of supervisors and without the involvement of a procurement department.

Desktop search The search of a user's own computer files. The search is done by looking through all the information that is available on the user's PC.

Detection measures Methods that help find security breaches in computer systems. Usually this means to find out whether intruders are attempting (or have attempted) to break into the EC system, whether they were successful, whether they are still damaging the system, and what damage they may have done.

Deterrent methods Countermeasures that make criminals abandon their idea of attacking a specific system (e.g., a possible deterrent is a realistic expectation of being caught and punished).

Digital currency A generic term that refers to the digital representation of either e-money or virtual currency.

Digital economy An economy that is based on online transactions, mostly e-commerce. Also called the *Internet economy*.

Digital enterprise A new business model that uses IT to gain competitive advantage by increasing employee productivity, by improving efficiency and effectiveness of business processes, and by better interactivity between vendors and customers.

Digital products Goods that can be transformed to digital format.

Digital rights management (DRM) A system of protecting the copyrights of data circulated over the Internet or digital media. These arrangements are technology-based protection measures (via encryption or using watermarks).

Digital signatures The electronic equivalent of personal signatures on paper. They are difficult to forge since they authenticate the identity of the sender that uses the public key.

Direct marketing Describes marketing that takes place without physical stores. Selling takes place directly from manufacturer to customer.

Direct materials Materials used in making products, such as steel in a car or paper in a book.

Discount rate The main fee that a merchant pays for offering credit card payments.

Disintermediation Elimination of intermediaries between sellers and buyers because they offer only services that can be fully automated; or are responsible for certain activities (usually in a supply chain) between trading partners.

Distance learning Education conducted from home or other place, anytime.

Double auction An auction in which multiple buyers and their bidding prices are matched with multiple sellers and their asking prices, considering the quantities on both sides.

Dynamic pricing Prices that are not fixed but that are allowed to fluctuate, and are determined by supply and demand.

E-bartering (electronic bartering) Bartering conducted online, usually in a bartering exchange.

E-business A broader definition of EC, not just the buying and selling of goods and services, but conducting all kinds of business online such as servicing customers, collaborating with business partners, delivering e-learning, and conducting electronic transactions within an organization.

EC security strategy Multiple layers of defense that includes several methods. This defense aims to deter, prevent, and detect unauthorized entry into an organization's computer and information systems.

E-collaboration The use of digital technologies among people for accomplishing a common task.

E-distributor An entity that basically aggregates product information from many manufacturers, sometimes thousands of them, in the e-distributor's catalog.

E-government The use of information technology in general, and e-commerce in particular, to improve the delivery of government services and activities in the public sector, such as providing citizens and organizations with more convenient access to government information and services, and to providing effective delivery of public services to engage citizens and businesses partners, as well as improving the performance of government employees. Governments can deal also with other governments (G2G).

E-grocer A grocer that takes orders online and provides deliveries on a daily or other regular schedule or within a very short period of time, sometimes within an hour.

E-health The transfer of health resources and health care by electronic means.

E-learning The online delivery of educational materials and methods using information technologies, for the purposes of learning, teaching, training, or gaining knowledge at any time, and at many different locations.

Electronic (online) banking or **e-banking** Conducting banking activities online.

Electronic auction (e-auction) An auction conducted online.

Electronic book (e-book) A book in digital format that can be read on a computer screen, including mobile devices (e.g., a tablet, iPhone), or on a dedicated device known as an *e-reader*.

Electronic catalog (e-catalog) The presentation of product information in electronic form; the backbone of most e-selling sites.

Electronic commerce (EC) Using the Internet and intranets to purchase, sell, transport, or trade data, goods, or services.

Electronic market (e-marketplace) An online location where buyers and sellers conduct commercial transactions such as selling goods, services, or information.

Electronic money Abbreviated e-money, it is a digital representation of fiat currency used for purposes of electronic transfer.

Electronic retailing (e-tailing) Retailing conducted over the Internet.

Electronic shopping cart Software that allows customers to accumulate items they wish to buy before they arrange payment and check out.

Electronic signature "The electronic equivalent of a handwritten signature" (per **pcmag.com/encyclopedia/term/42500/electronic-signature**).

E-mail advertising Ads are attached to e-mails.

E-mail marketing The use of e-mail for sending commercial messages to users.

E-mail spam Occurs when almost identical messages are e-mailed to many recipients (sometimes millions of unsolicited e-mails).

E-mall (online mall) An online shopping center where many online stores present their catalogs.

E-marketplace An electronic space where sellers and buyers meet and conduct different types of transactions.

Encryption The process of encoding data into a form (called a *ciphertext*) that will be difficult, expensive, or time-consuming for an unauthorized person to understand.

Encryption algorithm The set of procedures or mathematical algorithms used to encrypt or decrypt a message.

Enterprise 2.0 "The use of social software platforms within companies, or between companies and their partners or customers." McAfee (2009)

Enterprise mobility The people and technology (e.g., devices and networks) that enable mobile computing applications within the enterprise.

Enterprise search The search for information *within* the files and databases of an organization.

E-procurement (electronic procurement) The online purchase of supplies, materials, energy, work, and services. It

can be done via the Internet or via a private network such as EDI.

E-tailers Sellers who conduct retail business online.

E-tailing Online retailing, usually B2C.

Ethics A set of moral principles or rules of how people are expected to conduct themselves. It specifies what is considered by society to be right or wrong.

Event shopping The B2C model in which sales are designed to meet the needs of special events (e.g., a wedding, Black Friday). This model may be combined with group purchasing (to lower the customers' cost).

Exchanges (trading communities or **trading exchanges)** Many-to-many e-marketplaces where many buyers and many sellers meet electronically to trade with one another.

Expert/expertise location systems (ELS) Interactive computerized systems that help employees locate experts within their organization in order to get help in solving specific, critical business or technical problems in a short time.

Exposure The estimated cost, loss, or damage that can result if a threat exploits a vulnerability.

Extranet A network that uses Internet technology to link intranets of several organizations in a secure manner.

Fair use The limited use of copyrighted material, without paying a fee or royalty, for certain purposes (e.g., reviews, commentaries, teaching).

F-commerce Rapidly increasing commercial activities conducted on or facilitated by Facebook.

Fiat currency The coin and paper money of a country that is designated as legal tender.

Firewalls Barriers between an internal trusted network (or a PC) and the untrustworthy Internet. Technically, it is composed of hardware and a software package that separates a private computer network (e.g., your LAN) from a public network (the Internet).

Forward auction An auction where a seller entertains bids from multiple buyers.

Fraud Any business activity that uses deceitful practices or devices to deprive another of property or other rights.

Front end The place where customers interact with a marketspace. The major components of the front end can include the seller's portal, electronic catalogs, a shopping cart, a search engine, an auction engine, a payment gateway, and all other activities related to placing orders.

Gamification Virtual games designed to support B2B training and decision-making; or the introduction of gaming into social networking. Gamification can also be viewed as the introduction of social networking activities into online games.

General controls Controls designed to protect all system applications.

Geosocial networking Social networking with location awareness capabilities. This enables social networks to connect users with local businesses, people, or events.

Government 2.0 The employment of social media tools, new business models, and embracing social networks and user participation, government agencies can raise the effectiveness of their online activities to meet users' needs at a reasonable cost.

Government-to-employees (G2E) E-government category that includes activities between the government and their employees.

Government-to-government (G2G) E-government category that includes EC activities between different units of governments, including those within one governmental body. Many of these are aimed at improving the effectiveness and the efficiency of the government operation.

Government-to-business (G2B) E-government category that works both ways: government-to-business and business-to-government. Thus, G2B refers to activities where the government sells products to businesses or provides businesses with services and vice versa.

Government-to-citizens (G2C) E-government category that includes all the interactions between a government and its citizens that take place electronically.

Group purchasing Orders from several buyers are aggregated so that better prices due to larger quantities purchased can be negotiated.

Hacker Someone who gains unauthorized access to a computer system.

Hit A request for data from a Web page or file.

Horizontal marketplaces Markets in which trading is in a service or a product that is used in many types of industries. Examples are office supplies, PCs, or travel services.

Identity theft Wrongfully obtaining and using the identity of another person in some way to commit crimes that involve fraud or deception (e.g., for economic gain).

Indirect materials Items, such as office supplies or light bulbs, which support operation and production.

Information assurance (IA) The performance of activities (steps) to protect information systems and their processes against all risks. The assurance includes all tools and defense methods.

Information security Measures taken to protect information systems and their processes against all risks.

Integrity The assurance that data are accurate and that they cannot be altered.

Intellectual property (IP) Property that derives from the creative work of an individual, such as literary or artistic work.

Intellectual property law Area of the law concerned with the regulation of thinking-related products, including creativity that are protected by patents, copyrights, trademarks, and trade secret law.

Intelligent personal assistants An application that uses AI to understand spoken natural languages.

Interactive marketing A marketing concept that enables marketers and advertisers to interact directly with customers.

Interactive video A technique used to mix user interaction with videos.

Interactive voice response (IVR) A voice support application system that enables users to interact by telephone (of any kind) with a computerized system to request and receive information.

Interchange rate The fees charged by the issuing bank for handling authorization and settlement requests.

Intermediary A third party that operates between sellers and buyers.

Internet of Things (IoT) A situation where many objects (people, animals, items) with embedded microprocessors are connected mostly wirelessely to the Internet.

Internet Radio Audio content transmitted live via the Internet.

Internet TV The delivery of TV content via the Internet by video streaming technologies.

Internet underground economy E-markets for stolen information made up of thousands of websites that sell credit card numbers, social security numbers, e-mail addresses, bank account numbers, social network IDs, passwords, and much more.

Intrabusiness EC E-commerce category that refers to EC transactions among various organizational departments and individuals.

Intranet An internal corporate or government network that uses Internet tools, such as Web browsers, and Internet protocols.

Intrusion detection system (IDS) A device composed of software and/or hardware designed to monitor the activities of computer networks and computer systems in order to detect and define unauthorized and malicious attempts to access, manipulate, and/or disable these networks and systems.

Key (key value) The secret piece used with the algorithm to encrypt (or decrypt) the message.

Key performance indicator (KPI) A quantifiable measurement that is considered a critical success factor of a company, department, or project.

Keystroke logging (keylogging) The process of using a device or software program that tracks and records the activity of a user in real time (without the user's knowledge or consent) by the keyboard keys they press.

Knowledge management (KM) The process of capturing or creating knowledge, storing it, updating it constantly, disseminating it, and using it whenever necessary.

Landing page The page a viewer is directed to after having clicked on a link. In online marketing, this page is used to convert the person from a viewer to a buyer.

Learning management system (LMS) Software applications for managing e-training and e-learning programs including content, scheduling, delivery tips, and so forth.

Live banners Ads where the content can be created or modified at the time the ads pop up instead of being preprogrammed like banner ads.

Localization The transformation and adaptation of Web content media products and advertising materials to fit the Web environment of a certain region or country.

Location-based commerce (l-commerce) A wireless-based technology used by vendors to send advertisements relevant to the location where customers are at a given time by using GPS.

Macro virus (macro worm) A malware code that is attached to a data file rather than to an executable program (e.g., a Word file).

Maintenance, repair, and operation (MRO) Indirect materials used in activities that support production.

Malware (malicious software) A generic term for malicious software.

Maverick buying A buying situation that occurs when a buyer makes unplanned purchases of items needed quickly, resulting in buying at non-pre-negotiated, and usually higher, prices.

Merge-in-transit Logistics model in which components for a product may come from two (or more) different physical locations and are shipped directly to the customer's location.

Micropayments (e-micropayments) Small online payments, usually under $10.

M-learning (mobile learning) Refers to e-learning or other forms of education using mobile devices.

Mobile (digital) wallet Proximity payments that are debited to a mobile phone account as a monthly fee or to a debit card account. The technology enables payments as well as processing loyalty programs and performing target promotions all in one mobile device.

Mobile advertising (m-advertising) "Advertising tailored to and delivered through wireless mobile devices such as smartphones (e.g., Blackberry, iPhone, Android, etc.), feature phones (e.g., lower-end mobile phones capable of accessing mobile content), and media tablets (e.g., iPad, Samsung Galaxy Tablet, etc.)" (IAB 2014).

Mobile app A software application developed specifically for use on small, wireless computing devices, such as smartphones and tablets, rather than desktop or laptop computers.

Mobile banking (m-banking) A term used to describe the conducting of banking activities via a mobile device (mostly by texting, or via mobile website).

Mobile commerce (m-commerce; m-business) Conducting e-commerce by using mobile devices and wireless networks.

Mobile enterprise Mobile applications conducted by enterprises to improve the operations of the employees, facilities,

and relevant supply chains, within the enterprise and with its business partners.

Mobile entertainment Any entertainment delivered on mobile devices over wireless networks or that interacts with mobile service providers.

Mobile government (m-government) The implementation of e-government applications using wireless platforms.

Mobile marketing The use of mobile devices and wireless infrastructure as a means of marketing and advertising.

Mobile payment Payment transactions initiated or confirmed using a person's mobile device, usually a smartphone.

Mobile portal A portal accessible via a mobile device.

Mobile social networking Social networking where members converse and connect with one another using any mobile device.

Mobile worker Any employee who is away from his or her primary work space at least 10 h a week (or 25% of the time).

Multichannel business model The model or strategy of selling both online and off-line.

Multimedia messaging service (MMS) The new type of wireless messaging, delivering rich media content, such as video, images, and audio to mobile devices. MMS is an extension of SMS (no extra charge with an SMS "bundle"). It allows for longer messages than with SMS.

Name-your-own-price model Auction model in which a would-be buyer specifies the price (and other terms) he or she is willing to pay to any willing and able seller. It is a C2B model that was pioneered by Priceline.com.

Non-convertible virtual currency A virtual currency used in a specific virtual world or domain that cannot (theoretically) be exchanged for fiat currency.

Nonrepudiation The assurance that online customers or trading partners cannot falsely deny (repudiate) their purchase, transaction, sale, or other obligation.

On-demand delivery service An express delivery option.

Online intermediary A third-party entity that brokers the transactions between the buyer and seller and can be either a virtual or a click-and-mortar intermediary.

Opt-in The principle that consumers must approve, in advance, what they are willing to see. That is, information sharing should not occur unless customers affirmatively allow or request it.

Opt-out A method that gives consumers the choice to refuse to share information about themselves, or to avoid receiving unsolicited information.

Order fulfillment All the operations a company undertakes from the time it receives an order to the time the items are delivered to the customers, including all related customer services.

Patent "An exclusive right to a particular invention. Patents are granted by states or governments to the creator of an invention, or to someone who has been designated by them to accept the rights over the invention. The holder of the patent has sole rights over the invention for a specified period of time." (per Fedcirc.us)

Pay per click (PPC) A popular Internet advertising payment formula where advertisers pay sites only when someone clicks on their ad.

Payment cards Electronic cards that contain payment-related data. They include credit cards, charge cards, and debit cards.

Penetration test (pen test) A method of assessing the vulnerability of a computer system, which is done by allowing experts to act as malicious attackers.

Penny auction A new type of forward auction in which participants must pay a small nonrefundable fee each time they place a bid (usually in small increments above the previous bid). When time expires, the last participant to have placed a bid wins the item and also pays the final bid price.

Permission advertising Advertising (marketing) strategy in which customers agree to accept advertising and marketing materials (known as *opt-in*).

Personalization The matching of advertising content and vendors' services with customers based on their preferences and individual needs.

Personalized banners Banners that are tailored to meet the need of target customers.

Pervasive computing Computing capabilities that are embedded in the environment but typically are not mobile.

Phishing A fraudulent process of attempting to acquire sensitive information by masquerading as a trustworthy entity.

Plaintext A human-readable text or message.

Platform for Privacy Preferences Project (P3P) A protocol for privacy protection on the Web developed by the W3 Organization (W3C).

Pop-up ad An ad that appears due to the automatic launching of a new browser window when a visitor accesses or leaves a website, when a delay occurs; also known as *ad spawning*.

Pop-up banner Banners that appear in a separate window when its affiliated Web page is activated.

Prevention measures Ways to help stop unauthorized people from accessing the EC system (e.g., by using authentication devices and firewalls or by using *intrusion prevention* which is, according to TechTarget, "a preemptive approach to network security used to identify potential threats and respond to them swiftly").

Private key A key that only its owner knows.

Private shopping club Enables members to shop at discount, frequently for short periods of time (just few days).

Procurement management The process of planning, organizing, and coordinating of all the activities pertaining to the purchasing of the goods and services needed by an organization.

Public (asymmetric) key encryption An encryption method that uses two keys: public key and private key.

Public e-marketplaces Third-party exchanges open to all interested parties (sellers and buyers).

Public key A key that is known to all.

Public key infrastructure (PKI) A comprehensive framework for securing data flow and information exchange that overcomes some of the shortcomings of the one-key system.

Radio frequency identification (RFID) A short-range radio frequency communication technology for wirelessly identifying and tracking tags attached to objects.

Random banners Banner ads that appear randomly, not as a result of some action by the user.

Reintermediation The new intermediation that provides valuable help services.

Request for quote (RFQ) A form or document used as an "invitation" to take part in a reverse auction.

Reverse auction (bidding or **tendering system)** Auction in which the buyer places an item for bid (tender) on a request for quote (RFQ) system, potential suppliers bid on the job, with the price reducing sequentially, and the lowest bid wins; primarily a B2B or G2B mechanism.

Risk The probability that a vulnerability will be known and used.

Search advertising Placing online ads on Web pages that show results from querying a search engine.

Search engine A computer program that can access databases of Internet resources, search for specific information or keywords, and report the results.

Search engine optimization (SEO) A process that improves the position of a company or brands on the results page displayed by a search engine. Ideally, the results should be in the top five on the first page of the results.

Search engine spam The technology that enables the creation of spam sites.

Sell-side e-marketplace A place where a company sells either standard or customized products to individuals (B2C) or to businesses (B2B); this type of selling is considered to be one-to-many. In this model a business sells products and services to business customers electronically, frequently over an extranet.

Semantic Web A group of methods that focuses on machines (in contrast with Web 2.0 that focuses on people), trying to enable machines to understand the semantics (i.e., the meaning) of information using natural language understanding tools.

Sharing economy An economic system constructed around the concept of sharing goods and services among the participating people.

Shopping portals Gateways to webstores and e-malls.

Shopping robots (shopping agents or **shopbots)** Search engines that look for the lowest prices or for other search criteria.

Short message service (SMS) A service that supports the transmittal of short text messages (up to 140–160 characters) between wireless devices.

Smart card A plastic payment card that contains data in an embedded microchip.

Smart card reader A read/write device that acts as a mediator between the card and the host system that stores application data and processes transactions.

Smart grid An electricity network managed by utilizing digital technology.

Smartphone A mobile phone with Internet access and PC-like functionality.

Smartwatch A computerized wrist watch with functionality that is enhanced beyond timekeeping. Today, smartwatches are wearable computers. Many run mobile apps, using a mobile operating system.

Social (digital) customers Members of social networks who share opinions about products, services, and vendors, do online social shopping, and understand their rights and how to use the wisdom and power of social communities to their benefit.

Social business "An organization that has put in place the strategies, technologies and processes to systematically engage all the individuals of its ecosystem (employees, customers, partners, suppliers) to maximize the co-created value." (Social Business Forum). Or "A business that embraces networks of people to create business value." (IBM 2011). Or a name for a profit or nonprofit organization that is designed to achieve some social goal(s) rather than just make profit.

Social collaboration (Collaboration 2.0) People's collaboration within and between communities enabled by social media tools and platforms. The process where people, individually or in groups, interact and share information and knowledge while in social networks, or when pursuing social goals.

Social commerce (SC) The e-commerce activities conducted in social networks by using social software.

Social computing Computing systems that involve social interactions and behavior.

Social customer relationship management (SCRM, CRM 2.0) The delivery of CRM by using social media tools and platforms.

Social customers Customers who usually are members in social networks, do social shopping, and understand their shopper's rights and how to use them to their advantage.

Social engineering A type of nontechnical attack that uses some ruse to trick users into revealing information or performing an action that compromises a computer or network.

Social enterprise These organizations embrace the main goal of focusing on social issues. The enterprises generate revenue. The profits do not go to owners and shareholders, but are put back into the company and used toward building positive social change. The use of social media

tools and platforms and conducting social networking in organizations while the major objectives are either commercial or nonprofit activities (e.g., the government).

Social game A video multiplayer game played on the Internet, mostly in social networks or virtual worlds.

Social learning Learning, training, and knowledge sharing in social networks and/or facilitated by social software tools.

Social marketplace A marketplace that uses social media tools and platforms and acts as an online intermediary between buyers and sellers.

Social media Involves user-generated online text, image, audio, and video content that are delivered via Web 2.0 platforms and tools. The media is used primarily for social interactions and conversations such as to share opinions, experiences, insights, and perceptions and to collaborate, all online.

Social media marketing (SMM) The application of marketing communication and other marketing tools using social media.

Social network A social entity composed of nodes (which are generally individuals, groups, or organizations) that are connected by links such as hobbies, friendship, or profession. The structures are often very complex.

Social network game A video game that is played in social networks, and usually involves multiplayers.

Social networking The execution of any Web 2.0 activity, such as blogging or having a presence in a social network. It also includes all activities conducted in social networks.

Social networking service (SNS) A service that builds online communities by providing an online space for people to build free homepages and that provides basic communication and support tools for conducting different activities in the social network.

Social shopping (sales 2.0) Online shopping with social media tools and platforms. It is about sharing shopping experiences with friends. Social shopping is the combination of social media and e-commerce.

Social TV An emerging social media technology that enables several TV viewers who are in different locations to interactively share experiences such as discussions, reviews, and recommendations while watching the same show simultaneously.

Spam The electronic equivalent of junk mail.

Spam site Pages that trick search engines into offering biased search results so that the ranking of certain pages is inflated.

Splog Blogs created by spammers solely for advertising.

Spyware Tracking software that is installed by criminals or advertisers, without the user's consent, in order to gather information about the user and direct it to advertisers or other third parties. A tool that some merchants use to gather information about users without their knowledge.

Standard of due care The minimum and customary practice that a company is reasonably expected to take to protect the company and its resources from possible risks.

Static banner Banners that stay on a Web page regularly.

Stored-value card A card where a monetary value is prepaid and can be loaded on the card once, or several times.

Symmetric (private) key encryption A scheme in which the same key is used to encrypt and decrypt the plaintext.

Tendering (bidding) system System through which large organizational buyers make large-volume or large-value purchases (also known as a *reverse auction*).

Third-party logistics suppliers (3PL) External, rather than in-house, providers of logistics services.

Transaction log (for Web applications) A user file that records the user's activities on a company's website from the computer log.

Trojan horse A program that seems to be harmless or even looks useful but actually contains a hidden malicious code.

Ubiquitous computing (ubicom) Computing capabilities embedded into a relevant system, usually not visible, which may be mobile or stationary.

User profile Customer preferences, behaviors, and demographics.

Value proposition Refers to the benefits, including the intangible ones that a company hopes to derive from using its business model.

Vendor-managed inventory (VMI) A process in which retailers make their suppliers responsible for monitoring the inventory of each item they supply, and determining when to order each item.

Vertical marketplaces Markets for one industry or one industry segment. Examples include marketplaces specializing in electronics, cars, hospital supplies, steel, or chemicals.

Viral blogging Viral marketing done by bloggers.

Viral marketing Word-of-mouth (WOM) method by which people tell others (frequently their friends) about a product they like (or dislike). Electronic word-of-mouth marketing (WOM) that spreads a word, story, or some media.

Viral video Any video that is forwarded from a person to others, sometimes with a recommendation to watch it. This way, people share videos that receive more attention, sometimes drawing millions of viewers in a short time.

Virtual (pure-play) e-tailers Companies with direct online sales that do not need physical stores.

Virtual (pure-play) organizations Organizations that conduct their business activities solely online.

Virtual community A community where the interaction takes place over a computer network, mainly the Internet.

Virtual currency The digital representation of value that can be digitally traded and functions as a medium of exchange, a unit of account, and a store of value but does not have legal status in any jurisdiction.

Virtual economy An emerging economy existing in several virtual worlds, where people exchange virtual goods frequently related to an Internet game or to a virtual business.

Virtual goods Computer images of real or imaginary goods.

Virtual private network (VPN) A network that uses the Internet to transfer information in a secure manner.

Virtual reality A computer-generated simulation of a real-life environment in which users can be immersed.

Virtual trade show Temporary or permanent showplaces where exhibitors present their new products to potential customers.

Virtual university Online universities where students take classes from home via the Internet.

Virtual world A 3-D computer-based simulated environment built and owned by its residents. In addition to creating buildings, people can create and share cars, clothes, and many other items. Community members inhabit virtual spaces and interact and socialize via *avatars*.

Virus Programmed software inserted by criminals into a computer to damage the system; running the infected host program activates the virus.

Voice portal A portal with audio interfaces that can be accessed by telephone or cell phone.

Vulnerability Weakness in software or other mechanism that threatens the confidentiality, integrity, or availability of an asset (recall the CIA model). It can be directly used by a hacker to gain access to a system or network.

Vulnerability assessment A process of identifying and evaluating problem areas that are vulnerable to attack on a computerized system.

Warehouse management system (WMS) A software system that helps in managing warehouses.

Web (information) portal A single point of access, through a Web browser, to critical business information located inside and outside organizations.

Web 2.0 The second generation of Internet-based tools and services that enables users to easily generate content, share media, and communicate and collaborate, in innovative ways.

Web 3.0 A term used to describe the future of the World Wide Web. It is projected to deliver a new generation of business applications that will see business and social computing converge.

Web 4.0 The Web generation after Web 3.0. It is still an unknown entity. However, it is envisioned as being based on islands of intelligence and as being ubiquitous.

Web analytics "The measurement, collection, analysis, and reporting of Internet data for the purposes of understanding and optimizing Web usage." (per Web Analytics Association)

Web bugs Tiny (usually invisible) objects concealed in a Web page or in e-mail messages. Web bugs transmit information about the user and his or her movements to a monitoring site (e.g., to find out if the user has viewed certain content on the web page).

Web mining The use of data mining techniques for both Web content and usage in Web documents in order to discover patterns and hidden relationships.

Webstore (storefront) A single company's (or individual seller's) website where products or services are sold.

Wireless mobile computing (mobile computing) A computing solution where computing is done using mobile devices at any place connected to a wireless network.

Worm A software code that can replicate itself automatically (as a "standalone"—without any human intervention). Worms use networks to propagate and infect a computer or handheld device and can even spread via instant messages.

Zombies Computers infected with malware that are under the control of a spammer, hacker, or other criminal.

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