9

ELECTRONIC COMMERCE

CHAPTER PREVIEW

One of the most profound changes currently transpiring in the world of business is the introduction of electronic commerce. The impact of electronic commerce (e-commerce, or EC) on procurement, shopping, business collaboration, and customer services as well as on delivery of various services is so dramatic that almost every organization is affected. E-commerce is changing all business functional areas and their important tasks, ranging from advertising to paying bills. The nature of competition is also drastically changing, due to new online companies, new business models, and the diversity of EC-related products and services. EC provides unparalleled opportunities for companies to expand worldwide at a small cost, to increase market share, and to reduce costs. In this chapter we will explain the major applications of EC, the issues related to its successful implementation and to its failures, and what services are necessary for its support. We look at business-to-consumer (B2C) commerce, business-to-business (B2B) commerce, intrabusiness commerce, and e-government. Also, we will demonstrate the impact on the various functional areas of organizations.

CHAPTER OUTLINE

LEARNING OBJECTIVES

1. Describe electronic commerce, its scope, benefits, limitations, and types.

2. Describe the major applications of business-to-consumer commerce, service industries in e-commerce, and electronic auctions.

3. Discuss the importance and activities of B2C market research, advertising, and customer service.

4. Describe business-to-business and collaborative commerce applications.

5. Describe emerging EC applications such as e-government and mobile commerce.

6. Describe the e-commerce infrastructure and support services, including payments and logistics.

7. Discuss legal and other implementation issues.

INTEL CORPORATION EMBRACES THE WEB
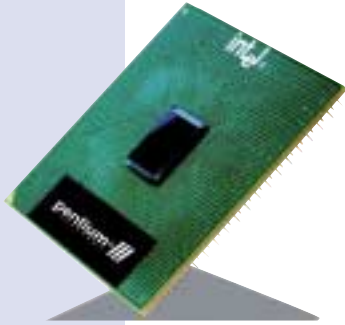
The Business Problem

Intel Corporation, the world's largest producer of microprocessor chips, sells its products to thousands of manufacturers. Much of its business is in the personal computer market, in which companies such as Dell computer use Intel's chips ("Intel Inside" logo). Competition in the chip market is intense. Intel creates customized catalogs and sends them to its potential customers together with information on product availability. Until 1997 it was all done on paper. Orders from Intel's thousands of customers, distributors, and business partners worldwide were received by fax and phone, making the distribution process slow, expensive, and frequently not up to date. During 1997, a number of departments launched their own electronic order handling that resulted in incompatible and inefficient systems.

The IT Solution

So, in 1998, Intel established its e-business program, which is focused on selling online and on customer support for a range of products, including microprocessors, motherboards, embedded chips, chipsets, and flash memory.

Order placing is only part of what Intel is doing online. The site also features self-service order tracking and a library of product documentation and roadmaps that replace the work of customer service representatives, who previously sent information manually to customers. In 1999, Intel moved to a broad program of electronic procurement of products and services. Finally, Intel is using electronic commerce to improve its internal operations, such as interdepartmentalcollaboration.

Intel first specifically targeted small and midsize customers, the majority of which operate outside the United States. These companies had previously communicated with Intel mostly by phone and fax. Intel also moved 11 of its larger customers, which previously were connected to Intel on *electronic data interchange (EDI)* networks, to a system called Supply Line Management. This system lets Intel link to customers' plants across the Internet to track usage of parts. Intel is also using online systems to deliver personalized information to its customers and employees. Intel claims that it is doing more e-business than any other company in the world.

The Results

Intel's e-business initiatives enhance its competitive advantage by giving its customers better tools for managing transactions. At the same time they bring substantial tangible savings to Intel. For example, the company has been able to eliminate 45,000 faxes per quarter to Taiwan alone.

Sources: Compiled from *InternetWeek* (November 23, 1998), pp. 1, 98, "Intel Goes E-Business" (*intel.com/eBusiness/enabling/ebusiness.htm*), December 28, 1999, and *intel.com/ebusiness*, August 2001.

What We Learned from this Case

The Intel case illustrates a new and effective way for conducting business—selling and buying products on the Internet. This is an example of *business-to-business electronic commerce,* one of the most exciting and fastest-growing business phenomena of our times. The case demonstrates that electronic commerce not only involves electronic buying and selling, but also provides *customer service* and improves the *organization's internal business processes.*

This chapter will explore what electronic commerce is, how it works, what issues are involved in its implementation, and how it creates new business models that

change the world of business. It also will show that while large companies such as Intel can benefit from electronic commerce, so too can very small companies successfully capitalize on the opportunities created by electronic commerce.

9.1 OVERVIEW OF E-COMMERCE

Electronic commerce (e-commerce, or EC) describes the buying, selling, and exchanging of products, services, and information via computer networks, primarily the Internet. Some people view the term *commerce* as describing transactions conducted between business partners. To them, the term *electronic commerce* seems fairly narrow, so many use the term **e-business** (electronic business) instead. It refers to a broad definition of EC, not just buying and selling, but also servicing customers, collaborating with business partners, and conducting electronic transactions within an organization. According to Lou Gerstner, IBM's CEO, "e-business is all about time cycle, speed, globalization, enhanced productivity, reaching new customers, and sharing knowledge across institutions for competitive advantage." In this book we use the term electronic commerce in its broadest scope, as basically equivalent to e-business.

E-commerce is a very diverse and interdisciplinary topic, with issues ranging from e-technology, addressed by computer experts, to consumer behavior, addressed by behavioral scientists and marketing research experts.

Types of E-Commerce

The opening case shows an example of **business-to-business EC (B2B)**, in which two or more businesses make transactions or collaborate electronically. Although B2B is the major current type of electronic commerce (as measured by monetary volume), there are several other important types of EC:

- *Collaborative commerce (c-commerce).* In this type of EC, business partners collaborate electronically. Such collaboration frequently occurs between and among business partners along the supply chain.
- *Business-to-consumers (B2C).* In this case the sellers are organizations, the buyers are individuals.
- *Consumers to businesses (C2B).* In this case consumers make known a particular need for a product or service, and organizations *compete* to provide the product or service to consumers. (An example would be Priceline.com, where the customer names the price and suppliers try to fulfill it.)
- *Consumer-to-consumer (C2C).* In this case an individual sells products (or services) to other individuals.
- *Intrabusiness (intraorganizational) commerce.* In this case an organization uses EC internally to improve its operations. A special case of this is known as **B2E** (business to its employees) EC.
- *Government-to-citizens (G2C) and to others.* In this case the government provides services to its citizens via EC technologies. Governments can do business with other governments (G2G) as well as with businesses (G2B).
- *Mobile commerce (m-commerce).* When e-commerce is done in a wireless environment, such as using cell phones to access the Internet, we call it *m-commerce*.

Each of the above types of EC may have several business models. For example, in B2B one can sell from catalogs or in auctions. Buying can be done in several models such as reverse auctions, group purchasing, or negotiations.

History and Scope

E-commerce applications began in the early 1970s with such innovations as electronic transfer of funds. However, the applications were limited to large corporations and a few daring small businesses. Then came electronic data interchange (EDI), which added other kinds of transaction processing and extended participation to all industries. Since the commercialization of the Internet and the introduction of the Web in the early 1990s, EC applications have rapidly expanded.

The field of e-commerce is broad. There are many applications of EC, such as home banking, shopping in electronic malls, buying stocks, finding a job, conducting an auction, collaborating electronically with business partners around the globe, and providing customer service. The implementation of various EC applications depends on four major support categories, shown as supporting pillars in Figure 9.1: people, public policy, marketing/advertising, and supply chain logistics. In addition, there is infrastructure support (shown at the bottom of the figure). The EC management within each organization coordinates the applications, infrastructure, and pillars. Figure 9.1 can be used as a framework for understanding the relationships among the EC components. In this book we concentrate mainly on the applications, on issues related to the topics of the pillars, and on EC management topics.
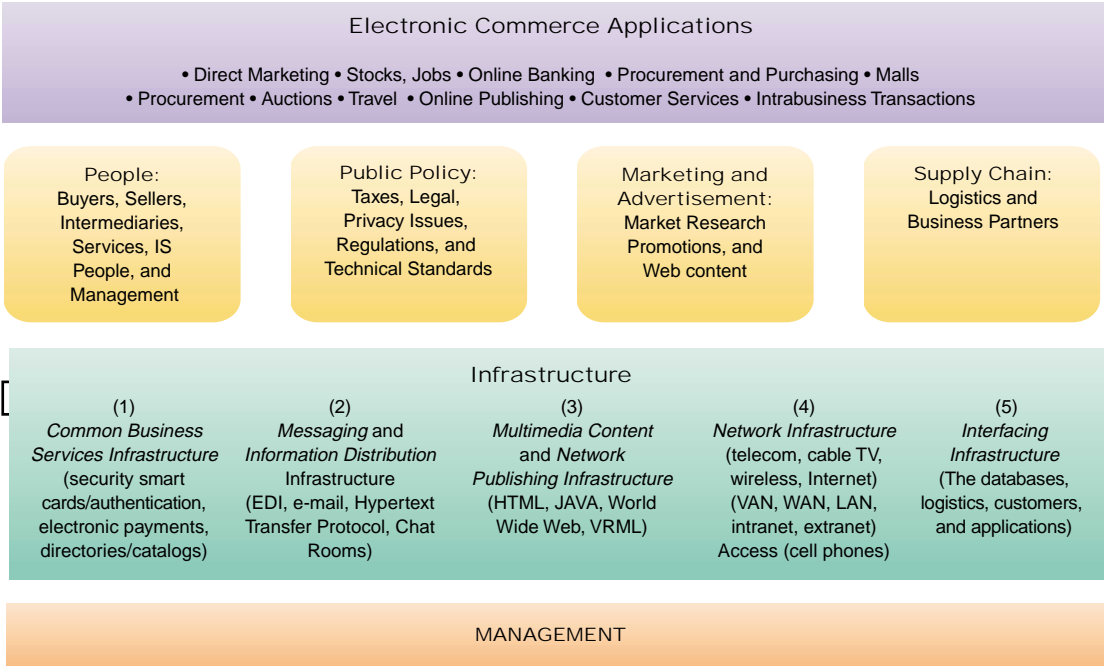
"First of all—you need a Web site."

cable

Electronic Commerce Applications

• Direct Marketing • Stocks, Jobs • Online Banking • Procurement and Purchasing • Malls
• Procurement • Auctions • Travel • Online Publishing • Customer Services • Intrabusiness Transactions

| **People:** Buyers, Sellers, Intermediaries, Services, IS People, and Management | **Public Policy:** Taxes, Legal, Privacy Issues, Regulations, and Technical Standards | **Marketing and Advertisement:** Market Research Promotions, and Web content | **Supply Chain:** Logistics and Business Partners |

Infrastructure

| (1) *Common Business Services Infrastructure* (security smart cards/authentication, electronic payments, directories/catalogs) | (2) *Messaging* and *Information Distribution* Infrastructure (EDI, e-mail, Hypertext Transfer Protocol, Chat Rooms) | (3) *Multimedia Content* and *Network Publishing Infrastructure* (HTML, JAVA, World Wide Web, VRML) | (4) *Network Infrastructure* (telecom, cable TV, wireless, Internet) (VAN, WAN, LAN, intranet, extranet) Access (cell phones) | (5) *Interfacing Infrastructure* (The databases, logistics, customers, and applications) |

MANAGEMENT

Figure 9.1   *A framework for e-commerce. [Sources: Modified from R. Kalakota and A. B. Whinston, Electronic Commerce: A Manager's Guide (Reading, MA: Addison-Wesley, 1997), p. 12; and from a list provided by V. Zwass, "Electronic Commerce: Structures and Issues," International Journal of Electronic Commerce, Fall 1996, p. 6.]*

Benefits of E-Commerce

Few innovations in human history encompass as many benefits to *organizations, individuals*, and *society* as does e-commerce. These benefits are have just begun to materialize, but they will increase significantly as EC expands. The major benefits are listed in Table 9.1.

Limitations and Failures of E-Commerce

Counterbalancing its many benefits, EC has some limitations, both technical and non-technical, which have slowed its growth and acceptance. Those limitations are listed in Table 9.2, and some have been contributing factors in the *failures* of many EC projects and dot-com companies in recent years. As time passes, the limitations, especially the technical ones, will lessen or be overcome. In addition, appropriate planning can minimize the impact of some of them. Despite its limitations and failures, e-commerce has made very rapid progress. Also, various B2B activities, e-government, and some B2C activities are ballooning. As experience accumulates and technology improves, the ratio of EC benefits to cost will increase, resulting in an even greater rate of EC adoption.

Table 9.1   Benefits of E-commerce

To Organizations

- Expands a company's marketplace to national and international markets. With minimal capital outlay, a company can quickly locate more customers, the best suppliers, and the most suitable business partners worldwide.
- Enables companies to procure material and services from other companies, rapidly and at less cost.
- Shortens or even eliminates marketing distribution channels, making products cheaper and vendors' profits higher.
- Decreases (by as much as 90 percent) the cost of creating, processing, distributing, storing, and retrieving information by digitizing the process.
- Allows lower inventories by facilitating pull-type supply chain management. This allows product customization and reduces inventory costs.
- Lowers telecommunications costs because the Internet is much cheaper than value-added networks (VANs).
- Helps small businesses compete against large companies.
- Enables a very specialized niche market.

To Customers

- Frequently provides less expensive products and services by allowing consumers to conduct quick online comparisons.
- Gives consumers more choices than they could easily locate otherwise.
- Enables customers to shop or make other transactions 24 hours a day, from almost any location.
- Delivers relevant and detailed information in seconds.
- Enables consumers to get customized products, from PCs to cars, at competitive prices.
- Makes it possible for people to work and study at home.
- Makes possible electronic auctions.
- Allows consumers to interact in *electronic communities* and to exchange ideas and compare experiences.

To Society

- Enables individuals to work at home and to do less traveling, resulting in less road traffic and lower air pollution.
- Allows some merchandise to be sold at lower prices, thereby increasing people's standard of living.
- Enables people in developing countries and rural areas to enjoy products and services that are otherwise are not available. This includes opportunities to learn professions and earn college degrees, or to receive better medical care.
- Facilitates delivery of public services, such as government entitlements, reducing the cost of distribution and chance of fraud, and increasing the quality of social services, police work, health care, and education.

Table 9.2   Limitations of E-commerce

Technical Limitations

1. Lack of universally accepted standards for quality, security, and reliability.
2. Insufficient telecommunications bandwidth.
3. Still-evolving software development tools.
4. Difficulties in integrating the Internet and EC software with some existing (especially legacy) applications and databases.
5. Need for special Web servers in addition to the network servers.
6. Expensive and/or inconvenient Internet accessibility for many would-be users.

Nontechnical Limitations

1. Unresolved legal issues (see Section 9.7 and Chapter 15).
2. Lack of national and international government regulations and industry standards.
3. Lack of mature methodologies for measuring benefits of and justifying EC.
4. Many sellers and buyers waiting for EC to stabilize before they take part.
5. Customer resistance to changing from a real to a virtual store. People do not yet sufficiently trust paperless, faceless transactions.
6. Perception that EC is expensive and unsecured.
7. An insufficient number (critical mass) of sellers and buyers exists for profitable EC operations.

Before you go on . . .

1. Define e-commerce and distinguish it from e-business.

2. List the major types of EC.

3. Distinguish among business-to-consumer, business-to-business, and intra-business EC.

4. List some organizational, societal, and consumer benefits of EC (five each).

5. List the major technical and nontechnical limitations of EC (three each).

9.2   BUSINESS-TO-CONSUMER APPLICATIONS

Forrester Research Institute and others predict that online B2C will be in the range of $300 billion to $800 billion in 2004, up from $515 million in 1996 (see *cyberatlas.com* and *emarketer.com*). For 2004, the total of B2C and B2B is estimated to be in the range of $2,500 billion to $7,000 billion. Some EC applications grew by 10 percent per *month*. Here we will look at some of the major categories of business-to-consumer applications.

Electronic Retailing, Storefronts, and Malls

For generations, home shopping from catalogs has flourished, and television shopping channels have been attracting millions of shoppers for more than a decade. However, these methods have drawbacks: Paper catalogs are sometimes inaccurate, and television shopping is limited to what is shown on the screen. Also, many people are troubled by the waste of paper used in catalogs that just get tossed out.

Like any mail-order shopping experience, e-commerce enables you to buy from home, 24 hours a day, 7 days a week. But EC overcomes some of the limitations of the other forms of home shopping. It offers a wide variety of products and services, including the most unique items, usually at lower prices. Furthermore, within seconds, you can get very detailed information on products, and you can easily search for and compare competitors' products and prices. **Electronic retailing** (e-tailing) is the direct sale of products through electronic storefronts or electronic malls, usually designed around an electronic catalog format and/or auctions.

Electronic storefronts.   Hundreds of thousands of solo storefronts can be found on the Internet, each with its own Internet name and Web site. **Electronic storefronts** may be an extension of physical stores such as Home Depot, The Sharper Image, or Wal-Mart. Others are new businesses started by entrepreneurs who saw a niche on the Web. Examples of these are Amazon.com, CDNow, Peapod, and Virtual Vineyards, (described at the book's Web site).

There are two types of storefronts, *general* and *specialized.* The latter sell one or a few products (e.g., flowers, wines, or dog toys). The general storefronts sell many products. Goods that are bought most often are computers and computer-related items, books and magazines, CDs, cassettes, movies and videos, clothing and shoes, toys, and food. Services that are bought most often online include travel services, stocks and bonds trading, electronic banking, insurance, and job matching. (Services will be presented as a separate topic later in this section.) Directories and hyperlinks from other Web sites and intelligent search agents help buyers find the best stores and products to match their needs. Storefronts may or may not be affiliated with electronic malls.

Electronic malls.   An **electronic mall**, also known as a **cybermall** or **e-mall**, is a collection of individual shops under one Internet address. The basic idea of an electronic mall is the same as that of a regular shopping mall—to provide a one-stop shopping place that offers many products and services. Representative cybermalls are Downtown Anywhere (*da.awa.com*), HandCrafters Mall (*rocksworld.com*), America's Choice Mall (*mall.choicemall.com*), and Shopping 2000 (*shopping2000.com*).

As is true for vendors that locate in a physical shopping mall, a vendor that locates in an e-mall gives up a certain amount of independence. Its success depends on the popularity of the mall, as well as on its own marketing efforts. On the other hand, malls generate streams of prospective customers who otherwise might never have stopped by the store. Each cybermall may include thousands of vendors. For example, *shopping.yahoo.com* and *eshop.msn.com* include tens of thousands of products from thousands of vendors.

Issues in e-tailing.   The following are the major issues faced by e-tailers.

- *Channel conflict.* If the seller is a click-and-mortar company, it may face a conflict with its regular distributors when it sells directly online. Known as **channel conflict**, this situation can alienate the regular distributors and has forced some companies (e.g., *lego.com*) to limit their B2C efforts; others (e.g., automotive companies) have decided not to sell direct online. However, a better approach is to try to collaborate in some way with the existing distributors whose services may be restructured.

- *Order fulfillment.* E-tailers face a difficult problem of shipping very small quantities to a large number of buyers. This can be expensive, especially when returned items need to be handled. This topic is discussed in Section 9.6.

- *Viability of online e-tailers.* Most of the purely online e-tailers (excluding service industries) were unable to survive and folded in 2000–2002. Companies had problems
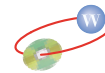
with customer acquisition, order fulfillment, and forecasting demand. Online competition, especially in commodity-type products such as CDs, toys, books, or groceries, became very fierce, due to the ease of entry to the marketplace.

- *Conflicts within click-and-mortar organizations.* When an established company decides to sell direct online, on a large scale, it may create a conflict within its existing operation. Conflict may arise in areas such as pricing of products and services, allocation of resources (e.g., advertising budget) and logistics services provided to the online activities by the offline activities (e.g., handling of returned items purchased online). As a result of these conflicts, some companies have completely separated the "clicks" (the online portion of the organization) from the "mortars" (the traditional brick-and-mortar part of the organization). This may increase expenses and reduce the synergy between the two.

- *Lack of funding.* The so-called dot-com companies enjoyed almost unlimited funding between 1995 and 1998. After "burning" lots of money and being unable to generate profits quickly, the sources of funding dried up, resulting in many bankruptcies.

- *Incorrect revenue models.* Many dot-com companies were selling at or below cost with the objective of attracting many customers as well as advertisers to their sites. The idea was to generate enough revenue from advertising. This model did not work. Too many dot-com companies were competing on too few advertising dollars, which went mainly to a small number of well-known sites such as AOL and Yahoo!

Service Industries Online

Selling books, toys, computers, and most other products on the Internet may reduce vendors' selling costs by 20 to 40 percent. Further reduction is difficult to achieve because the products must be delivered physically. Only a few products (such as software or music) can be digitized to be delivered online for additional savings. On the other hand, delivery of services, such as buying stocks or insurance online, can be done 100 percent electronically, with considerable cost reduction. Therefore, delivery of services online is growing very rapidly, with millions of new customers added annually. The major online services to be discussed here are banking, trading of securities (stocks, bonds), job matching, travel, and real estate.

Cyberbanking. **Electronic banking**, also known as **cyberbanking**, virtual banking, home banking, and online banking, includes various banking activities conducted from home, a business, or on the road instead of at a physical bank location. Electronic banking has capabilities ranging from paying bills to securing a loan. It saves time and is convenient for customers. For banks, it offers an inexpensive alternative to branch banking (for example, about 2 cents cost per transaction versus $1.07 at a physical branch) and a chance to enlist remote customers. Many banks are beginning to offer home banking, and some use EC as a major competitive strategy. One such bank is Wells Fargo (see IT's About Business 9.1).

Electronic banking offers several of the benefits listed in Section 9.1, such as expanding the customer base and saving the cost of paper transactions. In addition to regular banks with added online services, we are seeing the emergence of *virtual banks*, dedicated solely to Internet transactions, such as *sfnb.com* and *netbank.com*.

International and multiple-currency banking. International banking and the ability to handle trading in multiple currencies are critical for international trade. Although some international retail purchasing can be done by giving a credit card number, other transactions may require cross-border banking support. Transfers of electronic funds and letters of credit are other important services in international banking.

IT's About Business

Box 9.1: Cyberbanking at Wells Fargo

Wells Fargo is a large California Bank. At one time it had more than 1,700 branch banks. It has been known for generations for its financial services, dating back to the days of the Wild West. Wells Fargo's declared competitive strategy is cyberbanking. It is moving millions of customers to the Internet and closing hundreds of branches. A visit to the Wells Fargo Web site indicates the richness of services available.

The services are divided into five major categories: online (personal) banking, personal finance services, small business, commercial banking, and international trade. In addition, there are employment opportunities listed, and even a virtual mall in which you can buy from the Wells Fargo Museum Store or be linked to several virtual stores such as Amazon.com. The bank offers many services in all categories. Most interesting are the services that cover all the needs of small businesses. These are extremely user friendly and can run even on an old computer system.

Sources: Communications Week (May 27, 1997), p. 44; *Datamation* (June 1997), pp. 91–93; and *wellsfargo.com/com/comintro.jhtml* (November 2001).

Questions

1. What services cannot be performed by electronic banking?
2. Can a small bank offer similar electronic banking services?
3. Why would a bank get involved in cybershopping?

EXAMPLES

Hong Kong Bank grows without branches.   Hong Kong and Shanghai Bank (*hsbc.com.hk*) has developed a special system (called HEXAGON) to provide electronic banking in 60 countries. Using this system, the bank has leveraged its reputation and infrastructure in the developing economies of Asia to become a major international bank rapidly, without developing an extensive new branch network.   *www.hsbc.com.hk*

Supporting foreign currency trading.   The company Oanda provides conversion of over 160 currencies. International traders can be assisted by many online services (see *financialsupermarket.com* and *foreign-trade.com*). ●

Electronic bill payments.   In August 1998, 90 percent of people surveyed in the San Francisco Bay area indicated a desire to pay bills on the Internet. Mostly, people prefer to pay monthly bills, such as telephone, utilities, credit cards, and cable TV, online. The recipients of such payments are even more enthusiastic about such service than the payers, since online payments enable them to significantly reduce processing costs. The following are the major existing payment systems in common use: automatic payment of mortgages; automatic transfer of funds to pay monthly utility bills; paying bills from online banking account; merchant-to-customer direct billing; and use of an intermediary to aggregate bills into one payable Web site.

Online securities trading.   It is estimated that by the year 2004, about 35 million people in the United States will be using computers to trade stocks, bonds, and other financial instruments. In Korea, more than 65 percent of stock traders are using the Internet. Why? Because it makes a lot of dollars and "sense." An online trade typically costs between $3 and $30, compared to an average fee of $100 from a full-service broker and $35 from a discount broker. There is no waiting on busy telephone lines. Furthermore, the chance of making mistakes is small because there is no oral communication with a securities broker in a frequently very noisy physical environment.

Orders can be placed from anywhere, any time, and you can find on the Web, by your-self, a considerable amount of information regarding investing in a specific company or in a mutual fund.
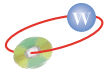
How does online trading work? Let's say you have an account with Charles Schwab. You access Schwab's Web site (*schwab.com;* see the screen capture at our Web site), enter your account number and password, and click on stock trading. Using a menu, you enter the details of your order (buy or sell, margin or cash, price limit, market order, etc.). The computer tells you the current "ask" and "bid" prices, much as a broker would do on the telephone, and you can approve or reject the transaction. Some well-known companies offer only online trading. Examples are E*Trade, Ameritrade, and Suretrade.

The online job market.   The Internet offers a perfect environment for job seekers and for companies searching for hard-to-find employees. The online job market is especially effective for technology-oriented jobs. However, there are thousands of companies and government agencies that advertise available positions in all types of jobs, accept resumes, and take applications via the Internet. The online job market is used by:

1. *Job seekers.* Job seekers can reply to employment ads online. Or they can take the initiative and place resumes on their own home pages or on others' Web sites, send messages to members of newsgroups asking for referrals, and use recruiting firms such as Career Mosaic (*careermosaic.com*), Job Center (*jobcenter.com*), and Mon-ster Board (*monster.com*). For entry-level jobs and internships for newly minted graduates, job seekers can use *jobdirect.com*. Need help writing your resume? Try *resume-link.com* or *jobweb.com*.

2. *Job offers.* Many organizations advertise openings on their Web site. Others use sites ranging from Yahoo! to bulletin boards and recruiting firms.

3. *Recruiting firms.* Hundreds of job-placement brokers and related services are ac-tive on the Web. They use their own Web pages to post available job descriptions and advertise their services in electronic malls and on others' Web sites. Recruiters use newsgroups, online forums, bulletin boards, and chat rooms. Job-finding bro-kers help candidates write their resumes and get the most exposure. Matching of candidates and jobs is done by companies such as *discoverme.com*.

4. *Newsgroups.* Job finding is of interest to many newsgroups. Jobs in a certain cate-gory or location are posted, discussions are conducted, and resumes can be sent.

In addition to low cost and wide exposure, participants in the online job market cite the ease of transmitting information and documents (resumes and job descrip-tions) and the speed of the recruiting process as motivators for using the Internet. Also, the recruiting companies save time on data entry by using electronic forms for taking applications. Finally, the ability to widen an employee's search geographically is an advantage to both the recruiter and the recruitee. Hot Jobs (*hotjobs.com*) pro-vides links to many sources for further research, for accessing job listings, and for find-ing for-fee counselors. A Manager's Checklist at the Web site lists the benefits and limitations of the online job market.
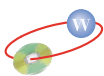
Travel.   The Internet is an ideal place to plan, explore, and economically arrange al-most any trip. Potential savings are available through special sales, comparisons, use of auctions, and the elimination of travel agents. Examples of comprehensive travel online services are Expedia.com, Travelocity.com, and Travelweb.com. Services are also provided online by all major airline vacation services, large conventional travel

agencies, car rental agencies, hotels, and tour companies. Online travel services allow you to purchase airline tickets, reserve hotel rooms, and rent cars. Most sites also support an itinerary-based interface, including a fare-tracker feature that sends you e-mail messages about low-cost flights to your favorite destinations. Finally, Price-line.com allows you to set a price you are willing to pay for an airline ticket or hotel accommodations and Priceline then attempts to find a vendor that will match your price.

Real estate.   Real estate transactions are an ideal area for e-commerce, for the following reasons. First, you can view many properties on the screen, saving time for you and the broker. Second, you can sort and organize properties according to your criteria and preview the exterior and interior designs of the properties, shortening the search process. Finally, you can find detailed information about the properties and frequently get even more detail than brokers will provide. In some locations brokers allow the use of such databases only from their offices, but considerable information is now available on the Internet. For example, Realtor.com allows you to search a database of over one million homes across the United States. The database is composed of local "multiple listings" of all available properties and properties just sold, in hundreds of locations.

In another application, homebuilders now use virtual reality technology on their Web sites to demonstrate three-dimensional floor plans to potential home buyers. They use virtual models that enable buyers to walk through mockups of homes.
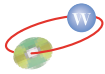
Auctions

An **auction** is a market mechanism by which sellers place offers and buyers make sequential bids. Auctions are characterized by the competitive nature by which a final price is reached. Auctions have been an established method of commerce for centures, and they are especially suited to deal with products and services for which conventional marketing channels are ineffective or inefficient. Auctions can expedite the disposal of items that need liquidation or a quick sale, and they ensure prudent execution of contracts.

The Internet provides an infrastructure for executing auctions at lower cost, and with many more involved sellers and buyers. Individual consumers and corporations alike can participate in this rapidly growing form of e-commerce. There are several types of auctions, each with its motives and procedures. Auctions are divided here into two major types: *forward* auctions, and *reverse* auctions.

Forward auctions.   **Forward auctions** are used mainly as a selling channel. A single seller auctions item(s) to many potential buyers. The specific alternative mechanisms in a forward auction are as follows.

- *English auctions.* Buyers bid on one item at a time. The bidding price increases with additional bids. The highest bidder wins (if price is the only criterion).

- *Yankee auctions.* These are similar to English auctions, but multiple identical items are offered. You can bid on any number of items. Biddings prices are escalating.

- *Dutch auctions.* These are usually for multiple, identical items (e.g., flowers). Prices are set high and are re-

duced as the auction clock runs down until a bid for a specific quantity is submitted. The first bidder wins. See the auction clock at our Web site.

Reverse auctions.   In **reverse auctions**, there is one buyer, who wants to buy a product or a service. Suppliers are invited to submit bids. The supplier that submits the lowest bid wins. Several rounds may take place if the lowest bid is not satisfactory to the seller.

Auctions are used in B2C, B2B, C2B, e-government, and C2C commerce, and they are becoming popular in many countries. Benefits are derived for sellers, buyers, and auctioneers as shown in Manager's Checklist 9.1.

Electronic auctions started in the 1980s on private networks, but their use was limited. The Internet opens many new opportunities for e-auctions, and millions of sellers and buyers participate. Auctions can be conducted from the seller's site or from a third-party site. For example, eBay offers hundreds of thousands of different items in several types of auctions (see the screen capture at our Web site). Over 300 other major companies, including Amazon.com, offer online auctions as well. B2B auctions are discussed in Section 9.4.
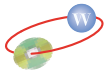
Bartering.   Related to auctions is **electronic bartering**, the *exchange* of goods or services without a monetary transaction. In addition to the individual-to-individual bartering ads that appear in some newsgroups, bulletin boards, and chat rooms, there are several intermediaries that arrange for corporate bartering (e.g., *barterbrokers.com*). These intermediaries try to find partners to a barter.

Not all e-commerce applications are Internet based. For an example of a B2C non-Internet EC service, see the description of the Highway 91 project at our Web site.
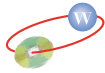
Manager's Checklist 9.1

Benefits of Electronic Auctions

Benefits to Sellers

- Increased revenues from broadening customer base and shortening cycle time
- Optimal price setting, determined by the market (more buyers)
- Saves on the commission to intermediaries. (Physical auctions' fees are very expensive compared to e-auctions.)
- Can liquidate large quantities quickly
- Improved customer relationship and loyalty (in the case of specialized B2B auction sites and electronic exchanges).

Benfits to Buyers

- Opportunities to find unique items and collectibles
- Chance to bargain, instead of buying at a fixed price
- Entertainment. Participation in e-auctions can be entertaining and exciting.
- Anonymity. With the help of a third party, buyers can remain anonymous.
- Convenience. Buyers can trade from anywhere, even with a cell phone; they do not have to travel to an acution place.

Benefits to Auctioneers

- High "stickness" to the Web site (customers stay at "sticky" sites longer and come back more often); generates more ad revenue to auctioneer
- Expansion of the auction business

Before you go on . . .

1. Describe electronic storefronts and malls.

2. List the benefits of cyberbanking.

3. Describe electronic securities trading.

4. Describe the online job market.

5. Explain how electronic auctions work and list their benefits.

9.3 MARKET RESEARCH, ADVERTISING, AND CUSTOMER SERVICE

Conducting successful B2C commerce requires several support activities. Most notable are advertising, customer service, and understanding of consumers and their behavior.

Consumers and Their Behavior

To successfully conduct B2C it is important to find out who are the actual and potential customers. Several research institutions collect Internet usage statistics (e.g., *emarketer.com*), look at factors that inhibit shopping, and more. Merchants then can prepare their marketing and advertising strategies, based on this information.

Online purchasing constitutes a fundamental change for customers. If the customer has previously used mail-order catalogs or television shopping, the change will not be so drastic. But moving away from a physical shopping mall to an electronic mall may not be simple. Furthermore, shopping habits keep changing as a result of innovative marketing strategies. Finding out what specific groups of consumers (such as teenagers or residents of certain geographical zones) want is a major role of market research. This dividing of markets into specific groups is called **segmentation**. However, even if we know what groups of consumers in general want, each individual consumer is very likely to want something different. Some like classical music while others like jazz. Some like brand names, while price is more important to many others. A major advantage of EC is its ability to *customize* products, services, advertisements, and customer service at a reasonable cost. This is referred to as **personalization**.

Learning about customers is extremely important for any successful business, especially in cyberspace. Such learning is facilitated by market research.

Market Research

Market research has been conducted offline for years in order to find out what motivates consumers to buy. The key for e-tailers is to understand the consumer decision-making process on the Web. To do that, we developed a model for explaining consumer buying decisions on the Internet, as shown in Figure 9.2. The model starts on the left, showing factors that stimulate a consumer to think about buying. Then, two types of factors influence the buying decision-making process, individual (personal) factors (top left) and environmental factors (top right). In EC there are additional factors that influence shoppers' decision making—these are shown at the bottom, in the vendor-controlled box. The model shows us that cybershopping is a
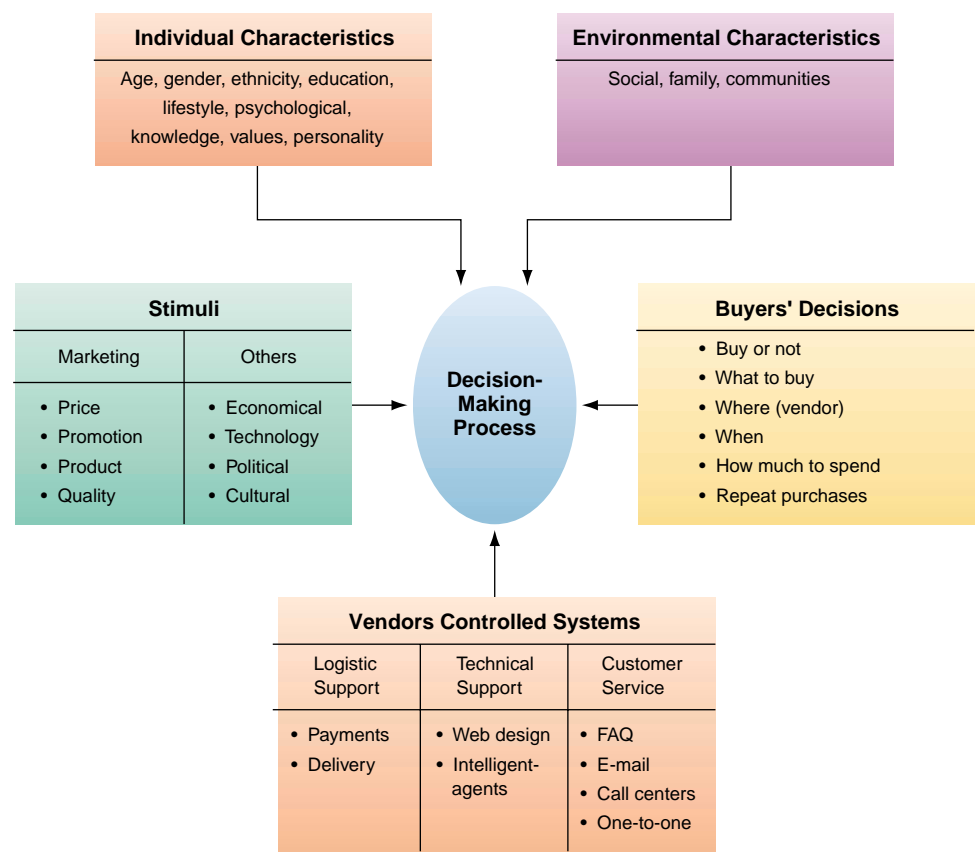
Individual Characteristics

Age, gender, ethnicity, education, lifestyle, psychological, knowledge, values, personality

Environmental Characteristics

Social, family, communities

Stimuli

Marketing	Others
• Price • Promotion • Product • Quality	• Economical • Technology • Political • Cultural

Decision-Making Process

Buyers' Decisions

• Buy or not
• What to buy
• Where (vendor)
• When
• How much to spend
• Repeat purchases

Vendors Controlled Systems

Logistic Support	Technical Support	Customer Service
• Payments • Delivery	• Web design • Intelligent-agents	• FAQ • E-mail • Call centers • One-to-one

Figure 9.2   *E-commerce consumer behavior model. [Source: Turban et al., Electronic Commerce: A Managerial Perspective (Upper Saddle River, NJ: Prentice-Hall, 2000).]*

complex process. It is also clear from this figure that there is much that sellers need to know about customers, since the seller controls all the online (vendor-controlled) systems shown at the bottom of the figure, as well as being able to influence some of the stimulus factors (for example, through advertising). Such knowledge is provided by market research.

The Internet is a powerful and cost-effective tool for conducting market research about consumer behavior, for identifying new markets, for investigating competitors and their products, and for testing consumer interest in new products. There are basically two ways to find out what customers want. The first is to ask them, and the second is to infer what they want by observing what they do in cyberspace.

Asking customers what they want.   The Internet provides easy, fast, and relatively inexpensive ways for vendors to find out what customers want by interacting directly with them. The simplest way is to ask potential customers to fill in electronic questionnaires. To do so, vendors need to provide some inducements. For example, in order to play a free electronic game or participate in a sweepstakes, you are asked to fill in an online form and answer some questions about yourself. Marketers not only learn what you want from the direct answers, but also try to infer from your preferences of music, for example, what type of books, clothes, or movies you may be likely to prefer.

In some cases, asking customers what they want may not be feasible. Or customers may refuse to answer questionnaires, or they may provide false information (as is done in about 40 percent of the cases, according to studies done at Georgia Tech University. Also, questionnaires can be lengthy and costly to administer. Therefore, a different approach may be needed—observing what customers do in cyberspace.

Tracking customer activities on the Web.   Today it is possible to learn about customers by observing their behavior on the Internet. Many companies offer site-tracking services, based on *cookies* or other approaches. For example, Nettracker (from *sane.com*) collects data from client/server logs and provides periodic reports that include demographic data such as where customers come from or how many customers have gone straight from the home page to ordering. The company translates Internet domain names into real-company names and includes general and financial corporate information. One of the most interesting tools for tracking customers on the Internet as well as helping them to shop is intelligent agents.

E-Commerce Intelligent Agents

Agents are computer programs that conduct routing tasks, search and retrieve information, support decision making, and act as domain experts. These agents sense the environment and act autonomously without human intervention. This results in a significant savings of users' time (up to 99 percent in some cases). There are various types of agents, ranging from **software agents**, which are those with no intelligence, to *learning agents* that exhibit some intelligent behavior (see Chapter 12).

Agents are used to support many tasks in EC. It will be beneficial to distinguish between search engines and the more intelligent type of agents. A **search engine**, which is usually a software agent, is a computer program that can automatically contact other network resources on the Internet, search for specific information or key words, and report the results. Unlike search engines, an **intelligent agent** uses expert, or knowledge-based, capabilities to do more than just "search and match." For example, it can monitor movement on a Web site to check whether a customer seems lost or ventures into areas that may not fit his profile, and the agent can notify the customers and even provide assistance. Depending on their level of intelligence, agents can do many other things. In this section we will concentrate on intelligent agents for assisting customers.

Search and filtering agents.   Intelligent agents can help customers to determine what to buy to satisfy a specific need. This is achieved by looking for specific product information and critically evaluating it. An agent helps consumers decide what product best fits their profile and requirements.

Product- and vendor-finding agents.   Once the consumer has decided what to buy, a *comparison agent* will help in doing comparisons, usually of prices from different vendors. A pioneering intelligent agent for online price comparison was Bargainfinder from Andersen Consulting. This agent was used only in online shopping for CDs. The agent queried the price of a specific CD from a number of online vendors and returned the list of vendors and prices. Today much more sophisticated agents such as Mysimon.com help with comparisons.

An interesting agent worth mentioning is Kasbah (*kasbah.com*). This agent from MIT media lab is sent out to actively seek buyers or sellers. In creating the agent, users must specify requirements, including desired price, highest (or lowest) acceptable price, and a date by which to complete the transaction. The agent's goal is to complete an acceptable transaction based on these requirements. This agent will soon be able to negotiate on the part of the buyers. Kasbah agents (which now deal with the travel industry) will be able to negotiate with each other, following specific strategies assigned by their creators, using a number of different parameters: price, warranty, delivery time, service contracts, return policy, loan options, and other value-added services.

Profiling customers using intelligent agents.   Some companies collect information about consumers for the purpose of creating a customer's profile. With this profile, the company can tailor ads to the specific customers or offer them product information. Use of this type of intelligent agent is called *product brokering*. To build a customer profile, an agent uses a *collaborative filtering* process. The consumer is asked to rate a number of products; the system then matches these ratings with the ratings of other consumers, and, relying on the ratings of other consumers with similar tastes, recommends products that the consumer has not yet rated.

EXAMPLE

www.fujitsu.co.jp

Fujitsu's agents profile consumers.   Fujitsu, a major Japanese vendor of consumer products, is using an agent-based technology called Interactive Marketing Interface (iMi) that allows advertisers to interact directly with targeted customers (*magazine. fujitsu.com*). Consumers submit a personal profile to iMi, indicating such characteristics as product categories of interest, hobbies, travel habits, and the maximum number of e-mail messages per week they are willing to receive. In turn, via e-mail, customers receive product announcements, advertisements, and marketing surveys based on their personal profile. By answering the marketing surveys or acknowledging receipt of advertisements, consumers earn iMi points, redeemable for gift certificates and phone cards. Consumers remain anonymous to the advertisers. ●

The information collected by market research and intelligent agents in used for advertising strategies and for customer service, the topics we discuss next.

Advertising Online

Advertising is an attempt to disseminate information in order to influence a buyer-seller transaction. Traditional advertising on TV or newspaper is impersonal, one-way mass communication. Direct-response marketing contacts individuals by means of direct mail or by telephone calls and requires them to respond in order to make a purchase. The direct-response approach personalizes advertising and marketing, but it can be expensive, slow, and ineffective. Internet advertising redefines the process, making it media-rich, dynamic, and interactive. It improves on traditional forms of advertising in a number of ways: Internet ads can be updated any time at minimal cost, and therefore can always be timely. They can reach a very large number of potential buyers all over the world. Online ads are sometimes cheaper in comparison to print (newspaper and magazine), radio, or television ads. Ads in these other media are expensive because they are determined by space occupied (print ads), by how many days (times) they are run, and by the number of local and national stations and print media that run them. Internet ads can be interactive and targeted to specific interest groups and/or to individuals. Finally, the use of the Internet itself is growing very rapidly, and it makes sense to move advertising to the Internet, where the number of viewers is growing. Nevertheless, the Internet as an advertising medium does have some shortcomings, most of which relate to measurement of effectiveness. For one thing, it is difficult to measure the actual results of placing a banner ad, and the audience is still relatively small (compared to television, for example). For a summary of the benefits and the limitations of Internet advertising, see the checklist at our Web site.
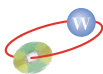
Advertising methods.   The most common advertising methods online are banners and e-mail, which we look at first.

Banners.   As you drive along a highway you see countless billboards on the sides of the road. **Banners** are electronic billboards, and banner advertising is the most commonly used form of advertising on the Internet. Typically, a banner contains a short text or graphical message to promote a product or a vendor. It may even contain video clips and sound. When customers click on the banner, they are transferred to the advertiser's home (ordering) page. Advertisers go to great lengths to design banners that catch consumers' attention.

There are two types of banners: **Keyword banners** appear when a predetermined word is queried from the search engine. It is effective for companies who want to narrow their target to consumers interested in particular topics. **Random banners** appear randomly and might be used to introduce new products to the widest possible audience, or to keep a well-known brand, such as Amazon.com or IBM, in the public eye.

A major advantage of using banners is the ability to customize them to the target audience. Keyword banners can be customized to a market segment or even to an individual. If the computer system knows who you are, or what your profile is, you may be sent a banner that is supposed to match your interests. However, one of the major drawbacks of using banners is that limited information is allowed. Hence advertisers need to think of creative but short messages to attract viewers. Another drawback is that banners, which were a novelty in late 1990s and so were noticed by viewers, are ignored by many viewers today. Therefore some question their cost effectiveness and instead recommend e-mail advertising.

E-mail advertising.   E-mail is emerging as an Internet advertising and marketing channel that affords cost-effective implementation and a better and quicker response rate than other advertising channels (such as print ads). Marketers develop or purchase a list of e-mail addresses, place them in a customer database, and then send advertisements via e-mail. A list of e-mail addresses can be a very powerful tool because the marketer can target a group of people or even individuals. However, there is potential for misuse of e-mail advertising. A major issue related to unsolicited e-mail advertising is *spamming,* the practice of indiscriminate distribution of electronic messages (electronic junk mail) without permission of the receiver.

What will happen when many marketers start inundating prospects and customers with electronic mail? How will consumers deal with it? What areas must marketers focus on to ensure e-mail marketing success? The answers to these and similar questions will determine the success of e-mail advertising. Unfortunately, the answers to these questions are not always known. Market research may help provide some answers to these questions.

Other forms of Internet advertising.   Online advertising can be done in several other forms, including non-banner ads or posting advertisements in chat rooms, to newsgroups, and on online kiosks. Advertising on Internet radio is just beginning, and soon advertising on Internet television will commence. Of special interest is advertising to members of *Internet communities.* Community sites are gathering places for people of similar interests and are therefore a logical place to promote products related to those interests. Advertising at a community site (such as at *geocities.com*; see Web site) might include direct advertising and, frequently, a chance to buy the advertised products at a discount.
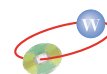
Some advertising issues and approaches.   There are many issues related to the implementation of Internet advertising: how to design ads for the Internet, where and when to advertise, and how to integrate online and offline ads. Most of such decisions require the input of marketing and advertising experts. We present several illustrative

issues: permission marketing, viral marketing, customizing ads, interactive marketing, and attracting visitors to a site.

Permission marketing.   Traditional telemarketers contact consumers without their permission, frequently when the consumers are busy or are eating dinner. This does not leave consumers with a positive feeling, nor does it put them in the mood to buy the product or service being marketed. As consumers gain more control of information, marketers must find ways to cleverly communicate their brand messages. **Permission marketing** is one answer. It offers consumers incentives to accept advertising and e-mail voluntarily. How does it work? Ask people what they are interested in, ask permission to send them marketing information, and then do it in an entertaining, educational, and interesting manner.

Permission marketing is the basis of many Internet marketing strategies. For example, some 1.7 million Net users receive e-mails each week from airlines such as American and Southwest. Users of this marketing service can ask for notification of low fares to exotic (or not-so-exotic) places. In addition, users can easily unsubscribe at any time. Permission marketing is also extremely important for market research (e.g., see *mediametrix.com*).

In one particularly interesting form of permission marketing, Clickdough.com, Getpaid4.com, and Surf-to-get-paid.com built customer lists of millions of people who are happy to receive advertising messages whenever they are on the Web. These customers are paid $0.50 an hour to view messages while they do their normal surfing. They may also be paid $0.10 an hour for the surfing time of any friends they refer to the above sites. The sites charge advertisers for space in the view bar on the user screens, but instead of pocketing all the money they collect, they split it with customers.

Viral marketing.   The customer referrals at AllAdvantage are an example of one type of viral marketing. **Viral marketing** refers to online word-of-mouth marketing. The main idea in viral marketing is to have people forward messages to friends, asking them, for example, to "check this out." A marketer can distribute a small game program, for example, that comes embedded with a sponsor's e-mail that is easy to forward. By releasing a few thousand copies, vendors hope to reach many more thousands. Word-of-mouth marketing has been used for generations, but its speed and reach are multiplied many fold by the Internet. Viral marketing is one of the new models being used to build brand awareness at a minimal cost. It has long been a favorite strategy of online advertisers pushing youth-oriented products.

Examples abound: Viral marketing was used by the founder of Hotmail, which grew from zero to 12 million subscribers in just 18 months. It also was successfully used by Blueskyfrog.com to give away five free SMS cell phone messages for every friend you bring in. Within a few months, this Australian company had over a million subscribers.

Unfortunately, though, several e-mail hoaxes have spread via viral marketing. Also, a danger of viral advertising is that a destructive virus can be added to an innocent advertisement, related game, or message. However, when used properly, the innovative approach of viral marketing, known also as *advocacy marketing*, can be both effective and efficient.

Customizing ads.   There is too much information on the Internet for customers to view. So filtering the irrelevant information by providing customized ads can be beneficial to customers and advertisers alike. BroadVision's Web site (*broadvision.com*) is an example of a customized ad service platform. Software there enables a marketing manager to customize display ads based on users' profiles. (For an example of how to customize ads see the Rapport demos in *micromass.com*.) For even better reach to their intended audience, customized ads can be interactive.

Interactive advertising and marketing.   Conventional advertising is passive, targeted to mass audiences, and for that reason it may be ineffective. Therefore, all advertisers, whether online or not, attempt to customize their ads to special groups and, if possible, to individuals. A good salesperson is trained to interact with sales prospects, asking questions about the features they are looking for and handling possible objections as they come up. Online advertising comes closer to supporting this selling process than more traditional advertising media possibly can.

Ideally, in **interactive marketing**, advertisers present customized, one-on-one ads. The term *interactive* points to the ability to address an individual, to gather and remember that person's responses, and to serve that customer based on his or her previous, unique responses. When the Internet is combined with marketing databases, interactive marketing becomes a very effective and affordable competitive strategy. The keys to successful interactive marketing are discussed at the book's Web site.
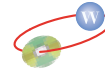
Attracting visitors to a site.   The following are examples of ways to attract visitors to a Web site.

- ***Making the top of the list of a search engine.*** Web sites submit their URLs to *search engines*. The search engine's intelligent program (called a spider) crawls through the submitted site, indexing all related content and links. Some lists generated by search engines includes hundreds or thousands of items. Users typically start by clicking on the first 10 or so items, and soon get tired. So, for best exposure, advertisers like to make the top of the list. How do they do it? A company can get to the top of a search engine's list merely by adding, removing, or changing a few sentences on its Web pages. By doing so, the Web designer may alter the way a search engine's program ranks its findings.

- ***Online events, promotions, and attractions.*** People generally like the idea of something funny or something free, or both. Contests, quizzes, coupons, and free samples are an integral part of e-commerce as much as, or even more than, they are in offline commerce. Running promotions on the Internet is similar to running offline promotions. These mechanisms are designed to attract visitors and to keep their attention. Examples include games, contests, monetary payments, and even free Internet access. For some specific examples of innovative ideas for online promotions and attractions, see the Web site.
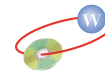
Electronic catalogs.   Printed catalogs have been a medium of advertising for a long time. Recently electronic catalogs on CD-ROMs and on the Web have been gaining popularity. The merchant's objective in using **online catalogs** is to advertise and promote products and services. From the customer's perspective, online catalogs offer a source of information that can be searched quickly with the help of special search engines. Also, comparisons involving catalog products can be made very effectively.

In the early days of online catalogs, most were replications of the text and pictures of printed catalogs. Today, electronic online catalogs are dynamic, customized, and integrated with selling and buying features such as electronic order taking and payment. The benefits and limitations of online catalogs are contrasted with those of paper catalogs in a Checklist at the books's Web site.
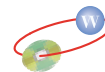
Customized catalogs.   A *customized catalog* is a catalog assembled specifically for a particular company, usually a regular customer of the catalog owner. It can even be tailored to individual consumers, in some cases. One way of doing this is to let the customers identify the parts of the public catalog that interest them; then, they do not have to deal with items they consider irrelevant.

Coupons online.   Finally, just as in offline advertising, shoppers can get discounts via coupons. You can gather any discount coupons you want by accessing sites like *hotcoupons.com* or *supermarkets.com*, selecting the store where you plan to redeem the coupons, and printing them. In the future, transfer of coupons directly to the virtual supermarket (such as *peapod.com* or *netgrocer.com*) will be available so that you can receive discounts on the items you buy there. Coupons also can be distributed via wireless devices, based on your location. As you approach a restaurant you may be offered a 15 percent discount electronic coupon to show to the proprietors when you arrive.

Customer Service

Whether an organization is selling to organizations or to individuals, in many cases a competitive edge is gained by providing superb customer service. In e-commerce, customer service becomes even more critical, since customers and merchants do not meet face-to-face.

Phases in the customer service life cycle.   Customer service should be approached as a business life cycle process, with the following four phases:

> **Phase 1. *Requirements.*** Assist the customer to determine needs by providing photographs of a product, video presentations, textual descriptions, articles or reviews, sound bites on a CD, and downloadable demonstration files. Also use intelligent agents to make requirements suggestions.

> **Phase 2. *Acquisition.*** Help the customer to acquire a product or service (online order entry, negotiations, closing of sale, and delivery).

> **Phase 3. *Ownership.*** Support the customer on an ongoing basis (interactive online user groups, online technical support, FAQs and answers, resource libraries, newsletters, and online renewal of subscriptions).

> **Phase 4. *Retirement.*** Help the client to dispose of a service or product (online resale, classified ads).

Many activities can be conducted in each of these phases. For example, when an airline offers information such as flight schedules and fare quotes on its Web site, it is supporting phases 1 and 2. Similarly, when computer vendors provide electronic help desks for their customers, they are supporting phase 3. Dell will help you to auction your obsolete computer, and Amazon.com will help you to sell used books, activities that support phase 4.

> ### EXAMPLE

www.fidelity.com

Fidelity Investments offers financial information and news.   Fidelity Investments provides investors with "the right tools to make their own best investment decisions." The site has several sections, which include daily updates of financial news, information about Fidelity's mutual funds, material for interactive investment and retirement planning, and brokerage services. This is an example of support given to phase 1 in the online selling of services. The site also helps customers buy Fidelity's products (phase 2), handle their accounts (phase 3), and sell the securities (phase 4). ●

Facilitating customer service.   Several tools are available for facilitating online customer service:

- ***FAQs.*** Companies provide online answers to questions customers ask most.
- ***E-mail.*** Companies can send confirmations, product information, and instructions to customers. They can also take orders, complaints, and other inquiries.

- **Tracking capabilities.** Customers can track the status of their orders, services (such as FedEx shipments, banking or stock-trading activities), or job applications.
- **Personalized Web pages.** Customers build individualized pages at the vendor's site; customized information can be provided there.
- **Chat rooms.** Customers can interact with each other and with the vendor's personnel, who monitor the chat room.
- **Web-based call centers.** A comprehensive communication center takes customers' inquiries in any form they come (fax, telephone, e-mail, letters) and answers them quickly and automatically, whenever possible. Customers can also interact with the vendor and get quick problem resolution.

An application of Web-based call centers is becoming very popular, as shown in IT's About Business 9.2 about Canadian Tire's integrated call center.

IT's About Business

www.canadiantire.com

Box 9.2: Canadian Tire provides superb customer service via integrated call center

Canadian Tire Acceptance Ltd. (CTAL), the financial services division of the $5 billion Canadian Tire Corp., Ltd., serves over four million of Canadian Tire's credit card holders. In 1998, CTAL became the primary call center of the company, handling telephone, fax, e-mail, and Internet contacts. It increased sales, enhanced customer retention, and eliminated annoying and time-consuming call transfers, ensuring that customers are treated on an individual basis. "The call center is a strategic asset," says Mary Turner, vice president of customer services at CTAL. "This is our main point of contact with the customer. We have to maximize it."

Canadian Tire's call center is actually 10 call centers, each dealing with a different area (general information, retail, wholesale, service, etc.), or with a geographical zone. The demands are heavy. CTAL's 10 call centers operate 24 hours a day, 7 days a week, and they respond to more than 16 million calls each year. Call center representatives are expected to provide personalized service while handling a diverse set of customer needs—dealing with more than 200 types of customer requests, for example. CTAL's new system ensures that any representative can resolve any customer need without handing it off to another department.

CTAL has several key business objectives:

- Greater customer loyalty to Canadian Tire as a result of enhanced service
- Personalized customer attention and fewer transfers from one service agent to another
- Rapid introduction of new products or changes to existing business services

- Reduced training requirements for customer-service representatives
- Integration of all customer touch points via a single system capable of handling Web, e-mail, and call center interactions

"When we began the project, we took a look at our operations and saw too many independent call centers," Turner continues. "It seemed that every time we introduced a new product or services, we set up a new call center. We decided to streamline operations to make it possible for customers to reach the right representative whenever they called."

One of the call center's major capabilities is to build customer profiles and act on them when needed, providing one-to-one relationships. The call center can be viewed as an *interaction center* that immediately recognizes the individual customer and integrates data that reflect on the relationship. While the Web-based call center is still new, it is expected to pay for itself quickly.

Sources: Compiled from D. Peppers et al., *The One to One Fieldbook* (New York: Currency & Doubleday, 1999) and *canadiantire.ca* (2001).

Questions

1. Why does the company have several call centers?
2. What are the capabilities of the Web-based system?
3. What are the advantages of the Web-based system?

Before you go on . . .

1. Describe the EC consumer behavior model.

2. Describe EC market research and its tools.

3. Describe the major support areas of intelligent agents in EC.

4. Describe online advertising, its methods, and benefits.

5. List the phases of the customer service cycle.

9.4 B2B AND COLLABORATIVE COMMERCE APPLICATIONS

In business to business (B2B) applications, the buyers, sellers, and transactions involve only organizations. Business-to-business comprises the majority of EC volume. It covers a broad spectrum of applications that enable an enterprise to form electronic relationships with its distributors, resellers, suppliers, customers, and other partners. By using B2B, organizations can restructure their supply chain and partnerships.

There are several business models for B2B applications. The major ones are sell-side marketplace, buy-side marketplace, and electronic exchanges.

Sell-Side Marketplace

In the **sell-side marketplace** model, organizations attempt to sell their products or services to other organizations electronically. This model is similar to the B2C model in which the buyer is expected to come to the seller's site (or to an electronic mall), view catalogs, and place an order. In this case, however, the buyer is an organization that may be a regular customer of the seller.

The key mechanisms in the sell-side model are: (1) electronic catalogs that can be customized for each large buyer, and (2) forward auctions. Sellers such as Dell Computer (*dellauction.com*) use this method extensively. In addition to auctions from their Web site, organizations can use auction sites, such as eBay, to liquidate items. Companies such as freemarkets.com are helping organizations to auction obsolete and old assets and inventories (asset recovery programs).

This model is used by thousands of companies and is especially powerful for companies with superb reputations. Examples are major computer companies such as Cisco, IBM, and Intel. The seller in this model can be either a manufacturer, a distributor (e.g., *bigboxx.com* and *marshall.com*), or a retailer. In this model EC is used to increase sales, reduce selling and advertising expenditures, increase delivery speed, and reduce administrative costs. An example is provided in an IT's About Business box (about Cisco Systems) at our Web site.
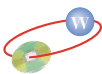
Buy-Side Marketplace

The **buy-side marketplace**, also known as **e-procurement**, is a model in which EC technology is used to streamline the purchasing process in order to reduce the cost of items purchased, the administrative cost of procurement, and the purchasing cycle time. A major method of e-procurement is a reverse auction. Here, a company that wants to buy items places a *request for quotation (RFQ)* on its Web site or in a bidding

marketplace. Once RFQs are posted, suppliers (usually preapproved ones) submit bids electronically. The bids are routed via the buyer's intranet to the engineering and finance departments for evaluation. Clarifications are made via e-mail, and the winner is notified electronically. Such auctions attract larger pools of willing suppliers. General Electric (*gegxs.com*), for example, saves 10 to 15 percent on the cost of the items placed for bid and up to 85 percent on the administrative cost; in addition, cycle time is reduced by about 50 percent. The seller in the buy-side model can be either a manufacturer, a distributor, or a retailer.

Procurements using a third-party buy-side marketplace model are especially popular for medium and small organizations. However, General Electric has organized a market for small companies that use GE's trading process network (TPN) to post the small companies' RFQs (*tpn.com*). These companies pay GE a fee for this service and for handling support services like payments. In this capacity, GE acts as an intermediary.

Another option of e-procurement that is popular with small companies is **group purchasing**. In group purchasing, the requirements of many buyers are aggregated so that they make up a large volume. Once buyers' orders are aggregated, they can be placed on a reverse auction, or a volume discount can be negotiated. The orders of small buyers usually are aggregated by a third-party vendor, such as *shop2gether.com*.

Buyer's internal marketplace.   In this variation of the buy-side model, suppliers' catalogs are aggregated in a master catalog on the buyer's server, so that the company's purchasing agents can shop more conveniently. In the *buyer's internal marketplace* model, a company has many suppliers, but the quantities purchased are relatively small. This model is most appropriate for large companies and for government entities. It is mostly suitable for indirect *maintenance, replacement, and operations (MRO)* items, such as office supplies, as shown in the following example.

EXAMPLES

MasterCard charges supplies in company catalog.   MasterCard International buys large numbers of MRO items from many vendors. Once prices are agreed upon, the items are placed on MasterCard's internal procurement system. About 10,000 items, from dozens of vendors, are listed in the company's e-catalog. Over 2,300 purchasers at various MasterCard offices around the world can view the catalog, select the appropriate products, electronically place orders, and pay with a MasterCard procurement card. Use of the buyer's internal marketplace model enabled MasterCard to consolidate buying activities from many corporate locations and to reduce administrative processing costs. Also, procurement cycle time was reduced in many cases from 20 days to just one. Since MasterCard now has a smaller supplier base from which to buy, the quantities purchased from each vendor are larger, so MasterCard has been able to negotiate larger purchase discounts. Finally, the system can be used to control the budget of each corporate buyer. ●

www. mastercardinternational. com

Electronic Exchanges

Electronic exchanges (in short, **exchanges**) refer to e-marketplaces in which there are many sellers and many buyers. Sometimes these are referred to as *e-hubs*, or *portals*. There are basically four types of exchanges:

- *Vertical distributors.* These are B2B marketplaces where *direct materials* (materials that are inputs to manufacturing) are traded in an environment of long-term relationship, known as **systematic sourcing**. Examples are *plasticsnet.com* and *plasticscommerce.com*. Both fixed and negotiated prices are common in this type of exchange.

- **Vertical exchanges.** Here direct and indirect materials in one industry are purchased on an as-needed basis. Buyers and sellers may not even know each other. *ChemConnect.com* and *e-steel.com* are online examples. In vertical exchanges, prices are continually changing, based on the matching of supply and demand. This is called **dynamic pricing**. Auctions are typically used in this kind of B2B marketplace, sometimes done in private trading rooms, as shown in IT's About Business 9.3.

- **Horizontal distributors.** These are many-to-many e-marketplaces for indirect (MRO) materials, when systematic sourcing is used. Prices are fixed or negotiated. Examples are *globalsources.com* and *alibaba.com*.

- **Functional exchanges.** Here, needed *services* such as temporary help or extra space are traded on an as-needed basis. Prices can be negotiated, and they vary depending on supply and demand.

All types of exchanges offer diversified services, ranging from payments to logistics. Vertical exchanges are frequently owned and managed by a group of big players in an industry. For example, Marriott and Hyatt own a procurement consortium for the hotel

IT's About Business   *www.chemconnect.com*

Box 9.3: Chemical companies "Bond" at ChemConnect

Buyers and sellers of chemicals and plastics today can meet electronically in a large Internet marketplace called ChemConnect (*chemconnect.com*). Using this marketplace, global industry leaders such as British Petroleum, Dow Chemical, BASF, Hyundai, Sumitomo, and many more can reduce trading cycle time and cost, and can find new markets and trading partners around the globe.

ChemConnect provides a *public trading marketplace* and an information portal to more than 12,000 members in 125 countries. In 2001, over 60,000 products were traded in this public e-marketplace. This is an unbiased, third-party-managed market that offers three trading places:

- A public exchange floor. Here, members can post items for sale or bid anonymously for all types of products, at market prices. A large catalog displays by category offers to sell and requests to buy, including starting prices and shipping terms. If the prices are not established, buyers can bid by changing the starting prices.

- The commodities floor. This space allows the more than 200 top producers, intermediaries, and buyers to buy, sell, and exchange commodity products online, in real time, through regional trading hubs.

- Corporate trading rooms. In these ChemConnect-managed private online virtual rooms, members can conduct private auctions and negotiate long-term contracts or spot deals (one-time, as-needed

purchases), in real time. The trading room allows companies to make money-saving deals in 30 minutes that might take weeks or months with a manual method. Companies can host a private auction in a trading room as they negotiate simultaneously online with suppliers or buyers on the public exchange floor.

In all three of the trading mechanisms, up-to-the-minute market information is available and can be translated into 30 different languages. Members pay transaction fees only for successfully completed transactions. Business partners provide several support services, such as financial services for the market members.

The marketplace works with certain rules and guidelines that ensure an unbiased approach to the trades. There is full disclosure of all legal requirements, payments, trading rules, etc. (Click on "Legal info and privacy issues" at the Web site.) ChemConnect is growing rapidly, adding members and trading volume.

Source: chemconnect.com.

Questions

1. What are the advantages of such exchange?
2. Why are there three trading places?
3. Why does the exchange provide information portal services?
4. Why are the rules needed?

industry, and Texaco and Chevron own an energy e-marketplace. The vertical e-marketplaces offer services particularly suited to the particular e-community they serve.

Since B2B activities involve many companies, specialized network infrastructure is needed. Such infrastructure works either as an EDI or as extranets. (We will return to the topic of EC infrastructure in Section 9.6.)

In addition, business-to-business EC can involve much more than buying and selling between companies. One area of considerable activity is collaborative commerce.

Collaborative Commerce

Collaborative commerce (c-commerce) refers to non-selling/buying EC transactions between and among organizations. An example would be a company that it is collaborating electronically with a vendor that is designing a product or part for this company. C-commerce implies communication, information sharing, and collaboration, done electronically by means of tools such as groupware (Chapter 4) and specially designed EC collaboration tools. Let's look at some areas of collaboration.

- *Retailer-suppliers.* Large retailers, such as Wal-Mart, collaborate with their major suppliers to conduct production and inventory planning and forecasting of demand. Such collaboration enables the suppliers to improve their production planning as well.

- *Vendor-managed inventory.* This is a service provided by large suppliers, such as Procter & Gamble, to large retailers, such as Wal-Mart, in which the vendor monitors and replenishes the inventory for the retailer. In some cases, vendor-managed inventory programs now are available to small retailers as well

- *Product design.* All the parties that are involved in a specific product design share data and use special tools. One such tool is *screen sharing,* in which several people can work on the same screen while they are in different locations. This enables suppliers to provide quick feedback when they see the drawing of a product the customer wants made. Changes made in one place are visible to others instantly. Documents that can be processed through collaborative product design include blueprints, bills of material, accounting and billing documents, and joint reports and statements.

- *Collaborative manufacturing.* Manufacturers can create dynamic collaborative networks. For example, Original Equipment Manufacturers outsources components and subassemblies to suppliers, which in the past often created problems in coordination, work flows, and communication. Collaborative tools have improved the outsourcing process, and are especially useful during changes, which may be initiated by any partner of the supply chain.

Various business activities and functions lend themselves to collaborative processes: (1) **planning and scheduling:** material position, visibility forecasts, advanced planning, forecasting, and capacity management; (2) **design:** mechanical, electrical, test, and others; also component selection and design of and for the supply chain; (3) **new product information:** design validation, bill-of-material management, prototyping, production validation, and testing; (4) **product content management:** generating changes, change impact assessment, and phase-in of changes; (5) **order management:** order capture and configuration, order tracking, and delivery arrangements; and (6) **sourcing and procurement:** approving vendors, reverse auctions (tendering), supplier selection, strategic sourcing, and component selection. Specialized tools for c-commerce applications are provided by vendors such as *glyphica.com, allegis.com, lotus.com,* and *ca.com.*

The major benefits of c-commerce are smoothing the supply chain, reducing inventories along the supply chain, reducing operating costs, increasing customer satisfaction, and increasing a company's competitive edge. The challenges faced by the

collaborators are software integration issues, technology selection, trust and security, and resistance to change and collaboration.

Before you go on . . .

1. Briefly describe the sell-side marketplace.

2. Describe the various methods of e-procurement.

3. Describe how forward and reverse auctions are used in B2B commerce.

4. Describe the role of exchanges in B2B.

5. Describe c-commerce and its various activities.

9.5   INNOVATIVE APPLICATIONS OF E-COMMERCE

While B2C and B2B received most of the media attention since 1995, several other EC innovative applications are starting to play a major role in e-commerce. These are e-government, mobile commerce, consumer-to-consumer e-commerce, and intrabusiness and business-to-employees e-commerce.

E-Government

As e-commerce matures and its tools and applications improve, greater attention is given to its use to improve the business of public institutions and governments (country, state, county, city, etc).

E-government is the use of Internet technology in general and e-commerce in particular to deliver information and public services to citizens, business partners and suppliers, and those working in the public sector. It is also an efficient way of conducting business transactions with citizens and businesses and within the governments themselves. E-government can make government more transparent to citizens and improve delivery of public services. For other potential benefits of e-government, see the checklist at our Web site.

E-government applications can be divided into three major categories: *government-to-citizens (G2C)*, *government-to-business (G2B)*, and *government-to-government (G2G)*. Government agencies are increasingly using the Internet to provide various services to citizens. An example would be **electronic benefits transfer (EBT),** in which government transfers Social Security, pension, and other benefits directly to recipients' bank accounts or to smart cards. Governments also are using the Internet to conduct business with businesses (sell to or buy from). For example, electronic tendering systems, using reverse auctions, are becoming mandatory. Many governments are moving public services online. For a list of those offered by the government of Hong Kong, for example, see our Web site.
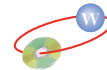
M-Commerce

M-commerce (mobile commerce) refers to the conduct of e-commerce via wireless devices. The number of mobile devices in use worldwide, according to the Gartner-Group, is projected to top 1.3 billion by 2004. Furthermore, these devices can be connected to the Internet, making it possible for users to conduct transactions from
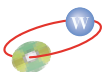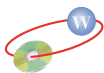
anywhere. In addition, many corporate employees are mobile, namely working at home, on clients' sites, or on the road. GartnerGroup projected that 30 to 50 percent of all employees in developed countries will be mobile by 2010. These employees need to collaborate and communicate with office employees and to access corporate data, rapidly and conveniently. Such a capability is provided by m-commerce.

The advantages of m-commerce.   Two main characteristics are driving the interest in m-commerce: mobility and reachability. *Mobility* implies that the Internet access travels with the customer. M-commerce is appealing because wireless offers customers information from any location. This enables employees to contact the office from anywhere they happen to be or customers to act instantly on any shopping impulse. *Reachability* means that people can be contacted at any time, which most people see as a convenience of modern life. (Of course, you can block certain times or certain messages.) These two characteristics—mobility and reachability—break the geographic and time barriers. As a result, mobile terminals such as a PDA (personal digital assistant) or a cell phone with Internet access can be used to obtain real-time information and to communicate from anywhere, at any time.

In addition, mobile devices make possible location-based commerce, also known as **l-commerce.** L-commerce delivers information about goods and services based on where you (and your mobile device) are located. For example, in San Francisco, NextBus service knows, by the use of global positioning systems (GPSs), where the buses are, in real time; when you call on your cell phone from a particular bus stop, the system will compute when the bus will actually arrive there. Other localization systems will find where you are located, and based on this information will send you advertisements for nearby vendors. For some representative applications of m-commerce, see the book's Web site.

EXAMPLE

I-MODE spreads m-commerce.   I-MODE is a pioneering wireless service that took Japan by storm in 1999 and 2000. With a few clicks of a handset, I-MODE users can conduct a large variety of m-commerce activities ranging from online stock trading and banking to purchasing travel tickets and booking karaoke rooms. You can also send and receive color images via I-MODE. The service was launched in February 1999, and it had over 29 million users by the end of 2001. I-MODE users can access train and bus timetables, guides to shopping areas, and automatic notification of train delays; get discount coupons for shopping and restaurants; purchase music online; send or receive photos; buy airline tickets; find information about best-selling books and then buy the books; and even receive Tamagotchi's characters, every day, for only $1 per month. I-MODE was taken international in late 2000. ●

www.nttdocomo.com/imode

Technology and limitations.   The implementation of m-commerce requires a multitude of infrastructures: hardware (cell phones, PDAs, screen phones, etc.), software (microbrowsers, operating systems, application software), and wireless transmission media (e.g., satellites). Some of the major limitations of m-commerce relating to these technologies are insufficient bandwith, lack of standard security protocols, high cost of 3G licenses, high power consumption, and possible health hazards.

Consumer-to-Consumer E-Commerce

An increasing number of individuals are using the Internet to conduct business or to collaborate with others. Auctions are by far the most popular C2C e-commerce activity. Some other C2C activities are:

- **Classifieds.** Individuals used to sell items by advertising in the classified section of the newspaper. Today, they are using the Internet for this purpose. Some classified services are provided free (see *classifieds2000.com*).

- **Personal services.** A variety of personal services are offered on the Internet, ranging from tutoring and astrology to legal and medical advice. Personal services are advertised in the classified areas, in personal Web pages, on Internet communities bulletin boards, and more. *Be very careful before you buy any personal services.* You need to be sure of the quality of what you buy.

- **Peer-to-peer (P2P) and bartering.** An increasing number of individuals are using the P2P services of companies such as Napster.com. Individuals can exchange on-line products and services as well.

Intrabusiness and Business-to-Employees E-Commerce

E-commerce can be done not only between business partners, but also within organizations. Such activity is referred to as *intrabusiness EC* or, in short, **intrabusiness**. Intrabusiness can be done between a business and its employees (B2E); among units within the business (usually done as c-commerce); and among employees in the same business (usually done as c-commerce).

Business to its employees (B2E) commerce.   Companies are finding many ways to do business with their own employees electronically. They disseminate information to employees over the intranet, for example. They also allow employees to manage their fringe benefits and take training classes, electronically. In addition, employees can buy discounted insurance, travel packages, and tickets to events on the corporate intranet, and they can electronically order supplies and material needed for their work. And many companies have electronic corporate stores that sell a company's products to its employees, usually at a discount.

E-commerce between and among units within the business.   Large corporations frequently consist of independent units, or *strategic business units* (SBUs), which "sell" or "buy" materials, products, and services to and from each other. Transactions of this type can be easily automated and performed over the intranet. An SBU can be considered as either a seller or a buyer. An example would be company-owned dealerships.

E-commerce between and among corporate employees.   Many large organizations allow employees to post classified ads on the company intranet, through which employees can sell and buy products and services to and from each other. This service is especially popular in universities, where it has been conducted since even before the commercialization of the Internet.


Before you go on . . .

1. Describe e-government and its benefits.

2. What makes m-commerce so appealing?

3. Describe some C2C activities.

4. Describe intrabusiness and B2E commerce.

9.6 INFRASTRUCTURE AND E-COMMERCE SUPPORT SERVICES

For e-commerce applications to succeed, it is necessary to provide them with all the needed support, as shown in Figure 9.1 (p.xxx). This is not a simple task because of the large number of issues to be considered and the large number of companies and government agencies that may be involved. Here we present some major issues in e-commerce support. First, an infrastructure must be in place. E-commerce transactions must be executable worldwide, without any delay or mistake. Some transactions involve several trading partners, requiring a more complex infrastructure. Second, electronic payment issues must be addressed. Payments need to be secure, convenient, fast, and inexpensive to process. Third, order fulfillment and related logistics must be in place. Several other services ranging from Web site content to security are needed. An example is a clearinghouse for paying royalties on intellectual property. Finally, appropriate planning and strategy that considers legal, technological, and other requirements is necessary. Some of these topics are the subject of this section.

E-Commerce Infrastructure

E-commerce infrastructure requires a variety of hardware, software, and networks. The major components are networks, Web servers, Web server support and software, electronic catalogs, Web page design, construction software, transactional software, and Internet access components. In addition, special software and sometimes hardware is needed for conducting auctions, e-procurement, and m-commerce. The key infrastructures that are needed to support electronic transactions, communication, and collaboration include: networks; Web servers and supporting software; electronic catalogs; Web page design software; transactional software; and Interent access components. For further description of these infrastructure components, see our Web site.
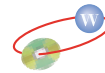
Electronic Payments

Payments are an integral part of doing business, whether in the traditional way or online. Unfortunately, in most cases traditional payment systems are not effective for EC.

Limitations of traditional payment instruments. Nonelectronic payment methods such as using cash, writing a check, sending a money order, or giving your credit card number over the telephone have several limitations in EC. First, cash cannot be used because there is no face-to-face contact. Second, if payment is sent by mail, it takes time for it to be received. Even if a credit card number is provided by phone or fax, it takes time to process it. Nor is it convenient to have to switch from the computer to the phone to complete a transaction. Also, not everyone accepts credit cards or checks, and some buyers do not have credit cards or checking accounts. Finally, contrary to what many people believe, it is less secure for the buyer to use the telephone or mail to arrange or send payment, especially from another country, than to finish a secured transaction on a computer.

Another issue is that many EC transactions are valued at only a few dollars or cents. The cost of processing such **micropayments** needs to be very low; you would not want to pay $5 to process a purchase valued at only a few dollars. The cost of making micropayments offline is too high. For all of these reasons, a better way is needed to pay in cyberspace. This better way is electronic payment systems.

Electronic payment systems.   As in the traditional marketplace, so too in cyberspace, diversity of payment methods allows customers to choose how they wish to pay. The following instruments are acceptable means of payment: electronic checks, electronic credit cards, electronic cash, smart cards, person-to-person payments, electronic funds transfer (EFT), e-wallets, and purchasing cards. Here we will look at each of these payment mechanisms. Later on we will see how to make them secure.

Electronic checks.   **Electronic checks (e-checks)** are similar to regular checks, and they are used mostly in B2B. Here is how they work:

Step 1. The customer establishes a checking account with a bank.

Step 2. The customer contacts a seller, buys a product or a service, and e-mails an encrypted electronic check.

Step 3. The merchant deposits the check in his or her account; money is debited from the buyer's account and credited to the seller's account.

Like regular checks, e-checks carry a signature (in digital form) that can be verified. Properly signed and endorsed e-checks are exchanged between financial institutions through electronic clearinghouses.

Electronic credit cards.   **Electronic credit cards** make it possible to charge online payments to one's credit card account. It is easy and simple for a buyer to e-mail her or his credit card number to the seller. The risk here is that hackers will be able to read the credit card number. Sender authentication is also difficult. Therefore, for security, only encrypted cards should be used. The data associated with *encrypted* cards are scrambled so that only those recipients with a key to the coding can retrieve the data. Credit card details can be encrypted by using the SSL protocol (described later) in the buyer's computer, which is available in standard browsers. When you buy a book from Amazon your credit card information and purchase amount are encrypted in your browser. When this information arrives at Amazon, it will be transferred automatically (encrypted) to VISA, Mastercard, and so forth, for authorization.

An enhanced credit card security system uses an intermediary for additional encryption. Unfortunately, this additional layer of protection adds to both the cost and the processing time. Also, a more secure protocol, called *SET*, can be used at a higher cost. (SET is described in detail later.)

Electronic cash.   Cash is the most prevalent consumer payment instrument. Traditional brick-and-mortar merchants prefer cash since they do not have to pay commissions to credit card companies and they can put the money to use as soon as it is received. Also, some buyers pay with cash because they do not have checks or credit cards, or because they want to preserve their anonymity. It is logical, therefore, that EC sellers and some buyers may prefer **electronic cash (e-cash)**. Electronic cash appears in two forms.

1. Electronic cash in a PC. The use of this approach involves a six-step process:

Step 1. The customer opens an account with a bank and receives special software for his or her PC.

Step 2. The customer buys "electronic money" from the bank by using the software. The customer's bank account is debited accordingly.

Step 3. The bank sends a secured electronic money note to this customer.

Step 4. The money is stored on the buyer's PC and can be spent in any electronic store that accepts e-cash.

Step 5. The software is also used to transfer the e-cash from the buyer's computer to the seller's computer.

Step 6. The seller can deposit the e-cash in a bank, crediting his or her regular or electronic account, or the seller can use the e-cash to make a purchase elsewhere.

2. **Electronic payment cards with e-cash.** Electronic payment cards have been in use for several decades. The best known are credit cards, which use magnetic strips that contain limited information, such as the card's ID number. A more advanced form of payment card, known as a stored-value money card, is the one that you use to pay for photocopies in your library, for transportation, or for telephone calls. It allows a fixed amount of prepaid money to be stored in quantities that can be decreased and sometimes increased. Each time you use the card, the amount is reduced. One successful example is used by the New York Metropolitan Transportation Authority (MTA), which operates buses, trains, interstate toll bridges, and tunnels. Nearly 5 million customers present cards to card reader machines on buses, subways, and road tollbooths each day. The Chicago Transit Authority (CTA) uses similar cards. Some of these cards are reloadable, and some are discarded when the money is depleted.

    Cards with stored-value money also can be purchased for Internet use. You enter a third-party Web site and you provide an ID number and a password, much as you do when you use a prepaid phone card. The money can be used only in participating stores.
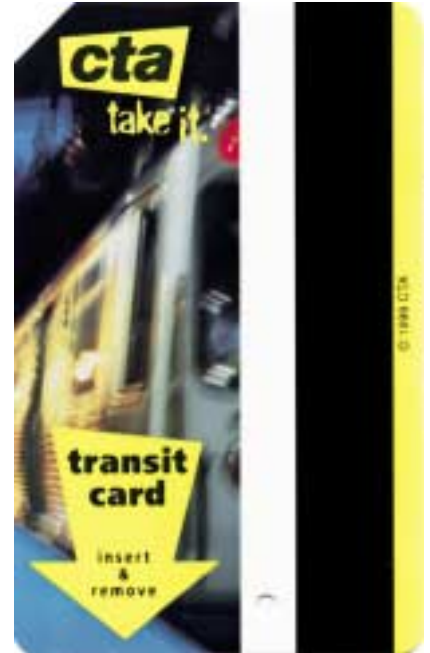
An electronic payment card from the Chicago Transit Authority (CTA).
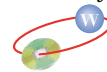
Smart cards.   Although some people refer to stored-value cards as smart cards, they are not really the same. True **smart cards** contain a microprocessor (chip) and can store a considerable amount of information (more than 100 times that of a stored-value card) and can conduct processing. Such cards are multipurpose, as shown in the Takashimaya Inc. example at our Web site.

    Advanced smart cards have the ability to transfer funds, pay bills, buy from vending machines, or pay for services such as those offered on television or PCs. Money values can be loaded at ATMs, kiosks, or from your PC. For example, the VISA Cash Card allows you to buy goods or services at participating gas stations, fast-food outlets, pay phones, discount stores, post offices, convenience stores, coffee shops, and even movie theaters. Smart cards are ideal for micropayments. Smart cards can also be used to transfer benefits from companies to their employees, as when retirees get their pension payments, and from governments that pay citizens different entitlements. The money is transferred electronically to a smart card at an ATM, kiosk, or PC.

Person-to-person (P2P) payment **Person-to-person (P2P) payments** is one of the newest and fastest-growing payment schemes. They enable the transfer of funds between two individuals for a variety of purposes like repaying money borrowed from a friend, sending money to students at college, paying for an item purchased at an online auction, or sending a gift to a family member. One of the first companies to offer this service was PayPal (*paypal.com*). PayPal claimed, in late 2001, to have 8 million customer accounts, handling 25 percent of all eBay transactions and funneling $5 billion in payments through its servers annually. Although PayPal had not made a profit by fall 2001, this kind of business activity has drawn the attention of a number of other companies who are trying to get in on the action. Citibank C2IT (*c2it.com*), AOL QuickCash (*aol.com*), One's Bank eMoneyMail, Yahoo! PayDirect, and WebCertificate (*webcertificate.com*) are all PayPal competitors.

Virtually all of these services work in a similar way. Assume you want to send money to someone over the Internet. First, you select a service and open up an account with the service. Basically, this entails creating a user name, a password, giving them your e-mail address, and providing the service with a credit card or bank account number. Next, you add funds from your credit card or bank account to your P2P account. Once the account has been funded you're ready to send money. You access PayPal (for example) with your user name and password. Now you specify the e-mail address of the person to receive the money, along with the dollar amount that you want to send. An e-mail is sent to the payee's e-mail address. The e-mail will contain a link back to the service's Web site. When the recipient clicks on the link, he or she will be taken to the service. The recipient will be asked to set up an account to which the money that was sent will be credited. The recipient can then credit the money from this account to either his or her credit card or bank account. The payer pays a small amount (around $1) per transaction.

Electronic funds transfer. **Electronic funds transfer (EFT)** is the electronic transfer of money to and from financial institutions using telecommunication networks. EFT is now widely used—with funds, debits and credits, and charges and payments electronically routed via clearinghouses among banks and between banks and customers. Examples of EFT include: interbank transactions around the globe; payment of university tuition using an ATM; direct deposit of salaries in employees' accounts; and payment of mortgages, utility bills, and car payments through monthly bank account deductions.

EFT is fast; it reduces delays associated with sending hardcopy documents, and it eliminates returned checks. It has become the only practical way to handle the large volume of financial transactions generated daily in the banking industry. EFT-based ATMs are increasingly available in shopping centers and business areas, allowing individuals to make deposits, withdrawals, and money transfers 24 hours a day.

Electronic wallets. Most of the time when you make a purchase on the Web you're required to fill out a form with your name, shipping address, billing address, credit card information, and so on. Doing this a few times is fine, but having to do it every time you shop on the Web is an annoyance. Some merchants solve the problem by having you fill out a form once and then saving the information stored on their servers for later use. For instance, this is what Amazon.com has done with its "one-click" feature. Of course, even if every merchant provides a "one-click" feature, you would still have to set up an account with every merchant.

One way to avoid the problem of having to repeatedly fill out purchase information, while at the same time eliminating the need to store the information on a merchant's server, is to use an **electronic wallet (e-wallet)**. An e-wallet is a software component that is downloaded to a user's PC and in which the user stores credit card numbers and other personal information. When the user shops at a merchant who accepts the e-wallet, the user can perform one-click shopping, with the e-wallet automatically filling in the necessary information. Credit card companies like Visa and MasterCard offer e-wallet services, as do Yahoo!, America Online (called Quick Checkout), and Microsoft (Passport). Of these, Yahoo! currently has the largest number of merchant participants (over 10,000). As of 2001, many banks around the world offer e-wallet service.

Purchasing cards. In some countries, such as the U.K., United States, and Hong Kong, companies are paying other companies by means of *purchasing cards*. Unlike credit cards, where credit is provided for 30 to 60 days for free before payment is made to the merchant, payments made with purchasing cards are settled within a

week. Purchasing cards are used for unplanned B2B purchases, and corporations generally limit the amount per puchase (usually $1,000 to $2,000). Purchasing cards can be used on the Internet much like regular credit cards.

Security in Electronic Payments

Two main issues need to be considered under the topic of payment security: what is required in order to make EC payments safe, and the methods that can be used to do it.

Security requirements.   Security requirements for conducting EC are:

1. *Authentication.* The buyer, the seller, and the paying institutions must be assured of the identity of the parties with whom they are dealing.
2. *Integrity.* It is necessary to ensure that data and information transmitted in EC, such as orders, reply to queries, and payment authorization, are not accidentally or maliciously altered or destroyed during transmission.
3. *Non-repudiation.* Merchants need protection against the customer's unjustified denial of placing an order. (Such denial is called *repudiation.*) On the other hand, customers need protection against merchants' unjustified denial of payments made.
4. *Privacy.* Many customers want their identity to be secured. They want to make sure others do not know what they buy. Some prefer complete anonymity, as is possible with cash payments.
5. *Safety.* Customers want to be sure that it is safe to provide a credit card number on the Internet.

Security protection.   Several methods and mechanisms can be used to fulfill the security requirements. One of the primary mechanisms is encryption, which is often part of the most useful security schemes.

Encryption.   **Encryption** is a process of making messages indecipherable except by those who have an authorized decryption key. The key is a code composed of a very large collection of letters, symbols, and numbers. For example, the letter "A" might be coded as: ABQ8iF 1 73 Rjbj / 83 ds 1 22 m 3 3 SP 5 Qqm2z. Every letter and number in the encrypted data would have similarly complex coding, which may include as many as 128 characters for each letter or number. The newer types of keys include graphics as well. Two basic encryption methods exist—those that use one key and those that use two keys. A third method combines the two.

- *Single-key encryption.* In early encryption technologies only one key was used. The sender of the electronic message (or payment) encrypted the information with a key. The receiver used an identical key to decrypt the information to a readable form. Therefore, the same code had to be in the possession of both the sender and the receiver. This created problems. For example, if a key were transmitted electronically and intercepted illegally, it could have been used to read all encrypted messages or to steal money. Since keys are changed frequently, the problem becomes repetitive.

- *Two-key encryption.* This method uses two different keys. One of the keys is called *public*, the other one, *private*. Many people may know the **public key** (it may be posted on a Web site, for example), but only its owner knows the **private key**. Every user of the system (which might be an individual or a business) has one private key and one public key. Encryption and decryption can be done with either key. However, if encryption is done with the public key, the decryption can be done only with the private key, and vice versa. For example: Amanda wants to be sure that Brian

will be the only one able to read her message. Amanda encrypts the message with Brian's public key. He decrypts it with his private key. There are several public key encryption algorithms; the most well known is RSA (*rsa.com*).

- **Public key infrastructure.** A **public key infrastructure (PKI)** is a security system based on use of the two keys, and also including a digital signature and a certificate. Let's look at an example: Clarissa (C) wants to assure David (D) that she is the author of a message. She encrypts the message with D's public key. In addition, C encrypts a signature with her own private key. The signature, called a **digital signature**, is attached to the original message (see Figure 9.3). D uses C's public key to decrypt the signature and his private key to read the message.

We still face one problem: How do we assure Clarissa that the public key she uses really belongs to David? And how can David be sure that the public key he has used to verify Clarissa's signature really belongs to Clarissa? Such assurances are provided by *electronic certificates*.

Electronic certificates.   **Electronic certificates** are issued by a trusted third party, called a *certificate authority (CA)*, in order to verify that a specific public key belongs to a specific individual (or organization). In addition to a name, a certificate may verify age, gender, and other attributes of the individual to whom the public key belongs. Also, if the CA is not well-known to the recipient of the certificate, it may be necessary to certify the CA by another, more trustworthy legal entity. Thus, there could be several levels of certification. Certificates are signed by the CA and are valid until an expiration date. A major issuer of certificates is VeriSign, Inc. (*verisign.com*). In many countries, especially where retail transactions are handled in association with the national postal system (called a *giro system*), a highly trusted certificate authority is the post office.

The PKI is the backbone of the various payment mechanisms describe earlier, including e-check, e-cash, and wireless payments. However, to ensure the acceptance of payments anywhere in the world, it is necessary to have some universal protocols.

Protocols.   As discussed in Chapter 6, a *protocol* is a set of rules and procedures that governs the transfer of information on the Internet. It is the software that also helps in authentication, security, and privacy. Two major payment protocols are used in e-commerce: SSL and SET.

- **Secure Socket Layer (SSL).** The SSL is the most common protocol used in EC. Its main capability is to encrypt messages. For example, any time you order merchandise from Wal-Mart, Amazon.com, and most other large vendors on the Internet, your order is encrypted automatically by the SSL in your computer browser *before* being sent over the Internet.
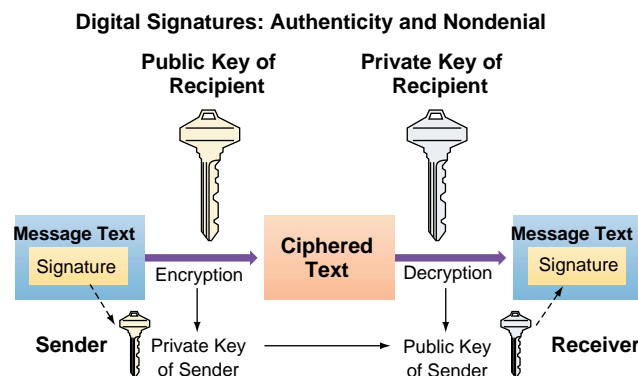

Figure 9.3 *Public key infrastructure: a message and digital signature.*

- **_Secure Electronic Transaction (SET) protocol._** A more comprehensive protocol for credit card processing is SET. It is not used much due to its cost and complexity. However, it is designed to allow consumers to shop anywhere as conveniently and securely as possible by incorporating digital signatures, certification, encryption, and an agreed-upon payment gateway (to banks). While SSL protects only integrity and safety, SET can provide protection against all security hazards.

Order Fulfillment

When a company sells direct to individual customers it is involved in various order fulfillment activities. It must:

1. Quickly find the products to be shipped, and pack them.
2. Arrange for the packages to be delivered speedily to the customer's door.
3. Collect the money from every customer, either in advance, by COD, or by individual bill.
4. Handle the return of unwanted or defective products.

It is very difficult to accomplish these activities both effectively and efficiently since a company may need to ship small packages to many customers, and do so quickly. For this reason, both online companies and click-and-mortar companies have difficulties in their B2C supply chain. Here we provide only a brief overview; a more detailed discussion is provided in Chapter 10.

Order fulfillment refers not only to providing customers with what they ordered and doing it on time, but also to providing all related customer service. For example, the customer must receive the assembly and operation instructions to a new appliance. (A nice example is available at *livemanuals.com.*) In addition, if the customer is not happy with a product, an exchange or return must be arranged. Order fulfillment is basically a part of the *back-office* operations.

During the last few years, e-tailers have faced continuous problems in order fulfillment, especially during the holiday season. The problems resulted in inability to deliver on time, delivery of wrong items, high delivery costs, and the need to heavily compensate unhappy customers. Several factors can be responsible for delays in deliveries. They range from inability to forecast demand accurately to ineffective supply chains. Some such problems exist also in offline businesses. One factor that is typical of EC, though, is that it is based on the concept of "pull" operations, which begin with an *order*, frequently a customized one. This is in contrast with traditional retailing that begins with a production to inventory, which is then "pushed" to customers. In the pull case it is more difficult to forecast demand, due to unique demands of customized orders and lack of sufficient years of experience. For solutions to order fulfillment problems, see Chapter 10. For many e-tailers, taking orders over the Internet could well be the easy part of B2C e-commerce. Fulfillment to customers' doors is the sticky part.

Before you go on . . .

1. List the major infrastructure items in EC.
2. List the various electronic payment mechanisms.
3. List the security requirements for EC.
4. Explain encryption for EC.
5. Describe the issues in EC order fulfillment.

9.7   LEGAL AND ETHICAL ISSUES IN E-COMMERCE

Ethical standards and their incorporation into law frequently trail technological in-novation. As with advancements in genetic medicine, for example, e-commerce is taking new forms and enabling new business practices that may bring numerous risks—particularly for individual consumers—along with their advantages. We encourage you to develop an awareness of the issues discussed in this section, and to carefully assess the risks involved in future e-commerce developments. Before we present these specific issues, we discuss the issues of market practices and consumer/seller protection.

Market Practices and Consumer and Seller Protection

When buyers and sellers do not know each other and cannot even see each other (they may even be in different countries), there is a chance that dishonest people will commit fraud and other crimes over the Internet. During the first few years of EC, the public witnessed many of these, ranging from the creation of a virtual bank that disappeared along with the investors' deposits, to manipulation of stock prices on the Internet. Unfortunately, fraudulent activities on the Internet are increasing.

Fraud on the Internet.   Internet fraud and its sophistication have grown as much and even faster than the Internet itself. As one example, in fall 1998 the SEC brought charges against 44 companies and individuals who illegally promoted stocks on computer bulletin boards, online newspapers, and investment Web sites. (You can see details on both settled and pending cases at *sec.gov.*) In most of these cases, stock promoters falsely spread positive rumors about the prospects of the compa-nies they touted. In other cases, the information provided might have been true, but the promoters did not disclose that they were paid to talk up the companies. Stock promoters specifically target small investors who are lured by the promise of fast profits.

Stocks are only one of many areas where swindlers are active. Auctions are espe-cially conducive to fraud, by both sellers and buyers. Other areas of potential fraud in-clude selling bogus investments and phantom business opportunities. Financial criminals now have access to far more people, mainly due to the availability of elec-tronic mail. The U.S. Federal Trade Commission has published a list of 12 scams most likely to arrive via e-mail, which is shown on this book's Web site.

There are several ways buyers can be protected against EC fraud. Representative methods are described next.

Buyer protection.   Buyer protection is critical to the success of any commerce where buyers do not see the sellers, and this is especially true for e-commerce. Some tips for safe electronic shopping are shown in Table 9.3. In short, do not forget that you have shopper's rights. Consult your local or state consumer protection agency for general information on your consumer rights.

Seller protection.   Sellers, too, may need protection. They must be protected against consumers who refuse to pay or who pay with bad checks, and from buyers' claims that the merchandise did not arrive. They also have the right to protect against the
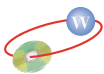
> ### Table 9.3   Tips for Safe Electronic Shopping
>
> - Look for reliable brand names at sites like Wal-Mart Online, Disney Online, and Amazon.com. Make sure that the sites are authentic before purchasing, by entering the site directly and not from an unverified link.
> - Search any unfamiliar selling site for the company's address and phone and fax numbers. Call up and quiz the employees about the sellers.
> - Check out the vendor with the local Chamber of Commerce or Better Business Bureau (*bbbonline.org*). Look for seals of authenticity such as TRUSTe.
> - Investigate how secure the seller's site is by examining the security procedures and by reading the posted privacy notice.
> - Examine the money-back guarantees, warranties, and service agreements.
> - Compare prices to those in regular stores. Too-low prices are too good to be true, and some "catch" is probably involved.
> - Ask friends what they know. Find testimonials and endorsements in community sites and well-known bulletin boards.
> - Find out what your rights are in case of a dispute.
> - Consult the National Fraud Information Center (*fraud.org*).
> - Check *consumerworld.org* for a listing of useful resources.

use of their name by others as well as use of their unique words and phrases, slogans, and Web address (trademark protection). Another seller protection applies particularly to electronic media: Sellers have legal recourse against customers who download without permission copyrighted software and/or knowledge and use it or sell it to others.

Ethical Issues

Many of the ethical and global issues related to IT apply also to e-commerce. These will be discussed in Chapter 15 and in the Ethics Primer at our Web site. Here we touch on issues particularly related to e-commerce.

Privacy.   Most electronic payment systems know who the buyers are; therefore, it may be necessary to protect the buyers' identities. Another privacy issue may involve tracking of Internet user activities by intelligent agents and cookies (see below). A privacy issue related to employees also involves tracking: Many companies monitor employees' e-mail and have installed software that performs in-house monitoring of Web activities; many employees don't want to feel like they are under the watchful eye of "Big Brother," even while at work.

Web tracking.   By using tracking software, companies can track individuals' movements on the Internet. Programs such as "cookies" raise a batch of privacy concerns. The tracking history is stored on your PC's hard drive, and any time you revisit a certain Web site, the computer knows it. Programs such as Cookie Cutter are designed to allow users to have some control over cookies. (For further discussion see *commerceNet.com*.)

Disintermediation.   The use of EC may result in the elimination of some of a company's employees as well as brokers and agents. This result is called **disintermediation**—that is, "eliminating the intermediary." The manner in which these

unneeded workers, especially employees, are treated may raise ethical issues, such as how to handle the displacement.

Legal Issues Specific to E-Commerce

Domain name.   Internet addresses are known as **domain names**. Domain names appear in levels. A top-level name is *wiley.com*, or *stanford.edu*. A second-level name will be *wiley.com/turban* or *ibm.com.hk* (for IBM in Hong Kong). Top-level domain names are assigned by central nonprofit organizations that check for conflicts and possible infringement of trademarks. Obviously, companies who sell goods and services over the Internet want customers to be able to find them easily, so the URL must match the company's name. Problems arise when several companies that have similar names compete over a domain name. For example, if you want to book reservations at a Holiday Inn hotel and you go to *holidayinn.com*, you get the Web site for a hotel at Niagara Falls, New York; to get to the hotel chain's Web site, you have to go to *holiday-inn.com*. Several cases of disputed names are already in court. An international arbitration organization is available as an alternative to the courts. The problem of domain names was alleviated somewhat in 2001 after several upper-level names were added to "com" (such as "info" and "coop").

Taxes and other fees.   Federal, state, and local authorities are scrambling to figure out how to get a piece of the revenue created electronically. The problem is particularly complex for interstate and international commerce. For example, some claim that even the state in which a server is located deserves to receive some sales tax from an e-commerce transaction. Others say that the state in which the seller is located deserves the entire sales tax (or value-added tax, VAT, in some countries).

In addition to sales tax, there is a question about where (and in some case, whether) electronic sellers should pay business license tax, franchise fees, gross-receipts tax, excise tax, privilege tax, and utility tax. Furthermore, how should tax collection be controlled? Legislative efforts to impose taxes on e-commerce are opposed by an organization called the Internet Freedom Fighters. Their efforts have been successful so far: At the time this edition was written, there was a ban on taxing business done on the Internet in the United States and many other countries (sales tax only), which could remain valid until fall 2006.

Copyright.   Intellectual property, in its various forms, is protected by copyright laws and cannot be used freely. Copyright issues and protection of intellectual property are discussed in detail in Chapter 15.

For other issues that are emerging as challenges to the existing legal system, see the book's Web site.
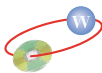
Before you go on . . .

1. Describe some of the potential fraud on the Internet.
2. Describe buyer protection in EC.
3. List some ethical issues in EC.
4. List the major legal issues of EC.

*WHAT'S IN **IT** FOR ME ?*

FOR THE ACCOUNTING MAJOR

ACC

Accounting personnel will be involved in several EC activities. Designing the ordering system and its relationship with inventory management requires accounting attention. Billing and payments also are accounting-related, as are determining cost and profit allocations. The implications of replacing paper documents by electronic means affects many of the accountants' tasks, especially the auditing of EC activities and systems. Finally, building a cost–benefit and justifications system of what products/services to take online and the creation of a chargeback system are critical to the success of EC.

FOR THE FINANCE MAJOR

FIN

The worlds of banking, securities and commodities markets, and other financial services are being reengineered due to EC. Online securities trading and its supporting infrastructure are growing more rapidly than any other EC activity. Many innovations already in place are changing the rules of economic and financial incentives for financial analysts and managers. Online banking, for example, does not recognize state boundaries and may create a new framework for financing global trades. Public financial information is accessible in seconds. All this changes the manner in which finance personnel will operate and excel.

FOR THE MARKETING MAJOR

MKT

A major revolution in marketing and sales is taking place due to EC. In addition to moving from a physical to a virtual marketplace, a radical transformation to one-on-one advertising and sales, and to customized and interactive marketing is happening. This revolution is affecting several marketing theories, ranging from consumer behavior to advertising strategies. Marketing channels are being combined, eliminated, or recreated. The EC revolution is creating new products and markets and significantly altering others. Digitization of products and services has many implications for marketing and sales. The direct producer-to-consumer channel is expanding rapidly, and with it the nature of customer service. As the battle for customers intensifies, the role of marketing and sales employees and managers is becoming the most critical success factor in many organizations. Online marketing can be a blessing to one company and a curse to another.

FOR THE PRODUCTION/OPERATIONS MANAGEMENT MAJOR

POM

EC is changing the manufacturing system from *product-push* mass production to *order-pull* mass customization. This change requires a robust supply chain, information support, and reengineering of processes that frequently involve suppliers and other business partners. Extranets are mushrooming, sometimes involving entire industries, and completely changing the logistics systems. In addition, the Internet and intranets help significantly reduce cycle times. Many production/operation problems that have persisted for years, such as complex scheduling and coordination as well as excess inventories, are being solved rapidly with the use of Web technologies. Using extranets, suppliers monitor and replenish inventories without the need for constant reorders. External and internal networks also provide for improved quality, and companies can now find and manage manufacturing operations in other countries much more easily. Also, the Web is reengineering procurement, by helping companies conduct electronic bids for parts and subassemblies, thus reducing cost. All in all, the job of the progressive production/operations manager is closely tied in with e-commerce.

HRM   **FOR THE HUMAN RESOURCES MANAGEMENT MAJOR**
Every activity and task performed by the HRM department may be affected by e-commerce. Recruiting, for example, is becoming Web-based for many companies, and benefits management and employee training are rapidly moving to intranets. And both collaborative commerce and e-government have the potential to break down traditional job descriptions and change job responsibilities.

SUMMARY

❶ **Describe electronic commerce, its scope, benefits, limitations, and types.**
E-commerce can be conducted on the Web, by e-mail, and on other networks. It is divided into the following major types: business-to-consumer, consumer-to-consumer, business-to-business, e-government, collaborative commerce, and intra-business. In each type you can find several business models. E-commerce offers many benefits to organizations, consumers, and society, but it also has limitations (technical and nontechnical). The current technical limitations are expected to lessen with time.

❷ **Describe the major applications and issues of business-to-consumer commerce, service industries in e-commerce, and electronic auctions.**
The major application areas of B2C commerce are in direct retailing, banking, securities trading, job markets, travel, and real estate. Several issues slow the growth of B2C, notably channel conflict, order fulfillment, and customer acquisition. B2C e-tailing can be pure (such as Amazon.com), or part of a click-and-mortar organization. Direct marketing is done via solo storefronts, in malls, and by using electronic auctions. The Internet provides an infrastructure for executing auctions at lower cost, and with many more involved sellers and buyers, including both individual consumers and corporations. F*orward* auctions and *reverse* auctions are the two major types.

❸ **Discuss the importance and activities of B2C market research, advertising, and customer service.**
Understanding consumer behavior is critical to e-commerce. Finding out what customers want can be done by asking them, in questionnaires, or by observing what they do online. Other forms of market research can be conducted on the Internet by using intelligent agents. Like any commerce, EC requires advertising support, much of which can be done online by methods such as banner advertisements and customized ads. Permission marketing, interactive and viral marketing, electronic catalogs, and online coupons offer ways for vendors to reach more customers. Customer service occurs before during and after purchasing, and during disposal of products.

❹ **Describe business-to-business and collaborative commerce applications.**
The major B2B applications are selling from catalogs and by forward auctions, buying in reverse auctions and in group purchasing, and trading in exchanges. In addition, most organizations employ collaborative commerce, usually along the supply chain.

❺ **Describe emerging EC applications such as e-government and mobile commerce.**
E-government commerce can take place between government and citizens or between businesses and governments. It makes government operations more effective and efficient. Using a wireless environment allows new mobile commerce applications as well as more convenient access to the Internet. EC also can be done

between consumers (C2C), but should be undertaken with caution. Finally, EC can be done within organizations (intrabusiness).

**❻ Describe the e-commerce infrastructure and support services, including payments and logistics.**

The major EC infrastructure components are networks, Web servers, Web tools, electronic catalogs, programming languages, transactional software, and security devices. Traditional, nonelectronic payment systems are insufficient or inferior for doing business on the Internet. Therefore, electronic payment systems are used. Electronic payments can be made by e-checks, e-credit cards, e-cash, smart cards, and EFT. Order fulfillment is especially difficult in B2C.

❼ Discuss legal and other implementation issues.

Protection of customers, sellers, and intellectual property is a major concern, but so are the value of contracts, domain names, and how to handle legal issues in a multicountry environment. Implementing e-commerce is not simple, and multiple financial, organizational, technological, and managerial issues must be addressed.

INTERACTIVE LEARNING SESSION

Enchance and test your knowledge of Chapter 2 using the interactive CD.
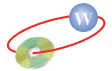
DISCUSSION QUESTIONS

1. Discuss the major limitations of e-commerce. Which of them are likely to disappear? Why?

2. Why is the electronic job market popular, especially among the high-tech professions?

3. Discuss the relationship between digital signature, certification, and PKI.

4. Distinguish between business-to-business forward auctions and buyers' bids for RFQs.

5. Some say that the major benefit of EC occurs in c-commerce. Why?

6. What is interactive advertising? What are its major benefits?

7. Discuss the benefits to sellers and buyers of a B2B exchange.

8. What are the major benefits of e-government?

9. Why is m-commerce attracting a great deal of attention?

10. Why are online auctions becoming popular?

PROBLEM-SOLVING ACTIVITIES

1. Assume you're interested in buying a car. You can find information about cars at *carpoint.com.* Go to *autoweb.com* or *autobytel.com* for information about financing and insurance. Decide what car you want to buy. Configure your car by going to the car manufacturer's Web site. Finally, try to find the car from *autobytel.com.* Write a report about your experience.

2. To find information about how to start a new EC business, go to *cio.com/forums/ec,* and to *financehub.com.* Also try e-business at the Netscape main menu, at "Starting EC business" at *google.com,* and *sellitontheweb.com.* Prepare a report.

3. Find information on the Web on:

   a. Getting an MBA degree at a virtual university.

   b. Going public on the Internet with stocks (IPO).

c. Business credit verification.

d. Electronic letter of credit.

4. Describe how public and private keys can be used in the following instances:

a. Person A wants to send a secure message to many people.

b. Person B received an e-check from person C. How can he be sure it is real?

c. You want to make sure that the credit card number you give to an e-tailer is secured. How can a PKI system help? If it cannot help, why not? What other approach can you use?

INTERNET ACTIVITIES

1. Access *etrade.com* and register for the Internet stock game. You will be bankrolled with $100,000 in a trading account every month. Try to win the game!

2. Access *hsbc.com.hk/hk/hexagon.default.htm* and *us.hsbc.com/business/payments/hexagon*, and find information about Hexagon. What are its advantages to the bank? To the customers?

3. Select one of the following destinations you want to visit: Australia, Nepal, Israel, Thailand, or Finland. Access *expedia.com* and *google.com*.

a. Find the lowest airfare.

b. Examine a few hotels by class.

c. Get suggestions of what to see.

d. Find out about local currency, and convert $1,000 to that currency with an online currency converter.

e. Compile travel tips.

f. Prepare a report.

4. Access *realtor.com*. Prepare a list of services available on this site. Then prepare a list of advantages derived by the users and advantages to realtors. Are there any disadvantages? To whom?

5. You can customize your own CD from existing music. Look at *musicmatch.com* or *cductive.com*. Examine the process, payments, etc. Try your own CD. Write a report.

6. Enter *alibaba.com*. Identify the site's capabilities. Look at the site's private trading room. Write a report.

7. Try to find a unique gift on the Internet for a friend. Several sites help you do it. (You might try *shopping.com* and *amazon.com*, for example.) Describe your experience with such a site.

8. Access the sites of Pizza Hut (*pizzahut.com*) and Domino's (*dominos.com*) to find what they are doing in your area with respect to take-home orders. Also check their distribution of coupons and any other strategic activities.

9. Access *peapod.com* and *netgrocer.com*. Compare and contrast the two companies.

10. Access *info.gov.hk* and find the major e-government initiatives. Look also at *ets.com.hk*.

11. Enter *campusfood.com*. Explore the site. Why is the site so successful? Could you start a competing one? Why or why not?

TEAM ACTIVITIES AND ROLE PLAYING

1. Have each team study a major bank with extensive EC strategy. For example, Wells Fargo Bank is well on its way to being a cyberbank. Hundreds of brick-and-mortar branch offices are being closed. In late 2001, the bank served more than a million cyberaccounts (see *wellsfargo.com*). Other banks are Citicorp, Netbank, and HSBC (Hong Kong). Each team should attempt to convince the class that its bank is the best.

2. Find 10 real-world applications of the major business-to-business models listed in the chapter. (Try success stories of vendors and EC-related magazines.) Find at least one in each category. Examine the problems they solve or the opportunities they exploit.

3. Amazon.com, the giant Internet bookstore, lists close to 10 million books. Its major competitor is Barnes & Noble online (*bn.com*). Assign one team to each company.

a. Find out how the company administers its book logistics.

b. Evaluate the customer services the site offers.

c. Examine how comparison agents such as *bestbookbuys.com* work.

d. Search press releases regarding the corporate strategy.

e. Convince the class that your company is better.

REAL-WORLD CASE

Supermarket Keeps It Fresh

The Business Problem Perishable goods such as fruit, vegetables, meat, and milk are significant in any retail marketplace, including online grocers such as start-up companies like Peapod.com (U.S.), and Green-grocer.com (Australia), which have found new ways to satisfy customers.

How is a well-established major grocer to respond? With huge investments in bricks-and-mortar stores, Woolworths of Australia found itself dealing with just this question. The grocery market in Australia is dominated by three major players: Coles-Meyers, Woolworths, and Franklins. Between them they control some 80 percent of the market. Franklins, which is Hong Kong–owned, takes a low-cost minimum service approach. The others, both Australian-owned, provide a full range of products, including fresh foods and prepared meals.

The IT Solution Woolworths' initial approach was to set up a standard Web site offering a limited range of goods, but excluding perishable items. This idea was tested in areas near major supermarkets, in response to the newly emerging approaches from entrepreneurs. If those organizations were allowed to take over a size-able segment of the market, regaining market share could be difficult. It was not long before management realized that this was not an attractive approach. Woolworths' staff had to walk the aisles, fill the baskets, pack the goods, and deliver them. For an organization that had optimized its supply chain in order to cut costs, here was a sudden explosion in costs. When gross margins are only 10 percent and net margins around 4 percent, it is very easy to become unprofitable. Furthermore, Woolworths had established its place in public perception as "the fresh-food people" by heavily promoting fruit and vegetables, freshly baked bread, meat, and prepared meals. If home shopping were to ignore these, Woolworths would be avoiding its strengths.

Woolworths' Homeshop, the second-generation home shopping site (*woolworths.com.au*), is designed with freshness in mind, and all the fresh food is available for delivery. Deliveries are arranged from major regional warehouses, rather than from every local store. There is a A$50 ($50 Australian) minimum order, a 7.5 percent surcharge for home delivery, and a A$6 delivery charge. These charges help in recovering the additional costs, but an average order around A$200 still returns little profit.

New users can register only if deliveries are possible to their postal address. On first use of the system, the customer is guided to find the products that they want, with suggestions from the list of best-selling items. Alternatively the customer can browse for items by category or search by keyword. Items are accumulated in the "shopping trolley" (cart). The first order can form a master list for future orders, as can subsequent orders.

After the customer has selected the required items, he or she selects "checkout," where the total value is computed and the customer confirms that delivery is required. Payment is made only at time of delivery using a mobile (cellular) electronic funds transfer (EFTPOS) terminal, and either a credit card or a debit card. In this way, precise charges can be made based on weight of meat or fish, as well as allowing for out-of-stock items. The customer has to set the delivery time, and will bear an additional charge if there is no one at home to accept the delivery.

The Results By the end of 2001, the competitive position of Woolworths agaianst the pure online grocers had been strengthened. The company was still losing money on its online endeavor, but its market share had increased significantly.

Source: Prof. Ernie Jordan, Macquarie Graduate School of Management, Sydney, Australia

Questions

1. Vist the Woolworths' Homeshop site (*woolworths.com.au*) and find new capabilities not mentioned above.

2. Who would be the target customers for an online grocer?

3. How easy is it to order regularly used items from this site? Suggest some improvements to the design.

4. How does this service disrupt the previously highly tuned supply chain?

5. Compare the advantages and disadvantages of the EFTPOS payment mechanism used with the more usual "credit card at time of order" payment method.

6. Should the newer startups such as greengrocer.com and peapod be threatened by this service? How about the traditional local grocery stores, such as Dewsons Wembley (*dewsons.com.au*)?

VIRTUAL COMPANY ASSIGNMENT

Extreme Descent Snowboards

As you begin to hang up your jacket, the phone on your desk begins to ring. You answer the phone to find Jacob March, the vice president of information systems for Extreme Descent Snowboards, at the other end of the line. Jacob is calling you from the cellular phone and explains that he wanted to talk to you before he boarded his next flight.

Jacob explains that he would like to have you attend an information technology training class to broaden your knowledge and internship experience. You should plan on taking this training class within the next two months. However, before you can go to the training class, you must submit a budget and itinerary.

Jacob suggests that you choose a training class from a company called Learning Tree International. The company has a Web site at *www.learningtree.com*. Jacob tells you to visit this site and pick a training class that you believe will be interesting and beneficial to you. Since you've been working so hard, he suggests that pick a training class in a city that you would like to visit.

However, before Jacob can authorize any funds for the training class, he will need to know which training class/location you have chosen, as well as your planned itinerary and budget. Your itinerary should detail your flight to the training class, the days you will be attending the training class, and your return flight. Moreover, you are to prepare a budget that includes the cost of the training class, airfare, hotel, as well as any other expenses you might incur. You are to determine the costs for your airfare and hotel using the World Wide Web. Jacob suggests that the travel section of the EDS intranet would be a good place to start, but you can use any other online service you find or currently use.