5. E-Business and E-Commerce

Hi-Life Corporation

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Minicases: (1) Freemarkets.com / (2) Restaurants.com

Appendix 5.1 EDI and Extranets

LEARNING OBJECTIVES
After studying this chapter, you will be able to:

1. Describe electronic commerce, its scope, benefits, limitations, and types.
2. Understand auctions and bartering.
3. Describe the major applications of business-to-consumer commerce, including service industries.
4. Discuss the importance and activities of B2C market research and online advertising.
5. Describe business-to-business applications.
6. Describe emerging EC applications such as intrabusiness and B2E commerce.
7. Describe e-government activities and consumer-to-consumer e-commerce.
8. Describe the e-commerce support services, specifically payments and logistics.
9. Discuss some ethicals and legal EC issues.
E-COMMERCE PROVIDES DECISION SUPPORT TO HI-LIFE CORPORATION

THE PROBLEM

Hi-Life Corporation owns and operates 720 convenience retail stores in Taiwan, where the company sells over 3,000 different products. A major problem is keeping a proper level of inventory of each product in each store. Overstocking is expensive due to storage costs and tying up money to buy and maintain the inventory. Understocking reduces sales and could result in unhappy customers who may go to a competitor.

To calculate the appropriate level of inventory, it is necessary to know exactly how many units of each product are in stock at specific times. This is known as stock count. Periodic stock count is needed since the actual amount in stock frequently differs from the theoretical one (inventory = previous inventory – sales + arrivals). The difference is due to “shrinkage” (e.g., theft, misplaced items, spoilage, etc.). Until 2002, stock count at Hi-Life was done manually. Using data collection sheets, where the products’ names were preprinted, employees counted the quantity of each product and recorded it on the data collection sheets. Then, the data were painstakingly keyed into each store’s PC. The process took over 21 person hours, in each store, each week. This process was expensive and frequently was delayed, causing problems along the entire supply chain due to delays in count and errors. Suppliers, employees, and customers were unhappy.

THE SOLUTION

The first phase of improvement was introduced in spring 2002. Management introduced a pocket PC (a handheld device) from Hewlett-Packard that runs on Microsoft Windows (Chinese version). The pocket PC, called Jornada, enables employees to enter the inventory tallies directly on the forms on the screen by hand, using Chinese characters for additional notes. Jornada has a synchronized cradle called Activesync. Once the pocket PC is placed in its cradle, inventory information can be relayed instantly to Hi-Life’s headquarters.

In the second phase of improvement, in 2003, a compact bar code scanner was added on in the pocket PC’s expansion slot. Employees now can scan the products’ bar codes and then enter the quantity found on the shelf. This new feature expedites data entry and minimizes errors in product identification. The up-to-the-second information enables headquarters to compute appropriate inventory levels, shipment schedules, and purchasing strategies, using decision support system formulas, all in minutes. The stores use the Internet (with a secured VPN) to upload data to the intranet at headquarters.

THE RESULTS

The results have been astonishing. Inventory taking has been reduced to less than four hours per store. Errors are down by more than 90 percent, order placing is simple and quick, and administrative paperwork has been eliminated. Furthermore, quicker and more precise inventory counts have resulted in lower inventory levels and in shorter response times for changes in demand. Actually, the entire product-management process became more efficient, including purchasing.
stocking, selling, shelf-price audit and price checks, re-ticketing, discontinuance, and customer inquiries.

The employees like the new electronic commerce-based system too. It is very user friendly, both to learn and to operate, and the battery provides at least 24 hours of power, so charging can be done after hours. Finally, Hi-Life’s employees now have more time to plan, manage, and chat with customers. More important, faster and better decisions are enabled at headquarters, contributing to greater competitiveness and profitability for Hi-Life.

Sources: Compiled from hp.com/jornada jornada, and from microsoft.com/asia/mobile (May 2002).

LESSONS LEARNED FROM THIS CASE

The output of an information system is only as good as the inputted data. When data are inaccurate and/or delayed, the decisions that use the data are not the best, as in Hi-Life’s old system, which resulted in high inventories and low customer satisfaction. The solution described in this case was provided by an electronic-commerce system that expedited and improved the flow of information to the corporate headquarters. Electronic commerce (EC), which is the subject of this chapter, describes the process of buying, selling, transmitting, or exchanging products, services, and information via computerized networks, primarily by the Internet (see Turban et al., 2004). This case illustrates an intrabusiness application, involving employees, and it is referred to business-to-employees (B2E) e-commerce. There are several other types of EC, and they all are the subject of this chapter. We also provide here an overview of the EC field and comment on its relationship to other information systems.

5.1 OVERVIEW OF E-BUSINESS AND E-COMMERCE

Electronic commerce (EC, or e-commerce) describes the process of buying, selling, transferring, or exchanging products, services, and/or information via computer networks, including the Internet. Some people view the term commerce as describing only transactions conducted between business partners. When this definition of commerce is used, some people find the term electronic commerce to be fairly narrow. Thus, many use the term e-business instead. E-business refers to a broader definition of EC, not just the buying and selling of goods and services, but also servicing customers, collaborating with business partners, conducting e-learning, and conducting electronic transactions within an organization. Others view e-business as the “other than buying and selling” activities on the Internet, such as collaboration and intrabusiness activities.

In this book we use the broadest meaning of electronic commerce, which is basically equivalent to e-business. The two terms will be used interchangeably throughout the chapter and the remainder of the text.

PURE VERSUS PARTIAL EC. Electronic commerce can take several forms depending on the degree of digitization (the transformation from physical to digital) involved. The degree of digitization can relate to: (1) the product (service) sold, (2) the process, or (3) the delivery agent (or intermediary). Choi et al.
(1997) created a framework that explains the possible configurations of these three dimensions. A product can be physical or digital, the process can be physical or digital, and the delivery agent can be physical or digital. In traditional commerce all three dimensions are physical, and in pure EC all dimensions are digital. All other combinations include a mix of digital and physical dimensions. If there is at least one digital dimension, we consider the situation electronic commerce but only partial EC. For example, buying a shirt at Wal-Mart Online, or a book from Amazon.com is partial EC, because the merchandise is physically delivered by FedEx. However, buying an e-book from Amazon.com or a software product from Buy.com is pure EC, because the product, its delivery, payment, and transfer agent are all done online.

EC ORGANIZATIONS. Pure physical organizations (corporations) are referred to as brick-and-mortar (or old-economy) organizations, whereas companies that are engaged only in EC are considered virtual (or pure-play) organizations. Click-and-mortar (or click-and-brick) organizations are those that conduct some e-commerce activities, yet their primary business is done in the physical world. Gradually, many brick-and-mortar companies are changing to click-and-mortar ones (e.g., Wal-Mart Online).

INTERNET VERSUS NON-INTERNET EC. Most e-commerce is done over the Internet. But EC can also be conducted on private networks, such as value-added networks (VANs, networks that add communication services to existing common carriers), on local area networks (LANs), or even on a single computerized machine. For example, buying food from a vending machine and paying with a smart card or a cell phone can be viewed as EC activity.

E-commerce transactions can be done between various other parties, as follows:

- **Business-to-business (B2B):** In B2B transactions, both the sellers and the buyers are business organizations. The vast majority of EC volume is of this type.
- **Collaborative commerce (c-commerce):** In c-commerce, business partners collaborate electronically. Such collaboration frequently occurs between and among business partners along the supply chain (see Chapters 4 and 8).
- **Business-to-consumers (B2C):** In B2C, the sellers are organizations, and the buyers are individuals.
- **Consumers-to-businesses (C2B):** In C2B, consumers make known a particular need for a product or service, and suppliers compete to provide the product or service to consumers. An example is Priceline.com, where the customer names a product and the desired price, and Priceline tries to find a supplier to fulfill the stated need.
- **Consumer-to-consumer (C2C):** In C2C, an individual sells products or services to other individuals. (You also will see the term C2C used as “customer-to-customer.” The terms interchangeable, and both will be used in this book to describe individuals sells products and services to each other.)
- **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, which was illustrated in the opening case.
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 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 is executed in one or more business models, the method by which a company generates revenue to sustain itself. For example, in B2B one can sell from catalogs, or in auctions. The major business models of EC are summarized in Table 5.1. (Note that this is an expanded version

<table>
<thead>
<tr>
<th>EC Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online direct marketing</td>
<td>Manufacturers or retailers sell directly to customers. Very efficient for digital products and services. Can allow for customization.</td>
</tr>
<tr>
<td>Electronic tendering systems</td>
<td>Businesses conduct online tendering, requesting quotes from suppliers. Use B2B reverse auctions mechanism.</td>
</tr>
<tr>
<td>Name-your-own-price</td>
<td>Customers decides how much they are willing to pay. An intermediary (e.g., Priceline.com) tries to match a provider.</td>
</tr>
<tr>
<td>Find-the-best-price</td>
<td>Customers specify a need. An intermediary (e.g., Hotwire.com) compares providers and shows the lowest price. Customer must accept the offer in a short time or may lose the deal.</td>
</tr>
<tr>
<td>Affiliate marketing</td>
<td>Vendors ask partners to place logos (or banners) on partner’s site. If customers click, come to vendors, and buy, vendors pay commision to partners.</td>
</tr>
<tr>
<td>Viral marketing</td>
<td>Spread your brand on the Net by word-of-mouth. Receivers will send your information to their friends. (Be on the watch for viruses.)</td>
</tr>
<tr>
<td>Group purchasing (e-co-ops)</td>
<td>Aggregating the demands of small buyers to get a large volume. Then conduct tendering, or negotiate a low price.</td>
</tr>
<tr>
<td>Online auctions</td>
<td>Placing auctions of various types on the Internet. Very popular in C2C, but getting grounds in other types of EC.</td>
</tr>
<tr>
<td>Product customization</td>
<td>Using the Internet to self-configure products or services, price them, and then fulfill them quickly (build-to-order).</td>
</tr>
<tr>
<td>Electronic marketplaces and exchanges</td>
<td>Create virtual marketplaces (private or public) where transactions can be conducted in an efficient way (more information to buyers and sellers, less transaction cost).</td>
</tr>
<tr>
<td>Value-chain integrators</td>
<td>Aggregate information and package it for customers, vendors, or others in the supply chain.</td>
</tr>
<tr>
<td>Value-chain service providers</td>
<td>Provide specialized services in supply-chain operations such as providing logistics or payment services.</td>
</tr>
<tr>
<td>Information brokers</td>
<td>Provide services related to EC information such as trust, content, matching buyers and sellers, evaluating vendors and products.</td>
</tr>
<tr>
<td>Bartering online</td>
<td>Exchanging surplus products and/or services with the process administered completely online by an intermediary. Company receives “points” for its contribution, and the points can be used to purchase other needed items.</td>
</tr>
<tr>
<td>Deep discounters</td>
<td>Gain market share via deep discounts (e.g., Half.com). For customers who consider only price in their purchasing decisions.</td>
</tr>
<tr>
<td>Membership</td>
<td>Only members can use the services provided, including access to certain information, conducting trades, etc. (e.g., Egreetings.com).</td>
</tr>
<tr>
<td>Supply-chain improvers</td>
<td>Restructure supply chains to hubs, or other configuration. Increase collaboration, reduce delays, and smooth supply-chain flows.</td>
</tr>
</tbody>
</table>
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 automated routine transaction processing and extended EC to all industries. (See Appendix 5.1.)

Since the commercialization of the Internet and the introduction of the Web in the early 1990s, EC applications have expanded rapidly. By 2000 there was a major shakeout in EC activities when hundreds of dot-com companies went out of business. The shakeout lasted about three years. Since 2003, EC continues its steady progress. Today, most medium and large organizations and many small ones are practicing some EC.

THE SCOPE OF EC. The field of e-commerce is broad, and we use Figure 5.1 to describe it. As can be seen in the figure, there are many of EC applications (top of the figure), some of which were illustrated in the opening case about Hi-Life Corp; others will be shown throughout the book. (Also see Huff et al., 2001, and Farhoomand and Lovelock, 2001.)

To execute these applications, companies need the right information, infrastructure, and support services. Figure 5.1 shows that the EC applications are supported by infrastructure and by five support areas (shown as supporting pillars):

- **People:** Sellers, buyers, intermediaries, information systems specialists and other employees, and any other participants.
- **Public policy:** Legal and other policy and regulating issues, such as privacy protection and taxation, that are determined by the government.
- **Marketing and advertising:** Like any other business, EC usually requires the support of marketing and advertising. This is especially important in B2C online transactions where the buyers and sellers usually do not know each other.
- **Support services:** Many services are needed to support EC. These range from payments to order delivery and content creation.
- **Business partnerships:** Joint ventures, e-marketplaces, and business partnerships of various sorts are common in EC. These occur frequently throughout the supply chain (i.e., the interactions between a company and its suppliers, customers, and other partners).

The supporting infrastructure includes hardware, software, and networks, ranging from browsers to multimedia.

All of these EC components require good management practices. This means that companies need to plan, organize, motivate, devise strategy, and reengineer processes as needed.

Few innovations in human history encompass as many benefits to organizations, individuals, and society as does e-commerce. These benefits have just begun to materialize, but they will increase significantly as EC expands. The major benefits are summarized in Table 5.2.
Counterbalancing its many benefits, EC has some limitations, both technological and nontechnological, which have slowed its growth and acceptance. Those limitations and inhibitors are listed in Table 5.3. 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 negative impact of some of them.

Despite its limitations and failures, e-commerce has made very rapid progress. Also, various B2B activities, e-auctions, e-government, e-learning, 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 5.2 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 (see Appendix 3A). This allows product customization and reduces inventory costs.
- Lowers telecommunications costs because the Internet is much cheaper than value-added networks (VANs).
- Helps some 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 searches and comparisons.
- Gives consumers more choices in selecting products and vendors.
- 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 that benefit buyers and sellers (see Section 5.9).
- 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 5.3 Limitations of E-Commerce

<table>
<thead>
<tr>
<th>Technological Limitations</th>
<th>Nontechnological Limitations</th>
</tr>
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<tbody>
<tr>
<td>Lack of universally accepted standards for quality, security, and reliability.</td>
<td>Unresolved legal issues (see Section 5.9).</td>
</tr>
<tr>
<td>Insufficient telecommunications bandwidth.</td>
<td>Lack of national and international government regulations and industry standards.</td>
</tr>
<tr>
<td>Still-evolving software development tools.</td>
<td>Lack of mature methodologies for measuring benefits of and justifying EC.</td>
</tr>
<tr>
<td>Difficulties in integrating the Internet and EC applications and software with some existing (especially legacy) applications and databases.</td>
<td>Many sellers and buyers waiting for EC to stabilize before they take part.</td>
</tr>
<tr>
<td>Need for special Web servers in addition to the network servers.</td>
<td>Customer resistance to changing from a real to a virtual store. People do not yet sufficiently trust paperless, faceless transactions.</td>
</tr>
<tr>
<td>Expensive and/or inconvenient Internet accessibility for many would-be users.</td>
<td>Perception that EC is expensive and unsecured.</td>
</tr>
<tr>
<td></td>
<td>An insufficient number (critical mass) of sellers and buyers exists for profitable EC operations.</td>
</tr>
</tbody>
</table>
5.2 E-COMMERCE MECHANISMS: AUCTIONS AND BARTERING

The major mechanism for buying and selling on the Internet is the electronic catalog. However, in order to better understand how e-commerce works, let’s first look at two common mechanisms used in its implementation: electronic auctions and bartering online.

Electronic Auctions (E-Auctions)

An auction is a market mechanism by which sellers place offers and buyers make sequential bids. The primary characteristic of auctions, whether off-line or online, is that prices are determined dynamically by competitive bidding. Auctions have been an established method of commerce for generations, and they are well-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 (for an example, see Minicase 1).

The Internet provides an efficient infrastructure for executing auctions at lower administrative cost and with many more involved sellers and buyers (see Kambil and Van-Heck, 2002). 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 auctions that sellers use as a selling channel to many potential buyers. Usually, items are placed at sites for auction, and buyers will bid continuously for the items. The highest bidder wins the items. Sellers and buyers can be individuals or businesses. The popular auction site eBay.com is a forward auction.

According to Gallaugher (2002) there are two types of forward e-auctions. One is for liquidations, the other one is to increase marketing efficiency, as defined and shown in Figure 5.2.

**FIGURE 5.2** Types of forward auctions.
(Source: Gallaugher (2002), Fig. 3, p. 91.)
REVERSE AUCTIONS. In reverse auctions, there is one buyer, usually an organization, that wants to buy a product or a service. Suppliers are invited to submit bids. Online bidding is much faster than conventional bidding, and it usually attracts many more bidders. The reverse auction is the most common auction model for large purchases (in terms of either quantities or price). Governments and large corporations frequently mandate this approach, which may provide considerable savings.

Auctions are used in B2C, B2B, e-government, and C2C commerce, and they are becoming popular in many countries. Their benefits for sellers, buyers, and auctioneers are listed in Online File W5.1 at the book’s Web site. Electronic auctions started in the 1980s on private networks, but their use was limited. The Internet opens many new opportunities for e-auctions. As we have discussed, auctions can be conducted from the seller’s site, the buyer’s site, or from a third-party site. For example, as described in IT At Work 5.1, eBay, the most known third-party site, offers hundreds of thousands of different items in several types of auctions. Over 300 other major companies, including Amazon.com and Dell Auction.com, offer online auctions as well.

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 e-bartering (e.g., barterbrokers.com). These intermediaries try to match online partners to a barter.
Forrester Research Institute, the Gartner Group, and others predict that online B2C will be in the range of $300 to $800 billion in the year 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 $3.5 billion to $8 billion (depending on the estimator and their definitions of what they measure). Here we will look at some of the major categories of B2C applications.

Electronic Retailing: Storefronts and Malls

Electronic retailing (e-tailing) is the direct sale of products and other particulars. eBay serves as a liaison between the parties; it is the interface through which sellers and buyers can conduct business. eBay does not maintain a costly physical inventory or deal with shipping, handling or other services that businesses such as Amazon and other retailers must provide.

After a few years of successful operations and tens of million of loyal users, eBay started to do e-tailing, mostly in fixed prices. By 2003, eBay operated several specialty sites, such as eBay Motors, and made wireless trading possible. eBay also operates a business exchange in which small- and medium-sized enterprises can buy and sell new and used merchandise, in B2B or B2C modes. In addition, half.com, the famous discount e-tailer, is now part of eBay and so is PayPal.com, the P2P payment company.

eBay operates globally, permitting international trades to take place. Country-specific sites are located in over 25 countries. Buyers from more than 160 other countries also participate. eBay also operates a business exchange in which small- and medium-sized enterprises can buy and sell new and used merchandise, in B2B or B2C modes. Finally, eBay operates locally: It has over 60 local sites in the United States that enable users to easily find items located near them, to browse through items of local interest, and to meet face-to-face to conclude transactions. As of fall 2002, eBay had close to 50 million registered users, and according to company financial statements, eBay transacted over $14.87 billion in sales in 2002.

The impact of eBay on e-business has been profound. Its founders took a limited-access off-line business model—auctions—and, by using the Internet, brought it to the desktops of consumers worldwide. This business model consistently generates a profit and promotes a sense of community—a near addiction that keeps traders coming back. As a matter of fact, the only place where people are doing more online business than off-line business (and considerably more, at that) is auctions. For comparison, e-tailing is less than 2 percent of the total retailing.

For Further Exploration: Is bigger always in better in auctions? Does eBay’s 2003 change of business model, from auctions to e-tailing, make sense? Why are wireless auctions promoted?

Sources: Compiled from press releases at ebay.com (2001–2003), and from Cohen (2001) and Deitel et al. (2001).
through electronic storefronts or electronic malls, usually designed around an electronic catalog format and/or auctions.

Both goods and services are sold online. Goods that are bought most often online are computers and computer-related items, office supplies, books and magazines, CDs, cassettes, movies and videos, clothing and shoes, toys, and food. Services that are bought most often online include entertainment, 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. Two shopping locations online are electronic storefronts and electronic malls.

**ELECTRONIC STOREFRONTS.** Hundreds of thousands of solo storefronts can be found on the Internet, each with its own Internet name and EC portal. Called electronic storefronts, they may be an extension of physical stores such as Home Depot, The Sharper Image, or Wal-Mart. Or, they may be new businesses started by entrepreneurs who saw a niche on the Web, such as Amazon.com, CDNow, Uvine.com, Restaurant.com (see Minicase 2), and Alloy.com. Besides being used by retailers, such as Officedepot.com, storefronts also are used by manufacturers, such as Dell.com. Retailers’ and manufacturers’ storefronts may sell to individuals and/or to organizations. There are two types of storefronts, general and specialized. The specialized store sells one or a few products (e.g., flowers, wines, or dog toys). The general storefronts sell many products.

**ELECTRONIC MALLS.** An electronic mall, also known as a cybermall or e-mail, 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), Cactus Hill HandCrafters Mall (cactushill.com), America’s Choice Mall (mall.choicemall.com), and Shopping 2000 (shopping2000.com). A unique e-mail is 2bsure.com, which specializes in services (financial, legal, etc.) but also sells computers and other electronic products, as well as provides price comparisons.

Two types of malls exist. First, there are referral malls, such as hawaii.com. You cannot buy in such a mall, but instead you are transferred to a participating storefront. In the second, more traditional type of mall, such as at store.yahoo.com, you can actually make a purchase. At this type of mall, you might shop from a variety of stores, but are able to make only one purchase transaction at the end; an electronic shopping cart enables you to gather items from various vendors and pay for them all together in once transaction. (The mall organizer, such as Yahoo, takes a commission from the sellers for this service.)

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.

As is true for vendors that locate in a physical shopping mall, a vendor that locates in an e-mail 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.

**E-Tailing: The Essentials**

The concept of retailing and e-tailing implies sales of goods and/or services to individual customers. However, the distinction between B2C and B2B e-commerce is
not always clear cut. For example, Amazon.com sells books mostly to individuals (B2C), but it also sells to corporations (B2B). Amazon.com’s rival, Barnes & Noble Online (bn.com), has a special division that caters only to business customers. Walmart.com sells to both individuals and businesses (via Sam’s Club). Dell.com sells its computers to both consumers and businesses, as does Staples.com, and some insurance sites sell both to individuals and corporations.

There are several models of B2C (see Turban et al., 2004). One of the most interesting properties of these models is the ability to offer customized products at a reasonable price and fairly fast (as done by Dell Computer). Many sites (e.g., nike.com and lego.com) offer product self-configuration from their B2C portals. (For more on build-to-order and its impact on e-commerce, see Appendix 3.1.) The most well known B2C site is Amazon.com, whose story is presented in IT At Work 5.2.

**Issues in E-Tailing**

The following are the major issues faced by e-tailers that may be handled and supported by IT tools:

- **Resolving channel conflict.** If a seller is a click-and-mortar company, such as Levi’s or GM, 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. Channel conflict has forced some companies (e.g., Lego.com) to limit their B2C efforts; others (e.g., some automotive companies) have decided not to sell direct online. An alternative approach is to try to collaborate in some way with the existing distributors whose services may be restructured. For example, an auto company could allow customers to configure a car online, but require that the car be picked up from a dealer, where customers would arrange financing, warranties, and service. IT tools can facilitate resolution of channel conflict, for example by using a group DSS (Chapter 12).

- **Resolving 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 operations. Conflicts may arise in areas such as pricing of products and services, allocation of resources (e.g., advertising budget) and logistics services provided by the offline activities to the online activities (e.g., handling of returns of items bought online). As a result of these conflicts, some companies have completely separated the “clicks” (the online portion of the organization) from the “mortars” or “bricks” (the traditional brick-and-mortar part of the organization). Such separation may increase expenses and reduce the synergy between the two. The decisions about how to organize the online and off-line operations and whether or not to separate them, can be facilitated by IT tools. In addition, group DSS can be used to resolve conflicts.

- **Organizing order fulfillment and logistics.** E-tailers face a difficult problem of how to ship very small quantities to a large number of buyers. This can be a difficult undertaking, especially when returned items need to be handled. IT-supported decision models can help with scheduling, routing, shipments, inventory management and other logistics-related decisions.

- **Determining viability and risk of online e-tailers.** Many pure online e-tailers folded in 2000–2002 (see Kaplan, 2002), the result of problems with customer acquisition, order fulfillment, and demand forecasting. 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. So a problem most young e-tailers face is to determine how long to operate while
Entrepreneur Jeff Bezos, envisioning the huge potential for retail sales over the Internet, selected books as the most logical product for e-tailing. In July 1995, Bezos started Amazon.com, an e-tailing pioneer, offering books via an electronic catalog from its Web site. Key features offered by the Amazon.com “superstore” were broad selection; low prices; easy searching and ordering; useful product information and personalization; secure payment systems; and efficient order fulfillment. Early on, recognizing the importance of order fulfillment, Amazon.com invested hundreds of millions of dollars in building physical warehouses designed for shipping small packages to hundreds of thousands of customers. Over the years since its founding, Amazon.com has continually enhanced its business models and electronic store by expanding product selection, improving the customer’s experience, and adding services and alliances. For example, the company now offers specialty stores, such as its professional and technical store. It has expanded its editorial content through partnerships with experts in certain fields. It has increased product selection with the addition of millions of used and out-of-print titles. It also is expanding its offerings beyond books. For example, in June 2002 it became an authorized dealer of Sony Corp. for selling Sony products online.

In 1997, Amazon started an extensive affiliates program. By 2002, the company had more than 500,000 partners that refer customers to Amazon.com. Amazon pays a 3 to 5 percent commission on any resulting sale. Amazon.com has undertaken alliances with major “trusted partners” that provide knowledgeable entry into new markets, such as cars, health and beauty aids, toys, and even wireless phone service providers. In yet another extension of its services, in September 2001 Amazon signed an agreement with Borders Group Inc., providing Amazon’s users with the option of picking up books, CDs, etc. at Borders’ physical bookstores. Amazon.com also is becoming a Web fulfillment contractor for national chains such as Target and Circuit City.

Amazon.com is recognized as an online leader in creating sales through customer intimacy and customer relationship management (CRM), which are cultivated by informative marketing front-ends and one-to-one advertising. In addition, sales are supported by highly automated, efficient back-end systems. When a customer makes a return visit to Amazon.com, a cookie file identifies the user and says, for example, “Welcome back, Sarah Shopper,” and then proceeds to recommend new books from the same genre of previous customer purchases. The company tracks customer purchase histories and sends purchase recommendations via e-mail to cultivate repeat buyers. These efforts usually result in satisfactory shopping experiences and encourage customers to return. The site has an efficient search engine and other shopping aids.

Customers can personalize their accounts and manage orders online with the patented “One-Click” order feature. This personalized service includes an electronic wallet, which enable shoppers to place an order in a secure manner without the need to enter their address, credit card number, etc., each time they shop. One-Click also allows customers to view their order status and make changes on orders that have not entered yet the shipping process.

Annual sales for Amazon.com have trended upward, from $15.7 million in 1996 to $600 million in 1998 to about $4 billion by 2002. With over 17 million book, music, and DVD/video titles (including over 1 million Japanese-language titles), Amazon.com has sold products to some 20 million customers. According to Retail Forward’s study, Top E-Retail 2001 (emarketer.com, August 1, 2002), Amazon was the number 1 e-tailer in 2001, generating $3.12 billion. This level of sales represented 22 percent of the total online sales for all 50 companies in the study. According to Bayers (2002), Amazon is becoming very successful in reducing its costs and increasing its profitability.

In January 2002, Amazon.com declared its first ever profit—for the 2001 fourth quarter—and followed that by a profitable first quarter of 2002. Yet the company’s financial success is by no means assured: The company sustained operating losses in the second and third quarters of 2002, though those losses were smaller than losses in the same quarters in preceding years. In the fourth quarter of 2002, the company again made a profit. Like all businesses, and especially all e-tailing businesses, Amazon.com will continue to walk the fine line of profitability for the foreseeable future.

For Further Exploration: What are the critical success factors of Amazon? What advantages does it have over other e-tailers (e.g., Wal-Mart online or toystatus.com)? What disadvantages? What is the purpose of the alliances Amazon.com has made?

you’re still losing money and how to finance the losses. In deciding on new EC initiatives, or on an entire dot-com company, a risk analysis is needed. A DSS modeling can be helpful in such cases (see Westland, 2002).

- **Identifying appropriate revenue models.** Many dot-com companies were selling goods at or below cost, with the objective of attracting many customers and advertisers to their sites. One early dot-com model was to generate enough revenue from advertising to keep the business afloat until the customer base reached critical mass. This model did not work. Too many dot-com companies were competing for too few advertising dollars, which went mainly to a small number of well-known sites such as AOL and Yahoo. In addition, there was a “chicken-and-egg” problem: Sites could not get advertisers to come if they did not have enough visitors. To succeed in EC, it is necessary to identify appropriate revenue models. For further discussion of revenue models, see Turban et al., 2004.

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 an airline ticket or buying stocks or insurance online, can be done 100 percent electronically, with considerable cost reduction potential. Therefore, delivering services online is growing very rapidly, with millions of new customers added annually. Indeed, in many ways e-commerce is now simply a part of traditional commerce, and like the addition of credit card payment capabilities a generation ago, many people expect companies to offer some form of e-commerce.

We’ve take a quick look here at the leading online service industries: banking, trading of securities (stocks, bonds), job matching, travel services, and real estate.

**CYBERBANKING.** Electronic banking, also known as cyberbanking 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 applying for 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 now offer online banking, and some use EC as a major competitive strategy (see Athitakis, 2003).

Electronic banking offers several of the benefits of EC listed in Section 5.1, 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 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. For example, 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 rapidly become a major international bank without developing an extensive new branch network (Peffers and Tunnainen, 1998). Transfers of electronic funds and electronic letters of credit are other important services in international banking. An example of support for EC global trade is provided by TradeCard (tradecard.com), which is done is conjunction with MasterCard. Banks and companies such as Oanda also provide currency conversion of over 160 currencies. International foreign-currency traders can be assisted by many other online services (see financialsupermarket.com and foreign-trade.com).

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 (eMarketer, 2003). In Korea, more than half of stock traders are using the Internet for that purpose. Why? Because it makes a lot of dollars and “sense”: An online trade typically costs the trader between $3 and $15, compared to an average fee of $100 from a full-service broker and $25 from a discount broker. There is no waiting on busy telephone lines. Furthermore, the chance of making mistakes is small because online trading does away with oral communication with a securities broker in a frequently very noisy physical environment. Orders can be placed from anywhere, any time, even from your cell phone. Investors can find on the Web a considerable amount of information regarding investing in a specific company or in a mutual fund. (e.g., money.cnn.com, bloomberg.com).

How does online trading work? Let’s say you have an account with Charles Schwab. You access Schwab’s Web site (schwab.com) from your PC or your Internet-enabled mobile device, enter your account number and password to access your personalized Web page, and then 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 are E*Trade, Ameritrade, and Suretrade.

However, both online banking and securities trading require tight security. Otherwise, your money may be at risk. Here is what happened in Korea on August 23, 2002: According to news items (Korean Times, August 24, 2002), an unknown criminal managed to get an account number and a password of a large investor in Korea (Hyundai Investment). Sitting in an Internet café, the criminal placed an order with the company that managed the investment, Daewoo Securities, to buy five million shares of Delta Information Communication. Within 90 seconds 2.7 million shares were sold by 100 sellers, at a much higher than normal price. When the fake order was discovered and the news broke out, the price of the shares spiraled down. Daewoo Securities ended with 2.7 million unwanted shares. Some analysts have suggested that one or more sellers hired the hacker so they could sell at a high price. Whatever the motive, Daewoo lost a huge amount of money. Most online bank stock and traders use only ID numbers and passwords. This may not be secured enough. See Chapter 15 on how to improve the online security.

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 of all types of jobs, accept resumes, and take applications via the Internet. The online job market is used by:

- **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 Monster 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. Finally, if you want to know if you are underpaid or how much you can get if you relocate to another city, consult wageweb.com.

- **Job offerers.** Many organizations advertise openings on their Web site. Others use sites ranging from Yahoo! to bulletin boards of recruiting firms. In many countries governments must advertise openings on the Internet.

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

Due to the large number of job market resources available on the Internet, it is too expensive and time-consuming to evaluate them manually. Resumix (resumix.com) can help (see Chapter 7 for details).

**TRAVEL SERVICES.** The Internet is an ideal place to plan, explore, and economically arrange almost 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 Orbitz.com. Services are also provided online by all major airline vacation services, large conventional travel agencies, car rental agencies, hotels (e.g., hotels.com), 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 or from your home city. Finally, Priceline.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. A similar service offered by Hotwire.com tries to find the lowest available price for you.

**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 preferences and decision criteria, and can 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 real estate 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 1.2 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. Those who are looking for an apartment can try Apartments.com.

In another real estate application, homebuilders use three-dimensional floor plans for potential home buyers on their Web sites. They use “virtual models” that enable buyers to “walk through” mockups of homes.

5.4 Market Research and Online Advertising

We now turn our attention in another direction—market research and online advertising. To successfully conduct electronic commerce, especially B2C, it is important to find out who are the actual and potential customers and what motivates them to buy. Several research institutions collect Internet-usage statistics (e.g., acnilsen.com, emarketer.com), and they also look at factors that inhibit shopping. Merchants can then prepare their marketing and advertising strategies based on this information.

Finding out what specific groups of consumers (such as teenagers or residents of certain geographical zones) want is done via segmentation, dividing customers into specific segments, like age or gender. 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. Learning about customers is extremely important for any successful business, especially in cyberspace. Such learning is facilitated by market research.

A Model of Consumer Behavior Online. For decades, market researchers have tried to understand consumer behavior, and they have summarized their findings in various models of consumer behavior. The purpose of a consumer behavior model is to help vendors understand how a consumer makes a purchasing decision. If the process is understood, a vendor may try to influence the buyer’s decision, for example, by advertising or special promotions.

Figure 5.3 shows the basics of these consumer behavior models, adjusted to fit the EC environment. The EC model is composed of the following parts:

- **Independent (or uncontrollable) variables**, which are shown at the top of Figure 5.3. They can be categorized as personal characteristics and environmental characteristics.
- **Vendors’ controlled variables** (intervening or moderating variables), which are divided into market stimuli (on the left) and EC systems at the bottom.
- **The decision-making process**, shown in the center of the figure, is influenced by the independent and intervening variable. This process ends with the buyers’ decisions (shown on the right), resulting from the decision making process.
- **The dependent variables** that describe the decisions made.

Figure 5.3 identifies some of the variables in each category. In this chapter, we deal briefly with only some of the variables. Discussions of other variables can be found in Internet-marketing books, such as Strauss et al. (2003) and Sterne (2001, 2002) and in Online File W5.2.
Before we discuss some of the model’s variables, let’s examine who the EC consumers are. Online consumers can be divided into two types: *individual consumers*, who get much of the media attention, and *organizational buyers*, who do most of the actual shopping in cyberspace. Organizational buyers include governments, private corporations, resellers, and public organizations. Purchases by organizational buyers are generally used to create products (services) by adding value to raw material or components. Also, organizational buyers such as retailers and resellers may purchase products for resale without any further modifications.

The above model is simplified. In reality it can be more complicated, especially when new products or procedures need to be purchased. For example, for online buying, a customer may go through the following five adoption stages: awareness, interest, evaluation, trial, and adoption. (For details see McDaniel and Gates, 2001, and Solomon, 2002.) Understanding the structure of the model in Figure 5.3, or any more complicated one, is necessary, but in order to really make use of such models, we need to learn about the decision making process itself, as discussed next.

**The Consumer Decision-Making Process**

Let’s return to the central part of Figure 5.3, where consumers are shown making purchasing decisions. Several models have been developed in an effort to describe the details of the decision-making process that leads up to and
culminates in a purchase. These models provide a framework for learning about the process in order to predict, improve, or influence consumer decisions. Here we introduce two relevant purchasing-decision models.

**A GENERIC PURCHASING-DECISION MODEL.** A general purchasing-decision model consists of five major phases. In each phase we can distinguish several activities and, in some of them, one or more decisions. The five phases are: (1) need identification, (2) information search, (3) evaluation of alternatives, (4) purchase and delivery, and (5) after-purchase evaluation. Although these phases offer a general guide to the consumer decision-making process, do not assume that all consumers’ decision making will necessarily proceed in this order. In fact, some consumers may proceed to a point and then revert back to a previous phase, or skip a phase. For details, see Strauss et al. (2003) and Online File W5.2.

**A CUSTOMER DECISION MODEL IN WEB PURCHASING.** The above purchasing-decision model was used by O’Keefe and McEachern (1998) to build a framework for a Web-purchasing model, called the *Consumer Decision Support System (CDSS)*. According to their framework, shown in Table 5.4, each of the phases of the purchasing model can be supported by both CDSS facilities and Internet/Web facilities. The CDSS facilities support the specific decisions in the process. Generic EC technologies provide the necessary mechanisms, and they enhance communication and collaboration. Specific implementation of this framework is demonstrated throughout the text.

### TABLE 5.4 Purchase Decision-Making Process and Support System

<table>
<thead>
<tr>
<th>Decision Process Steps</th>
<th>Consumer Decision Support System Support Facilities</th>
<th>Generic Internet and Web Support Facilities</th>
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<tbody>
<tr>
<td>Need recognition</td>
<td>Agents and event notification</td>
<td>Banner advertising on order</td>
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<td></td>
<td></td>
<td>Web sites</td>
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<tr>
<td>Information search (what, from whom?)</td>
<td>Virtual catalogs</td>
<td>URL on physical material</td>
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<td></td>
<td>Structured interaction and question/answer sessions</td>
<td>Discussions in newsgroups</td>
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<td></td>
<td>Links to (and guidance on) external sources</td>
<td>Web directories and classifiers</td>
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<tr>
<td>Evaluation, negotiation, selection</td>
<td>FAQs and other summaries</td>
<td>Internal search on Web site</td>
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<td></td>
<td>Samples and trials</td>
<td>External search engines</td>
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<td></td>
<td>Provisions of evaluative models</td>
<td>Focused directories and information brokers</td>
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<td></td>
<td>Pointers to (and information) existing customers</td>
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<tr>
<td>Purchase, payment, and delivery</td>
<td>Product or service ordering</td>
<td>Discussion in newsgroups</td>
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<td></td>
<td>Arrangement of delivery</td>
<td>Cross-site comparisons</td>
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<td>Generic models</td>
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<tr>
<td>After-purchase service and evaluation</td>
<td>Customer support via e-mail and newsgroups</td>
<td>Electronic cash and virtual banking</td>
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<td>Logistics providers and package tracking</td>
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<td>Discussion in newsgroups</td>
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5.4 MARKET RESEARCH AND ONLINE ADVERTISING

How Market Research Finds What Customers Want

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 may 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 (e.g., see bizrate.com). 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. Also, 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, Web bugs, or spyware programs. 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 Web is an incredibly rich source of business intelligence, and many enterprises are scrambling to build data warehouses that capture the knowledge contained in the clickstream data (data recovered from customers’ “clicks” as they move around online) obtained from their Web sites. By analyzing the user behavior patterns contained in these clickstream data warehouses (see Sweiger et al., 2002), savvy businesses can expand their markets, improve customer relationships, reduce costs, streamline operations, strengthen their Web sites, and plot their business strategies.

As discussed in Chapter 12, software agents are computer programs that conduct routine 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. There are various types of agents, that can be used in EC ranging from software agents, which are those with no intelligence, to learning agents that exhibit some intelligent behavior.

Agents are used to support many tasks in EC. But first, it will be beneficial to distinguish between search engines and the more intelligent type of agents. As discussed in Chapter 4, a search engine 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 movements 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 then notify the customer and even provide corrective assistance. Depending on their level of intelligence, agents can do many other things. In this section we will concentrate on intelligent agents for assisting shoppers (see Yuan, 2003). (For other uses of intelligent agents, see Chapter 12.)

BRAND- AND VENDOR-FINDING AGENTS AND PRICE COMPARISONS. Once the consumer has decided what to buy, a type of intelligent agent called a comparison agent will help in doing comparisons, usually of prices, from different vendors. A pioneering price-comparison agent was Bargainfinder from Andersen Consulting. This agent was used only in online shopping for CDs. It 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, Pricescan.com and Dealtime.com, make comparisons. Some of these look at multiple criteria, not just price, and even let you prioritize the criteria. Then, the agent makes a recommendation based on your stated preferences.

SEARCH AGENTS. Search agents, another type of intelligent agents, can help customers determine what to buy to satisfy a specific need (e.g., Likemind.com, Gifts.com). This is achieved by looking for specific product information and critically evaluating it. The search agent helps consumers decide what product best fits their profile and requirements (e.g., see salesmountain.com).

COLLABORATIVE FILTERING AGENTS. Once a company knows a consumer’s preferences (e.g., what music they like), it would be useful if the company could predict, without asking, what other products or services this consumer might enjoy. One way to do this is through use of collaborative filtering agents, which use customer data to infer customer interest in other products or services. There are several methods and formulas, all using software agents, to execute collaborative filtering. Some collaborative filtering agents based predictions on statistical formulas derived from behavioral sciences (see sins.berkeley.edu/resources.collab/ for details). Some based their predictions on what is known about other customers with similar profiles. (For details of the different methods and formulas, see Ridell et al., 2002.) One of the pioneering filtering agents was Firefly (now embedded in Microsoft’s Passport System).

OTHER AGENTS. Many other software agents can aid buyers and sellers in e-commerce. Examples are: UPS.com for optimizing deliveries, e-Falcon.com for fraud detection, and webassured.com for increasing trust levels. Other agents are described throughout the book.

The information collected by market research is used for customer relationship management (CRM), described in Chapter 7, and for advertising, the topics we discuss next.
approach personalizes advertising and marketing, but it can be expensive, slow, and ineffective (and from the consumer’s point of view, annoying).

Internet advertising redefines the advertising 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. Internet ads can reach very large number of potential buyers all over the world and they 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 on 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 advertisement 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 the difficulty in measuring the effectiveness and justificating the ads. For example, it is difficult to measure the actual results of placing a banner ad, or an e-mail and the audience is still relatively small (compared to television, for example). For a comparison of advertising media, see Online File W5.3.

ADVERTISING METHODS. The most common advertising methods online are banners, pop-ups, and e-mails. The essentials of these and some other methods are briefly presented next.

**Banners.** Banners are, simply, 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 a banner, they are transferred to the advertiser’s home 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 a 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 for brand recognition.

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 user. 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 due to its small size. 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. A new generation of banner-like ads are the pop-ups.

**Pop-Up, Pop-Under, and Similar Ads.** One of the most annoying phenomena in Web surfing is the increased use of pop-up, pop-under, and similar ads. These ads are contained in a new browser window that is automatically launched when one enters or exits a site, or by other triggers such as a delay during Internet surfing. A **pop-up ad** appears in front of the current browser window. A **pop-under ad** appears underneath the active window, and when
users close the active window, they see the ad. Pop-ups and pop-unders are sometime difficult to close. These methods are controversial: Many users strongly object to these ads, which they consider intrusive.

For further discussion, see Martin and Ryan, 2002, and Online File W5.4.

**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. For example, Restaurant.com (see Minicase 2) use e-mail to send restaurant coupons to millions of customers. However, as with pop ups, there is a potential for misuse of e-mail advertising, and some consumers are receiving a flood of unsolicited mail (see the section on unsolicited advertising, below).

**Electronic Catalogs and Brochures.** Printed catalogs have been an advertising medium for a long time. Recently electronic catalogs 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.

Sometimes merchants find it useful to provide a *customized catalog* to a regular customer. Such a catalog is assembled specifically for the particular buyer, usually a company but sometimes even an individual who buys frequently or in large quantities.

**Other Forms of Internet Advertising.** Online advertising can be done in several other forms, including posting advertising in chat rooms (newsgroups) and in classified ads (see classifieds 2000.com). 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 (such as geocities.com) are gathering places for people of similar interests and are therefore a logical place to promote products related to those interests. Another interesting method is wireless ads, which we will describe in Chapter 6.

**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 off-line ads. Most of such decisions require the input of marketing and advertising experts. Here, we present the following illustrative issues.

**Unsolicited Advertising: Spamming and More.** A major issue related to pop-ups and e-mail advertising is *spamming*, the practice of indiscriminate distribution of electronic ads without permission of the receiver. E-mail spamming, also known as *unsolicited commercial e-mail* or *UCE*, has been part of the Internet for years. Unfortunately, the situation is getting worse with time. The drivers of spamming and some of potential solutions are described in Online File W5.5.

**Permission Marketing.** Permission marketing is one answer to e-mail spamming. *Permission marketing* asks consumers to give their permission to voluntarily accept advertising and e-mail. Typically, consumers are asked to complete a form that asks what they are interested in and requests permission to send related marketing information. Sometimes consumers are offered incentives...
to receive advertising; at the least, marketers try to send information in an entertaining, educational, or other interesting manner.

Permission marketing is the basis of many Internet marketing strategies. For example, millions of users receive e-mails periodically from airlines such as American and Southwest. Users of this marketing service can ask for notification of low fares from their home town or to their favorite destinations. Users can easily unsubscribe at any time. Permission marketing is also extremely important for market research (e.g., see mediaresearch.com).

In one particularly interesting form of permission marketing, companies such as Clickdough.com, Getpaid4.com, and CashSurfers.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 $0.25 to $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.

**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, which 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 (e.g., see alladvantage.com). It has long been a favorite strategy of online advertisers pushing youth-oriented products.

Unfortunately, though, several e-mail hoaxes have spread via viral marketing. Also, a more serious danger of viral marketing is that a destructive computer virus can be added to an innocent advertisement, game, or message. However, when used properly, viral marketing can be both effective and efficient.

**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, even 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 one-to-one 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 databases marketing, interactive marketing becomes a very effective and affordable competitive strategy.

**Online Promotions: Attracting Visitors to a Site.** A Web site without visitors has little value. The following are two examples of ways to attract visitors to a Web site.

- **Making the top 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
that view the results submitted by a search engine 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 10 of the list. How to do it? If it understands how a search engine’s program ranks its findings, 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. However, this is not easy, as everyone wants to do it, so there are sometimes several thousand entries competing to be in the top 10. It is easier to pay the search engine to put a banner at the top of the lists (e.g., usually on the right-hand side of the screen at google.com’s results).

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 off-line commerce. Running promotions on the Internet is similar to running offline promotions. These mechanisms are designed to attract visitors and to keep their attention. For innovative ideas for promotions and attractions used by companies online, see Sterne, 2001 and Strauss et al., 2003.

5.5 B2B Applications

In business to business (B2B) applications, the buyers, sellers, and transactions involve only organizations. Business-to-business comprises about 85 percent 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 chains and partner relationship (e.g., see Warkentin, 2001).

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

Sell-Side Marketplaces

In the sell-side marketplace model, organizations attempt to sell their products or services to other organizations electronically, from their own private e-marketplace and/or from a third-party site. This model is similar to the B2C model in which the buyer is expected to come to the seller’s site, view catalogs, and place an order. In the B2B sell-side marketplace, however, the buyer is an organization.

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 sites, organizations can use third-party auction sites, such as eBay, to liquidate items. Companies such as Freemarkets.com are helping organizations to auction obsolete and old assets and inventories (see Minicase 1).

The sell-side 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 avnet.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. This model is especially suitable to customization. For example, customers can configure their orders online at cisco.com, dell.com, and others. This results in fewer misunderstandings about what customers want and in much faster order fulfillment.
The buy-side marketplace is a model in which organizations attempt to buy needed products or services from other organizations electronically, usually from their own private e-marketplace. A major method of buying goods and services in the buy-side model 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 third-party bidding marketplace. Once RFQs are posted, sellers (usually preapproved suppliers) submit bids electronically. Such auctions attract large pools of willing sellers, who can be either a manufacturer, a distributor, or a retailer. 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.

The buy-side model uses EC technology to streamline the purchasing process in order to reduce the cost of items purchased, the administrative cost of procurement, and the purchasing cycle time. General Electric, for example, has calculated that it saves 10 to 15 percent on the cost of the items placed for bid and up to 85 percent on the administrative cost of procurement (Turban et al., 2004); in addition, cycle time is reduced by about 50 percent. Procurements using a third-party buy-side marketplace model are especially popular for medium and small organizations.

E-PROCUREMENT. Purchasing by using electronic support is referred to as e-procurement. In addition to reverse auctions just discussed, e-procurement uses other mechanism. Two popular ones are group purchasing and desktop purchasing.

Group purchasing. In group purchasing, the requirements of many buyers are aggregated so that they total to a large volume, and may merit more seller attention. Once buyers’ orders are aggregated, they can be placed on a reverse auction, and a volume discount can be negotiated. The orders of small buyers usually are aggregated by a third-party vendor, such as Consarta.com and Shop2gether.com. Group purchasing is especially popular in the health care industry (see all-health.com).

Desktop purchasing. In this variation of e-procurement, known as desktop purchasing, suppliers’ catalogs are aggregated into an internal master catalog on the buyer’s server, so that the company’s purchasing agents (or even end users) can shop more conveniently. Desktop purchasing is most suitable for maintenance, replacement, and operations (MRO) indirect items, such as office supplies. (The term indirect refers to the fact that these items are not inputs to manufacturing.) In the desktop purchasing model, a company has many suppliers, but the quantities purchased from each are relatively small. This model is most appropriate for large companies (such as Schlumberger, as described in IT at Work 5.3) and for government entities.

E-marketplaces in which there are many sellers and many buyers are called public exchanges (in short, exchanges). They are open to all, and frequently are owned and operated by a third party. According to Kaplan and Sawhney, 2000, there are basically four types of exchanges:

1. Vertical distributors for direct materials. 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.
Schlumberger is an $8.5 billion company with 60,000 employees in 100 countries. That makes it the world’s largest oil-service company. In 2000 the company installed a Web-based automated procurement system in Oilfield Services, its largest division. With this system, employees can buy office supplies and equipment as well as computers direct from their desktops.

The system replaced a number of older systems, including automated and paper-based ones. The single desktop system streamlined and sped up the purchasing operation, reducing costs, as well as the number of people involved in the process. The system also enables the company to consolidate purchases for volume discounts from vendors.

The system has two parts:

1. The internal portion uses CommerceOne’s BuySite procurement software and runs on the company’s intranet. Using it is like shopping at an online store: Once the employee selects the item, the system generates the requisition, routes it electronically to the proper people for approval, and turns it into a purchase order.

2. CommerceOne’s MarketSite transmits the purchase orders to the suppliers. This B2B Internet marketplace connects Schlumberger with hundreds of suppliers with a single, low-cost, many-to-many system.

Negotiation of prices is accomplished with individual vendors. For example, Office Depot’s entire catalog is posted on the MarketSite, but the Schlumberger employees see only the subset of previously negotiated products and prices. (In the future, the company plans to negotiate prices in real time through auctions and other bidding systems.)

The benefits of the system are evident in both cost and processes. The cost of goods has been reduced, as have the transaction costs. Employees spend much less time in the ordering process, giving them more time for their true work. The system is also much more cost efficient for the suppliers, who can then pass along savings to customers. By using one system worldwide, Schlumberger saves time for employees who are transferred—they don’t spend time learning a new system wherever they go. Procurement effectiveness can be increased because tracing the overall procurement activity is now possible.

Getting the system up and running was implemented in stages and ran at the same time as existing systems. There were no implementation issues for employees (once the system was in place, the old system was disabled), and there were no complaints in regard to the old system being shut down (no one was using the old system anymore).

For Further Exploration: What are the benefits of the e-procurement system to Schlumberger? How does it empower the buyers? Why would real-time price negotiations be beneficial?


Examples are Plasticsnet.com and Papersite.com. Both fixed and negotiated prices are common in this type of exchange.

2. Vertical exchanges for indirect materials. Here indirect materials in one industry are purchased on an “as-needed” basis (called spot sourcing). Buyers and sellers may not even know each other. ChemConnect.com and Isteelasia.com are examples. In such vertical exchanges, prices are continually changing, based on the matching of supply and demand. Auctions are typically used in this kind of B2B marketplace, sometimes done in private trading rooms, which are available in exchanges like ChemConnect.com (see IT At Work 5.4).

3. Horizontal distributors. These are “many-to-many” e-marketplaces for indirect (MRO) materials, such as office supplies, used by any industry. Prices are fixed or negotiated in this systematic sourcing-type exchange. Examples are EcEurope.com, Globalsources.com, and Alibaba.com.

4. Functional exchanges. Here, needed services such as temporary help or extra space are traded on an “as-needed” basis (spot sourcing). For example,
Buyers and sellers of chemical and plastics today can meet electronically in a large vertical exchange called ChemConnect (chemconnect.com). Using this exchange, 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 9,000 members in 150 countries. In 2003, over 60,000 products were traded in this public, third-party-managed e-marketplace.

Chemconnect provides three marketplaces (as of April 21, 2003): a commodity markets platform, a marketplace for sellers, and a marketplace for buyers.

1. The commodity markets platform is a place where pre-qualified producers, customers, consumers, distributors, and others come together in real time to sell and buy chemical-related commodities like natural gas liquids, oxygenates, olefins, and polymers. They can even simultaneously execute multiple deals. Transactions are done through regional trading hubs.

2. The marketplace for sellers has many tools ranging from electronic catalogs to forward auctions. It enables companies to find buyers all over the world. ChemConnect provides all the necessary tools to expedite selling and achieving the best prices. It also allows for negotiations.

3. The marketplace for buyers is a place where thousands of buyers shop for chemical-related indirect materials (and a few direct materials). The market provides for automated request for proposal (RFP) tools as well as a complete online reverse auction. The sellers’ market is connected to the buyers’ market, so that sellers can connect to the RFPs posted on the marketplace for buyers. (Note that RFP and RFQ are interchangeable terms; RFP is used more in government bidding.)

For the three marketplaces, ChemConnect provides logistics and payment options as well as connectivity solutions (such as integration connection with ERPs). Also, market information is provided as well as a network of industry experts and contact with third-party service providers and other business partners.

In all of its trading mechanisms, up-to-the-minute market information is available and can be translated to 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 marketplaces work 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 ChemConnect Web site.) ChemConnect is growing rapidly, adding members and trading volume.

For Further Exploration: What are the advantages of the ChemConnect exchange? Why are there three trading places? Why does the exchange provide information portal services?

Source: Compiled from chemconnect.com (accessed April 11, 2003).

Employease.com can find temporary labor using employers in its Employease Network. Prices are dynamic, and they vary depending on supply and demand.

All four types of exchanges offer diversified support services, ranging from payments to logistics. Vertical exchanges are frequently owned and managed by a group of big players in an industry (referred to as a consortium). For example, Marriott and Hyatt own a procurement consortium for the hotel industry, and Chevron Texaco owns 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 Internet/EDI or as extranets (see Appendix 5.1 to this chapter). A related EC activity, usually done between and among organizations, is collaborative commerce (see Chapters 4 and 8).
5.6 INTRABUSINESS AND BUSINESS-TO-EMPLOYEES

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.

Companies are finding many ways to do business electronically with their own employees. 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. Also, many companies have electronic corporate stores that sell a company’s products to its employees, usually at a discount. Of the many types of employees that benefit from B2E we have chosen to focus on sales people in the field. Note that in the literature on B2E commerce, B2E includes all things employees need for work, not just for communication, compensation, and benefits; so productivity software, such as sales force automation, is considered part of B2E.

SALES FORCE AUTOMATION. Sales force automation (SFA) is a technique of using software to automate the business tasks of sales, including order processing, contact management, information sharing, inventory monitoring and control, order tracking, customer management, sales forecast analysis, and employee performance evaluation. Of special interest in the context of B2E e-commerce is the support provided to employees when they are in the field. Recently, SFA become interrelated with CRM, since the salespeople constitute the contact point with customers. IT can empower salespeople and other customer-facing employees to make quick decisions, when they are in the customer’s office. Advancement in wireless technologies is creating opportunities for providing salespeople with new capabilities, such as shown in the case of PAVECA Corp. in IT At Work 5.5. Many other companies, ranging from Maybelline (see Mini-case in Chapter 2) to Kodak, have equipped their salesforces with similar mobile devices.

Large corporations frequently consist of independent units, or strategic business units (SBUs), which “sell” or “buy” materials, products, and services 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, which buy goods from the main company. This type of EC helps in improving the internal supply chain operations.

Many large organizations allow employees to post classified ads on the company intranet, through which employees can buy and sell products and services from each other. This service is especially popular in universities, where it has been conducted since even before the commercialization of the Internet. The Internet is used for other collaboration as well.
5.7 E-GOVERNMENT AND CONSUMER-TO-CONSUMER EC

**E-Government**

As e-commerce matures and its tools and applications improve, greater attention is being 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 offers a number of potential benefits: It improves the efficiency and effectiveness of the functions of government, including the delivery of public services. It enables governments to be more transparent to citizens and businesses by giving access to more of the information generated by government. E-government also offers greater opportunities for citizens to provide feedback to government agencies and to participate in democratic institutions and processes. As a result, e-government may facilitate fundamental changes in the relationships between citizens and governments.

E-government applications can be divided into three major categories: government-to-citizens (G2C), government-to-business (G2B), and government-to-government (G2G). In the first category, government agencies are increasingly using the
CHAPTER 5  E-BUSINESS AND E-COMMERCE

The focus of the Western Australian (WA) government agency Contract and Management Services (CAMS) is to develop online contract management solutions for the public sector. CAMS Online allows government agencies to search existing contracts to discover how to access the contracts that are in common use by different government agencies (for example, lightbulbs or paper towels bought by various government units). It also enables suppliers wanting to sell to the government to view the current tenders (bids) on the Western Australia Government Contracting Information Bulletin Board, and download tender documents from that site.

CAMS Online also provides government departments and agencies with unbiased expert advice on e-commerce, Internet, and communication services, and how-to's on building a bridge between the technological needs of the public sector and the expertise of the private sector. The center also offers various types of support for government procurement activities.


Government-to-government e-commerce functions include DataLink, which enables the transfer of data using a secure and controlled environment. DataLink is an ideal solution for government agencies needing to exchange large volumes of operational information. Another G2G function is a videoconferencing service that offers two-way video and audio links, enabling government employees to meet together electronically from up to eight sites at any one time.

In addition to G2B functions, the G2G Web site also offers online training to citizens. A service called Westlink delivers adult training and educational programs to remote areas and schools, including rural and regional communities.

For Further Exploration: How is contract management facilitated by e-commerce tools? Describe the WA online training program? Why would government want to take on a role in promoting e-learning?


E-GOVERNMENT IN WESTERN AUSTRALIA

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Implementing E-Government. Like any other organization, government entities want to move into the digital era, becoming click-and-mortar organizations. However, the transformation from traditional delivery of government services to full implementation of online government services may be a lengthy process. The business consulting firm Deloitte and Touche conducted a study (see Wong, 2000) that identified six stages in the transformation to e-government:

Stage 1: Information publishing/dissemination.
Stage 2: “Official” two-way transactions, with one department at a time.
Stage 3: Multipurpose portals.
Stage 4: Portal personalization.
Stage 5: Clustering of common services.
Stage 6: Full integration and enterprise transformation.

The speed at which a government moves from stage 1 to stage 6 varies, but usually the transformation is very slow. Deloitte and Touche found that in 2000, most governments were still in stage 1 (Wong, 2000). The implementation issues that are involved in the transformation to e-government depend on which of the six stages of development a government is in, on the plan for moving to higher stages, and on the available funding. In addition, governments are concerned about maintaining the security and privacy of citizens’ data, so time and effort must be spent to ensure that security. According to emarketer.com (October 2, 2002), the number of U.S. government Web sites with security policies increased from 5 percent in 2000 to 34 percent in 2002; the percentage of those with privacy policies increased from 7 percent in 2000 to 43 percent in 2002.

In general, implementation of G2B is easier than implementation of G2C. In some countries, such as Hong Kong, G2B implementation is outsourced to a private company that pays all of the start-up expenses in exchange for collecting future transaction fees. As G2B services have the potential for rapid cost savings, they can be a good way to begin an e-government EC initiative.

Customer-to-customer (C2C) e-commerce refers to e-commerce in which both the buyer and the seller are individuals (not businesses). C2C is conducted in several ways on the Internet, where the best-known C2C activities are auctions.

C2C AUCTIONS. Regardless where people are, in dozens of countries, selling and buying on auction sites is exploding. Most auctions are conducted by intermediaries, like eBay.com. Consumers can select general sites such as eBay.com or auctionanything.com, and they can use specialized sites such as buyit.com or bid2bid.com. In addition, many individuals are conducting their own auctions. For example, greatshop.com provides software to create C2C reverse auction communities online.

CLASSIFIED ADS. People sell to other people every day through classified ads in newspapers and magazines. Internet-based classified ads have one big advantage over these more traditional types of classified ads: They offer a national, rather than a local, audience. This wider audience greatly increases the supply of goods and services available and the number of potential buyers. For example, infospace.com/info.cls2k contains a list of 3 million job openings and about 500,000 cars, compared with the much, much smaller numbers you might find locally. Another example is recycler.com. Often, placing an ad on one Web site brings it automatically into the classified sections of numerous partners. This increases ad exposure, at no cost. In addition, Internet-based classifieds often can be edited or changed easily, and in many cases they display photos of the product offered for sale.
Like their counterparts in printed media, classified ad Web sites accept no responsibility for the content of any advertisement. Advertisers are identified by e-mail address. A password is used to authenticate the advertiser for future changes in an ad. Most classified ads are provided for free.

The major categories of classified ads are similar to those found in the newspaper: vehicles, real estate, employment, general merchandise, collectibles, computers, pets, tickets, and travel. Classified ads are available through most Internet service providers (AOL, MSN, etc.), at some portals (Yahoo, etc.), and from Internet directories, online newspapers, and more. To help narrow the search for a particular item on several sites, shoppers can use search engines. Once users find an ad and get the details, they can e-mail or call the other party for additional information or to make a purchase. Classified sites generate revenue from affiliate sites.

PERSONAL SERVICES. Numerous personal services are available on the Internet (lawyers, handy helpers, tax preparers, investment clubs, dating services). Some are in the classified ads, but others are listed in specialized Web sites and directories. Some are for free, some for a fee. Be very careful before you purchase any personal services. Fraud or crime could be involved. For example, a lawyer online may not be an expert in the area they profess, or may not deliver the service at all.

SUPPORT SERVICES TO C2C. When individuals buy products or services from individuals, they usually buy from strangers. The issues of ensuring quality, receiving payments, and preventing fraud are critical to the success of C2C. One service that helps C2C is payments by companies such as Paypal.com (see Section 5.8). Another one is escrow services, intermediaries that take the buyer's money and the purchased goods, and only after making sure that the seller delivers what was agreed upon, deliver the goods to the buyer and the money to the seller (for a fee).

5.8 E-COMMERCE SUPPORT SERVICES

The implementation of EC may require several support services. B2B and B2C applications require payments and order fulfillment. Portals require content, etc. Figure 5.4 portrays the collection of the major EC services. They include: e-infrastructure (mostly technology consultants, system developers and integrators, hosting, security, and networks), e-process (mainly payments and logistics), e-markets (mostly marketing and advertising) e-communities (different audiences and business partners), e-services (CRM, PRM, and directory services), and e-content (supplied by content providers). All of these services support the EC applications in the center of the figure, and all of the services need to be managed.

Here we will discuss only two of the above topics—payments and order fulfillment. For details on the other services, see Turban et al., 2004.

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, especially for B2B.
LIMITATIONS OF TRADITIONAL PAYMENT INSTRUMENTS. Non-electronic payments 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, especially if the same telephone line is used. 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 may be less secure for the buyer to use the telephone or mail to arrange or send payment, especially from another country, than to complete a secured transaction on a computer.

Another issue is that many EC transactions are valued at only a few dollars or even 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 off-line is just too high.
For all of these reasons, a better way is needed to pay for goods and services 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 electronic payment: electronic checks, electronic credit cards, purchasing cards, electronic cash, stored-value cards, smart cards, and person-to-person payments. In addition we discuss electronic bill presentment and/or payment, both online and from ATMs. Here we will look at each of these payment mechanisms. In Chapter 15 and in Online File W5.6 we consider how to make them secure.

**Electronic checks.** Electronic checks (e-checks) are similar to regular checks. They are used mostly in B2B (see Reda, 2002). Here is how they work: First, the customer establishes a checking account with a bank. Next, the customer contacts a seller, buys a product or a service, and e-mails an encrypted electronic check to the seller. The seller deposits the check in a bank account, and funds are transferred from the buyer’s account and into the seller’s account. Like regular checks, e-checks carry a signature (in digital form) that can be verified (see echeck.net). Properly signed and endorsed e-checks are exchanged between financial institutions through electronic clearinghouses (see Eccho, 2002, and eccho.org for details). For the process of how e-checks work as done by eCheck Secure (echecksecure.com), see Figure 5.5.

**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 his or her credit card number to the seller. The risk here is that if the
card number is not encrypted, then hackers will be able to read it and may use it illegally. Sender authentication is also difficult. (New technologies will solve this problem in 2 to 3 years, however.) Therefore, for security, only encrypted credit cards should be used. (Credit card details can be encrypted by using the SSL protocol in the buyer’s computer, which is available in standard browsers. This process is described in Online File W5.6.)

Here is how electronic credit cards work: When you buy a book from Amazon, your credit card information and purchase amount are encrypted in your browser. So the information is safe while “travelling” on the Internet. Furthermore, when this information arrives at Amazon, it is not opened but is transferred automatically (in encrypted form) to a clearinghouse, where the information is decrypted for verification and for money transfer from the payer’s account to the payee’s bank account. The process is illustrated in Figure 5.6. Electronic credit cards are used mainly in B2C and in shopping by SMEs (small to medium enterprises).

**Purchasing Cards.** The B2B equivalent of electronic credit cards is *purchasing cards*. In some countries companies pay other companies primarily by means of purchasing cards, rather than by traditional checks. 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 typically are used for unplanned B2B purchases, and corporations generally limit the amount per purchase (usually $1,000 to $2,000). Purchasing cards can be used on the Internet much like regular credit cards. They expedite the process of unplanned purchases, usually as part of *desktop purchasing* described earlier. (For details see Segev and Gebauer, 2001).

**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. **Electronic cash (e-cash)** appears in three major forms: stored-value cards, smart cards, and person-to-person payments.

**Stored-Value Money Cards.** A typical e-payment card is known as a **stored-value money card**. It 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 on it. Each time you use the card, the amount is reduced. One successful example is used by the New York Metropolitan Transportation Authority (MTA), described in Chapter 1. Similar cards are used in many cities around the world. Some of these cards are reloadable, and some are discarded when the money is depleted. The transportation card Octopus in Hong Kong is used in trains, buses, and shopping in stores and from vending machines (for details see Poon and Chan, 2001).

Cards with stored-value money can be also purchased for Internet use. To use such cards, you enter a third-party Web site and 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 online.

**Smart Cards.** Although some people refer to stored-value money cards as smart cards, they are not really the same. True **smart cards** contain a microprocessor (chip), which enables them to store a considerable amount of information (more than 100 times that of a stored-value card) and conduct processing. Such cards are frequently **multipurpose**; they can be used as a credit card, debit card, or stored-value card. In addition, when used in department store chains (as a **loyalty card**), they may contain the purchasing information of shoppers.

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 (see Shelter and Procaccino, 2002). Money values can be loaded onto advanced smart cards 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 various entitlements. The money is transferred electronically to a smart card at an ATM, kiosk, or PC.

**Person-to-Person Payments.** **Person-to-person payments** are one of the newest and fastest-growing payment schemes. They enable the transfer of funds between two individuals, or between an individual and a business, 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 (now an eBay company) claimed (on its Web site, accessed January 6, 2003) to have had about 20 million customer accounts in 2003, handling more than 35 percent of all transactions of eBay and funneling $8.5 billion in payments through its servers annually. Other companies offer similar services;
5.8 E-COMMERCE SUPPORT SERVICES

Citibank c2it (c2it.com), AOL QuickCash, One’s Bank eMoneyMail, Yahoo PayDirect, and WebCertificate (webcertificate.com) are all PayPal competitors.

Virtually all of these person-to-person payment 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. Basically, this entails creating a user name, selecting a password, giving 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 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 Bill Presentment and Payments. An increasing number of people prefer to pay online their recurring monthly bills, such as telephone, utilities, credit cards, and cable TV. The recipients of such payments are even more enthusiastic about such service than the payers, since online payments enable them to reduce processing costs significantly. The following are the major existing payments 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.

Paying Bills at ATMs. In some countries (e.g., Hong Kong, Singapore) customers can pay bills at regular ATMs. The bills are sent by regular mail or can be viewed online. When you receive the bills, you go to an ATM, slide in your bank card, enter a password and go to “bill payments” on the menu. All you need to do is insert the account number of the biller and the amount you want to pay; that amount will be charged to your bank card and sent to the biller. You get a printed receipt on the spot. In addition to utilities you can pay for purchases of products and services (e.g., for airline tickets). Merchants love it and many give a discount to those who use the service, since they do not have to pay 3 percent to Visa or MasterCard.

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 so.

Security Requirements. Security requirements for conducting EC are the following:

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. **Nonrepudiation.** Merchants need protection against the customer's unjustified denial of placing an order. On the other hand, customers need protection against merchants' unjustified denial of payments made. (Such denials, of both types, are called repudiation.)

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. They also want protection against fraud by sellers or by criminals posing as sellers.

**Security Protection.** Several methods and mechanisms can be used to fulfill the above requirements. One of the primary mechanisms is encryption, which is often part of the most useful security schemes. For a coverage of security protection see Online Text Section W5.6 and Chapter 15. Other representative methods are discussed below.

**E-Wallets.** E-wallets (or digital wallets) are mechanisms that provide security measures to EC purchasing. The wallet stores the financial information of the buyer, including credit card number, shipping information, and more. Thus, sensitive information does not need to travel on the Net, and the buyer and seller save time. E-wallets can contain digital certificates (see Online Text Section W5.6), e-loyalty information, etc. As soon as you place an order, say at Amazon.com, your e-wallet at Amazon is opened, and Amazon can process your order.

The problem is that you need an e-wallet with each merchant. One solution is to have a wallet installed on your computer (e.g., MasterCard Wallet). In that case, though, you cannot purchase from another computer, nor is it a totally secured system. Another solution is a universal e-wallet such as Microsoft's Passport (Rosenbaum, 2002) and the Liberty Alliance (Costa, 2002). Universal systems are becoming popular since they provide a digital identity as well. For a description of how Microsoft's Passport works, see Rosenbaum, 2002. At our Web site, in Online File W5.7, you can see how Liberty Alliance works.

**Virtual Credit Cards.** Virtual credit cards are a service that allow you to shop with an ID number and a password instead of with a credit card number. They are used primarily by people who do not trust browser encryption sufficiently to use their credit card number on the Internet. The virtual credit card gives an extra layer of security. The bank that supports your traditional credit card, for example, can provide you with a transaction number valid for use online for a short period. For example, if you want to make a $200 purchase, you would contact your credit card company to charge that amount to your regular credit card account, and would be given transaction number that is good for charges up to $200. This transaction number is encrypted for security, but even in the worst possible case (that some unauthorized entity obtained the transaction number), your loss be limited, in this case to $200. For another example of virtual credit cards, see americanexpress.com.

**Payment Using Fingerprints.** An increasing number of supermarkets allow their regular customers to pay by merely using their fingerprint for identification. A computer template of your fingerprint is kept in the store's computer system. Each time you shop, your fingerprint is matched with the template at
the payment counter. You approve the amount which is then charged either to your credit card or bank account. See Alga (2000) for details.

Order Fulfillment

We now turn our attention to another important EC support service—order fulfillment. Any time a company sells direct to customers it is involved in various order fulfillment activities. It must: quickly find the products to be shipped, and pack them; arrange for the packages to be delivered speedily to the customer’s door; collect the money from every customer, either in advance, by COD, or by individual bill; and handle the return of unwanted or defective products.

It is very difficult to accomplish these activities both effectively and efficiently in B2C, since a company may need to ship small packages to many customers, and do it 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 Turban et al. (2004) and in Bayles (2001).

*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 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 (see fedex.com for how returns are handled via FedEx). Order fulfillment is basically a part of a company’s 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 off-line 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 (see Appendix 3.1A on Build-to-Order). 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 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. Fulfillment is less complicated in B2B where several effective methods are in use (see Bayles, 2001). For more on order fulfillment and IT-supported solutions, see Chapter 8.

5.9 **LEGAL AND ETHICAL ISSUES IN E-BUSINESS**

Ethical standards and their incorporation into law frequently trail technological innovation. E-commerce is taking new forms and enabling new business practices that may bring numerous risks—particularly for individual consumers—along with their advantages. Before we present some specific issues, we discuss the topic of market practices and consumer/seller protections.
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 as, and even faster than, the Internet itself. In most of these stock-fraud cases, stock promoters falsely spread positive rumors about the prospects of the companies 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 especially conducive for fraud, by both sellers and buyers. Other areas of potential fraud include selling bogus investments and phantom business opportunities. Financial criminals now have access to far more people, mainly due to the availability of electronic mail. The U.S. Federal Trade Commission (ftc.gov) regularly publishes examples of twelve scams most likely to arrive via e-mail or be found on the Web.

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 5.5. 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.

<table>
<thead>
<tr>
<th>TABLE 5.5 Tips for Safe Electronic Shopping</th>
</tr>
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<tbody>
<tr>
<td>● Look for reliable brand names at sites like Wal-Mart Online, Disney Online, and Amazon.com. Before purchasing, make sure that the site is authentic by entering the site directly and not from an unverified link.</td>
</tr>
<tr>
<td>● Search any unfamiliar selling site for the company’s address and phone and fax numbers. Call up and quiz the employees about the sellers.</td>
</tr>
<tr>
<td>● Check out the vendor with the local Chamber of Commerce or Better Business Bureau (bbbonline.org). Look for seals of authenticity such as TRUSTe.</td>
</tr>
<tr>
<td>● Investigate how secure the seller’s site is by examining the security procedures and by reading the posted privacy notice.</td>
</tr>
<tr>
<td>● Examine the money-back guarantees, warranties, and service agreements.</td>
</tr>
<tr>
<td>● Compare prices to those in regular stores. Too-low prices are too good to be true, and some “catch” is probably involved.</td>
</tr>
<tr>
<td>● Ask friends what they know. Find testimonials and endorsements in community sites and well-known bulletin boards.</td>
</tr>
<tr>
<td>● Find out what your rights are in case of a dispute.</td>
</tr>
<tr>
<td>● Consult the National Fraud Information Center (fraud.org).</td>
</tr>
<tr>
<td>● Check consumerworld.org for a listing of useful resources.</td>
</tr>
</tbody>
</table>
SELLER PROTECTION. Sellers, too, may need protections. 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 use of their name by others, as well as to protect the 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.

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” (a string of characters stored on the user’s hard drive to record the history of the user’s visits to particular Web sites). 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. Yet 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 (see NetTracker at sane.com). Programs such as Cookie Cutter, Cookie Crusher, and Spam Butcher are designed to allow users to have some control over cookies. (For further discussion see Chapter 16 and Alwang, 2001).

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.

Many legal issues are related to e-commerce (Cheeseman, 2001, Doll et al., 2003, and Isenberg, 2002). Representative examples are discussed below.

DOMAIN NAMES. 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 it is best when the URL matches 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”).

Cybersquatting. Cybersquatting refers to the practice of registering domain names in order to sell them later at a higher price. For example, the original owner of tom.com received about $8 million for the name. The case of tom.com was ethical and legal. But in other cases, cybersquatting can be either illegal or at least unethical (e.g., see Stead and Gilbert, 2001). Companies such as Christian Dior, Nike, Deutsche Bank, and even Microsoft have had to fight or pay to get the domain name that corresponds to their company’s name. The Anticybersquatting Consumer Protection Act (1999) lets trademark owners in the United States sue for statutory damages.

Disintermediation and Reintermediation. One of the most interesting EC issues is that of intermediation. Intermediaries provide two types of services: (1) matching and providing information and (2) value-added services such as consulting. As seen in the Rosenbluth case (at the beginning of Chapter 3), the first type of services (matching and providing information) can be fully automated, and therefore, these services are likely to be assumed by e-marketplaces and portals that provide free services. The second type of services (value-added services) requires expertise, and these can be only partially automated. Rosenbluth decided to charge only for the second type of service. Intermediaries who provide only (or mainly) the first type of service may be eliminated, a phenomena called disintermediation. On the other hand, brokers who provide the second type of service or who manage electronic intermediation, also known as infomediation, are not only surviving, but may actually prosper, as Rosenbluth did. This phenomenon is called reintermediation.

The Web offers new opportunities for reintermediation. First, brokers are especially valuable when the number of participants is enormous, as with the stock market or when complex information products are exchanged. Second, many brokering services require information processing; electronic versions of these services can offer more sophisticated features at a lower cost than is possible with human labor. Finally, for delicate negotiations, a computer mediator may be more predictable, and hence more trustworthy, than a human. For example, suppose a mediator’s role is to inform a buyer and a seller whether a deal can be made, without revealing either side’s initial price to the other, since such a revelation would influence subsequent price negotiations. An independent auditor can verify that a software-based mediator will reveal only the information it is supposed to; a human mediator’s fairness is less easily verified. The subject of reintermediation and intermediation is further discussed in Chapters 7 and 16.

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 named 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 Chapter 16.

5.10 FAILURES AND STRATEGIES FOR SUCCESS

In the concluding section of this chapter we pay attention to failures of EC and to successes.

PRE-INTERNET FAILURES. Failures of e-commerce systems should not seem surprising, since we have known about failures of EDI systems for more than 10 years. A typical example involved the attempt of the U. S. Food and Drug Administration (FDA) to install an online collaboration systems to reduce drug-review time (Williams et al., 1997). It was basically an electronic submission system and then an intranet-based internal distribution and review system. The system failed for various reasons. We present them in list form below; many of these reasons are typical of the reasons for EC failures in general, so we have highlighted the key words, for your future reference.

- No standards were established for submitted documents.
- There was resistance to change to the new system, and the FDA did not force reviewers to work electronically.
- The system was merely an electronic version of existing documents. No business process reengineering (BPR) was undertaken in planning (or improving) the new system.
- The FDA lacked technical expertise in interorganizational information systems and in collaborative commerce.
- No training or even information was provided to the FDA's end users.
- There were learning curve difficulties, and no time was allowed to learn different document systems.
- Clients (the pharmaceutical companies) were not encouraged to make electronic submissions.
- There was no IS planning. The FDA knew that a business process design study was needed, but it did not do it.
However, the FDA learned from its mistakes. An improved EDI-based system was installed in 1998/1999—after a BPR was done, training was completed, and standards were provided. The system became a full success in 1999.

INTERNET-RELATED EC FAILURES. Failures of e-commerce initiatives started as early as 1996. Early on, pioneering organizations saw the potential for EC, but expertise and EC business models were just developing. However, the major wave of failures started in 2000, as secondary funding that was needed by Internet-based EC began to dry up. Here are some examples (again, with key words highlighted).

- PointCast, a pioneer in personalized Web-casting, folded in 1998 due to an incorrect business model. Similarly, Dr. Koop, a medical portal, was unable to raise the needed advertising money, so the company folded. The diagnosis: death due to incorrect business model.
- An Internet mall, operated by Open Market, was closed in 1996 due to an insufficient number of buyers.
- Several toy companies—Red Rocket (a Viacom Company), eparties.com, and babybucks.com—failed due to too much competition, low prices, and lack of cash. Even E-toys, a virtual toy retailer that affected the entire toy industry, folded in 2001 due to its inability to generate profits and the need for additional funding for expanding its logistics infrastructure. It was sold to kkbids.com.
- Garden.com closed its doors in December 2000 due to lack of cash. Suppliers of venture capital were unwilling to give the company any more money to “burn.”
- Living.com, the online furniture store, closed in 2000. The customer acquisition cost was too high.
- PaperX.com, an online paper exchange in the U.K., folded due to lack of second-round funding (funding subsequent to a firm’s original funding but before it goes to the stock market with a stock offering).
- Webvan, an online grocery and same-day delivery company, invested over $1 billion in infrastructure of warehouses and logistics. But its income was insufficient to convince investors to fund it further. It collapsed in 2002. Kozmo, another same-day delivery company in New York, Boston, and other large cities was unable to show sufficient profit and collapsed in 2001.
- In late 2000 Chemdex.com, the “granddaddy” of the third-party exchanges, closed down. Ventro.com, its parent company, said that the revenue growth was too slow and that a new business model was needed. Because of the difficulty in obtaining enough buyers and sellers fast enough (before the cash disappears), some predicted that as many as 90 percent of all 1998–2001 exchanges would collapse (Ulph, Favier, and O’Connell, 2001). And indeed, during 2001–2003 large numbers of exchanges folded or changed their business models.

Even Amazon.com, considered by many as one of the most successful e-commerce sites, did not reach profitability until the end of 2001.

The major lessons of the Internet-based EC failures were summarized by Useem (2000) in his “12 truths” and by Agrawal et al. (2001). The major reasons for failure are incorrect revenue model, lack of strategy and contingency planning, inability to attract enough customers, lack of funding, channel conflict with distributors, too much online competition in standard (commodity) products (e.g., CDs, toys), poor order fulfillment infrastructure, and lack of qualified management.
To learn more about EC failures, visit whytheyfailed.com and techdirt.com. Also, see Kaplan (2002).

**FAILED EC INITIATIVES.** Whereas failing companies, especially publicly listed ones, are well advertised, failing EC initiatives within companies, especially within private companies, are less known. However, news about some failed EC initiatives has reached the media and been well advertised. For example, Levi Strauss stopped online direct sales of its apparel (jeans and its popular Dockers brand) on its Web site (livestrauss.com) after its major distributors and retailers put pressure on the company not to compete with their brick-and-mortar outlets (channel conflict). Another EC initiative that failed was a joint venture between Intel and SAP, two world-class companies, which was designed to develop low-cost solutions for SMEs. It collapsed in August 2000. Large companies such as Citicorp, Disney, and Merrill Lynch also closed EC initiatives after losing millions of dollars in them.

There are hundreds of EC success stories, primarily in specialty and niche markets (see Athitakis, 2003). One example is Puritan.com, a successful vitamin and natural health care product store. Another one is Campusfood.com, which serves take-out food to college students. Monster.com is doing very well, and so is Southwest Airlines Online (iflyswa.com). Alloy.com is a successful shopping and entertainment portal for young adults.

Here are some of the reasons for EC success and some suggestions from EC experts on how to succeed:

- Thousands of brick-and-mortar companies are slowly adding online channels with great success. Examples are Uniglobe.com, Staples.com, Homedepot.com, Clearcommerce.com, 1-800-FLOWERS (800flowers.com), and Southwest Airlines (iflyswa.com).
- As of late 2000, more companies were pursuing mergers and acquisitions (e.g., Ivillage.com with Women.com, though each maintains its separate Web site). Mergers seem to be a growing trend (see Bodow, 2000).
- Peter Drucker, the management guru, provides the following advice: “Analyze the opportunities, go out to look, keep it focused, start small (one thing at a time), and aim at market leadership” (quoted in Daly, 2000).
- A group of Asian CEOs recommend the following factors that are critical for success: select robust business models, understand the dot-com future, foster e-innovation, carefully evaluate a spin-off strategy, co-brand, employ ex-dot-com staffers, and focus on the e-generation as your market (e.g., alloy.com and bolt.com) (Phillips, 2000).
- Consultant PricewaterhouseCoopers (pwglobal.com) suggests avoiding technology malfunctions (e.g., inability to handle a surege of orders quickly enough), which erode consumer trust.
- Many experts (e.g., The National Institute for Standards and Technology, NIST) recommend contingency planning and preparing for disasters (as reported by Buchholz, 2002).
- Agrawal et al. (2001) suggest that companies should match a value proposition with customer segmentation, control extensions of product lines and business models, and avoid expensive technology.
Huff et al. (1999) suggest the following critical success factors for e-commerce: add value, focus on a niche and then extend that niche, maintain flexibility, get the technology right, manage critical perceptions, provide excellent customer service, create effective connectedness, and understand Internet culture.

Analyzing successful companies, researchers have suggested that if they do careful planning to reach profitability quickly, many click-and-mortar companies are likely to succeed. Joint ventures and partnerships are very valuable, and planning for satisfactory infrastructure and logistics to meet high demand is needed. In short, do not forget that e-business has a “business” side!

Finally, let’s not forget that history repeats itself. When the automobile was invented, there were 240 startup companies between 1904 and 1908. In 1910 there was a shakeout, and today there are only three U.S. automakers. However, the auto industry has grown by hundredfolds. The same is happening in EC: Despite the 2000–2003 failures, the total volume of EC activities continued to grow exponentially. For example, emarketer.com reported on May 19, 2003, that B2C revenues in 2002 reached $76 billion, a 48 percent increase over 2001. The estimate for 2003 is $96 billion—more than a 30 percent increase over 2002 (reported by Biz Report, 2003).

1. Managing resistance to change. Electronic commerce can result in a fundamental change in how business is done, and resistance to change from employees, vendors, and customers may develop. Education, training, and publicity over an extended time period offer possible solutions to the problem.

2. Integration of e-commerce into the business environment. E-commerce needs to be integrated with the rest of the business. Integration issues involve planning, competition for corporate resources with other projects, and interfacing EC with databases, existing IT applications, and infrastructure.

3. Lack of qualified personnel and outsourcing. Very few people have expertise in e-commerce. There are many implementation issues that require expertise, such as when to offer special promotions on the Internet, how to integrate an e-market with the information systems of buyers and sellers, and what kind of customer incentives are appropriate under what circumstances. For this reason, it may be worthwhile to outsource some e-commerce activities. Yet, as shown in Chapter 13, outsourcing decisions are not simple.

4. Alliances. It is not a bad idea to join an alliance or consortium of companies to explore e-commerce. Alliances can be created at any time. Some EC companies (e.g., Amazon.com) have thousands of alliances. The problem is which alliance to join, or what kind of alliance to form and with whom.

5. Implementation plan. Because of the complexity and multifaceted nature of EC, it makes sense to prepare an implementation plan. Such a plan should include goals, budgets, timetables, and contingency plans. It should address the many legal, financial, technological, organizational, and ethical issues that can surface during implementation.

6. Choosing the company’s strategy toward e-commerce. Generally speaking there are three major options: (1) Lead: Conduct large-scale innovative e-commerce activities. (2) Watch and wait: Do nothing, but carefully watch
what is going on in the field in order to determine when EC is mature enough to enter it. (3) **Experiment:** Start some e-commerce experimental projects (learn by doing). Each of these options has its advantages and risks.

7. **Privacy.** In electronic payment systems, it may be necessary to protect the identity of buyers. Other privacy issues may involve tracking of Internet user activities by intelligent agents and cookies, and in-house monitoring of employees’ Web activities.

8. **Justifying e-commerce by conducting a cost-benefit analysis is very difficult.** Many intangible benefits and lack of experience may produce grossly inaccurate estimates of costs and benefits. Nevertheless, a feasibility study must be done, and estimates of costs and benefits must be made. For example, see the proposal for assessing EDI investment presented by Hoogewelgen and Wagenaar (1996).

9. **Order fulfillment.** Taking orders in EC may be easier than fulfilling them. To learn about the problems and solutions related to order fulfillment, see Chapter 8.

10. **Managing the impacts.** The impacts of e-commerce on organizational structure, people, marketing procedures, and profitability may be dramatic. Therefore, establishing a committee or organizational unit to develop strategy and to manage e-commerce is necessary.

**ON THE WEB SITE...** Additional resources, including an interactive running case; quizzes; additional resources such as cases, tables, and figures; updates; additional exercises; links; and demos and activities can be found on the book’s Web site.
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 intrabusiness. In each type you can find several business models.

E-commerce offers many benefits to organizations, consumers, and society, but it also has limitations (technological and nontechnological). The current technological limitations are expected to lessen with time.

A major mechanism in EC is 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. Two major types exist: one for selling, which is the traditional process of selling to the highest bidder (forward auctions), and one is for buying, using a tendering system of buying at the lowest bid (reverse auctions).

A minor mechanism is online bartering, in which companies arrange for exchange of physical items and/or services.

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 or in malls. It can be done via electronic catalogs, or by using electronic auctions. Understanding consumer behavior is critical to e-commerce. Finding out what customers want can be determined 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 ads, pop-ups, and customized ads. Permission marketing, interactive and viral marketing, electronic catalogs, making it to the top of search-engine listings, and online promotions offer ways for vendors to reach more customers.

The major B2B applications are selling from catalogs and by forward auctions, buying in reverse auctions and in group and desktop purchasing, and trading in exchanges.

Most organizations employ B2B collaborative commerce, usually along the supply chain.

EC activities can be conducted inside organizations. Three types are recognized: between a business and its employees, between units of the business, and among employees of the same organizations. Many method and tools exist in conducting the above.

E-government commerce can take place between government and citizens, between businesses and governments, or among government units. It makes government operations more effective and efficient.

EC can also be done between consumers (C2C), but should be undertaken with caution. Auction is the most popular C2C mechanism.

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-cheques, e-credit cards, e-cash, stored-value and smart cards, electronic bill presentment and payment, and e-wallets.

Order fulfillment is especially difficult in B2C, making B2C expensive at times (solutions are provided in Chapter 8).

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.

There is increasing fraud and unethical behavior on the Internet, including invasion of privacy by sellers and misuse of domain names. Both sellers and buyers need to be protected.

Periods of innovations produce both many successes and many failures. There have been many of both in e-commerce.

Major reasons for failure are insufficient cash flow, too much competition, conflicts with existing systems, wrong revenue models, and lack of planning. Despite the failures, overall EC volume is growing exponentially.
QUESTIONS FOR REVIEW

1. Define e-commerce and distinguish it from e-business.
2. List the major types of EC (by transaction)
3. Distinguish between business-to-consumer, business-to-business, and intrabusiness EC.
4. List major technological and nontechnological limitations of EC (three each).
5. Describe electronic storefronts and malls.
6. List the benefits of cyberbanking.
7. Describe electronic securities trading.
8. Describe the online job market.
9. Explain how electronic auctions work.
10. Describe the EC consumer behavior model.
11. Describe EC market research and its tools.
12. Describe the major support areas of intelligent agents in EC.
13. Describe online advertising, its methods, and benefits.
14. Describe pop-up ads and the issues surrounding them.
15. Briefly describe the sell-side marketplace.
16. Describe the various methods of e-procurement.
17. Describe how forward and reverse auctions are used in B2B commerce.
18. Describe the role of exchanges in B2B.
22. Describe some C2C activities.
23. Describe intrabusiness and B2E commerce.
24. List the various electronic payment mechanisms.
25. List the security requirements for EC.
26. Describe the issues in EC order fulfillment.
27. Describe some areas of potential fraud on the Internet.
28. Describe buyer protection in EC.
29. List some ethical issues in EC.
30. List the major legal issues of EC.
31. List five reasons for EC failures.
32. List five suggestions for EC success.

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. Distinguish between business-to-business forward auctions and buyers’ bids for RFQs.
4. Discuss the benefits to sellers and buyers of a B2B exchange.
5. What are the major benefits of e-government?
6. Why are online auctions popular?
7. Discuss the reasons for EC failures.
8. Discuss the various ways to pay online in B2C. Which one you prefer and why?
9. Why is order fulfillment in B2C considered difficult?
10. Distinguish between smart cards and value-added cards. Discuss the advantages of each.
11. Discuss the online consumer behavior model and explain why is it needed.
12. Discuss the reasons for having multiple EC business models.

EXERCISES

1. Assume you’re interested in buying a car. You can find information about cars at autos.msn.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. What information is most supportive of your decision making process? Write a report about your experience.
2. Consider the opening case about Hi-Life.
   a. How was the corporate decision making improved?
   b. Summarize the benefits to the customers, suppliers, store management, and employees.
   c. The data collected at Activesys can be uploaded to a PC and transmitted to the corporate intranet via the internet. It is suggested that transmission be done using a wireless system. Comment on the proposal.
3. Compare the various electronic payment methods. Specifically, collect information from the vendor cited in the chapter, and find more with google.com. Be sure you pay attention to security level, speed, cost, and convenience.
GROUP ASSIGNMENTS

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 Spring 2003 the bank served more than 1.2 million cyberaccounts (see wellsfargo.com). Other banks to look at are Citicorp, Netbank, and HSBC (Hong Kong). Each team should attempt to convince the class that its e-bank is the best.

2. Assign each team to one industry. Each team will find five real-world applications of the major business-to-business models listed in the chapter. (Try success stories of vendors and EC-related magazines.) Examine the problems they solve or the opportunities they exploit.

3. Have teams investigate how B2B payments are made in global trade. Consider instruments such as electronic letters of credit and e-checks. Visit tradecard.com and examine their services to SMEs. Also, investigate what Visa and MasterCard are offering. Finally, check Citicorp and some German and Japanese banks.

INTERNET EXERCISES

1. Access etrade.com and register for the Internet stock simulation game. You will be bankrolled with $100,000 in a trading account every month. Play the game and relate your experiences to IT.

2. Use the Internet to plan a trip to Paris.
   a. Find the lowest airfare.
   b. Examine a few hotels by class.
   c. Get suggestions of what to see.

Minicase 1
FreeMarkets.com

FreeMarkets (freemarkets.com) is a leader in creating B2B online auctions for buyers of industrial parts, raw materials, commodities, and services around the globe. The company has created auctions for goods and services in hundreds of industrial product categories. FreeMarkets auctions more than $5 billion worth of purchase orders a year and saves buyers an estimated 2 to 25 percent of total expenses (administrative and items).

FreeMarkets operates two types of marketplaces. First, the company helps customers purchase goods and services through its B2B global marketplace where reverse auctions usually take place. Second, FreeMarkets helps companies improve their asset-recovery results by getting timely market prices for surplus assets through the FreeMarkets AssetExchange, employing a forward auction process, as well as other selling models.

FreeMarkets Onsite Auctions include (1) asset disposal recovery and (2) sourcing (e-procurement) functions. These functions provide the following:

- **Asset disposal analysis.** Market makers work with sellers to determine the best strategy to meet asset-recovery goals.
- **Detailed sales offering.** The company collects and consolidates asset information into a printed or online sales offering for buyers.

- **Targeted market outreach.** FreeMarkets conducts targeted advertising to a global database of 500,000 buyers and suppliers.
- **Event coordination.** The company prepares the site, provides qualified personnel, and enforces auction rules.
- **Sales implementation.** FreeMarkets summarizes auction results and assists in closing sales.

**Asset-Recovery Success Stories**

FreeMarkets helped the following companies make asset recoveries:

- New Line Cinema (newline.com) had unique memorabilia that they had stored for years. In 2001 they decided to auction these via FreeMarkets’s auction marketplace (AssetExchange). The release of a movie sequel titled *Austin Powers: The Spy Who Shagged Me* provided an opportunity for New Line to experiment with the asset-recovery auction. Items from the original production were put off for auction; these items included a 1965 Corvette driven by Felicity Shagwell (sold in the auction for $121,000) and one of Austin’s suits (sold for $7,500). In addition to freeing storage space and generating income, the auction provided publicity for the sequel through the newspaper and television coverage it received. An additional benefit was that the auction was
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.

3. 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?
4. Enter alibaba.com. Identify the site capabilities. Look at the site’s private trading room. Write a report. How can such a site help a person who is making a purchasing?
5. 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.
6. Enter campusfood.com. Explore the site. Why is the site so successful? Could you start a competing one? Why or why not?

linked to the company’s online store. If you were unable to afford the 1965 Corvette, you instead could have purchased a new T-shirt or a poster of the new movie. Finally, the auction created a dedicated community of users. The auction was a great success, and since then New Line Cinema has conducted similar auctions on a regular basis.

Another success story for FreeMarkets’ auctions was American Power Conversion Corp. (apcc.com), which needed a channel for end-of-life (old models) and refurbished power-protection products. These were difficult to sell in the regular distribution channels. Before using auctions, the company used special liquidation sales, which were not very successful. Freemarkets deployed the auction site (using its standard technology, but customizing the applications). It also helped the company determine the auction strategies (such as starting-bid price and auction running length), which were facilitated by DSS modeling. The site became an immediate success. The company is considering selling regular products there, but only merchandise for which there would be no conflict with the company regular distributors.

**E-Procurement (Sourcing) Success Story**

Besides providing companies with successful efforts in asset recovery, FreeMarkets has also helped companies conduct reverse auctions either from their own sites (with necessary expertise provided by FreeMarkets) or from FreeMarkets’ site. Singapore Technologies Engineering (STE), a large integrated global engineering group specializing in the fields of aerospace, electronics, land systems and marine, had the following goals when it decided to use e-procurement (sourcing) with the help of FreeMarkets: to minimize the cost of products they need to buy, such as board parts; to identify a new global supply base for their multi-sourcing strategy; to ensure maximized efficiency in the procurement process; to find new, quality suppliers for reliability and support; and to consolidate existing suppliers. These are typical goals of business purchasers.

FreeMarkets started by training STE’s corporate buyers and other staff. Then it designed an improved process that replicated the traditional negotiations with suppliers. Finally, it took a test item and prepared a RFQ, placing it for bid in the FreeMarkets Web site. FreeMarkets uses a five-step tendering process that starts with the RFQ and ends with supplier management (which includes suppliers verification and training). STE saved 35 percent on the cost of printed circuit board assemblies.

**Questions for Minicase 1**

1. What makes FreeMarket different from eBay?
2. Why do you think FreeMarkets concentrates on asset recovery and on e-procurement?
3. Why is the RFQ mechanism popular?
4. In 2003 the company shifted attention to global supply management. What does the company mean by that?

**Sources:** Compiled from freemarkets.com, see success stories (site accessed December 15, 2002 and March 28, 2003).
Restaurants.com was founded in 1999 as an all-purpose dining portal with menus, video tours online, and a reservation feature. Like other dot-coms, the company was losing money. Not too many restaurants were willing to pay the fees in order to put their Web page on the restaurants.com site. The company was ready to pull the plug when its owner learned that CitySpree, which was selling dining certificates (coupons) online, was for sale in a bankruptcy auction. Realizing that Restaurants.com might have a better model for selling dining certificates online than did CitySpree, the owner purchased CitySpree. This enabled him to change the company from “just another dining portal” to a gift-certificate seller.

Here is how the new business model works: Restaurants are invited to place, for free, dining certificates at restaurants.com, together with information about the restaurant, menu, parking availability, and more. The dining certificate—traditionally had been found in newspapers or newspaper inserts. Placing them online is free to the restaurants’ owners; some use the online coupons to replace the paper coupons, and others supplement the paper coupons with the online version. Restaurants.com sells these certificates online, and collects all the fees for itself. The restaurants get broad visibility, since Restaurants.com advertises on Orbitz, Yahoo, and MSN; it even auctions certificates at eBay.

The certificates offer 30–50 percent off the menu price, so they are appealing to buyers. By using a search engine, you can find a restaurant with a cuisine of your choice, and you can look for certificates when you need them. Although you pay $5–$15 to purchase a certificate, you get usually a better discount than is offered in the newspapers. You pay with your credit card, print the certificate, and are ready to dine. Customers are encouraged to register as members, free of charge. Then they can get e-mails with promotions, news, etc. In their personalized account, customers can view past purchases as well. Customers also can purchase gift certificates to be given to others. And bargains can be found: For example, a $50 off regular price certificate to New York City’s Manhattan Grille was auctioned for only $16.

The business model worked. By going to eBay, the world largest virtual mall, Restaurants.com found an audience of millions of online shoppers. By e-mailing coupons to customers it saves the single largest cost of most conventional coupon marketers—printing and postage. Finally, the model works best in difficult economic times, when price-conscious consumers are looking for great deals. The financial results are striking: Revenues doubled during the first five months of operation (late 2001). The company has been profitable since the third quarter of 2002. And by June 2003, the company was selling over 80,000 certificates a month, grossing over $5 million in 2002, and expecting about $10 million in 2003.

Question for Minicase 2

1. Visit restaurants.com. Find an Italian restaurant in your neighborhood and examine the information provided. Assuming you like Italian food, is the gift certificate a good deal?

2. Review the “lessons from failures” described in Section 5.10 and relate them to this case.

3. Why was it necessary to purchase CitySpree? (Speculate.)

4. What motivates restaurants to participate in the new business model when they refused to do so in the old one?

5. Given that anyone can start a competing business, how can Restaurants.com protect its position? What are some of its competitive advantages?

Sources: Compiled from Athitakis (2003) and restaurants.com (June 1, 2003).
Virtual Company Assignment
E-Commerce in the Diner

As the head hostess for The Wireless Café, Barbara has noticed more customers using wireless devices at their tables, sending e-mails and messages, looking up information during business lunches, as well as talking on the phone. She has shared this observation with you and asked you to identify ways The Wireless Café can attract more customers through e-commerce. After reading Chapter 5, you are now aware that e-commerce is more than just business-to-customer relationships, so you ask her if you can broaden the scope of your analysis. Barbara agrees.

1. Identify the category, participants, and benefits of e-commerce for the following activities:
   a. Ordering food supplies.
   b. Financial reporting (city, state, federal)

2. Inventory management is more than just ordering food supplies. It includes table-setting items (dishes, glassware, cutlery, napkins), and cleaning and office supplies in addition to ingredients for the daily menu offerings. How would Internet-based EDI benefit The Wireless Café in managing these inventories? Can you find any products and services on the Internet that would help The Wireless Café do this?

3. Identify for Barbara some lessons learned in implementing successful ecommerce projects and how they can help ensure TH The Wireless Café’s success.

REFERENCES

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CHAPTER 5 E-BUSINESS AND E-COMMERCE


Useem, J. “Dot-Coms: What Have We Learned?” Fortune (October 2000).


E-commerce transactions must be executable worldwide without any delays or mistakes. Infrastructure may be of many types (see Online File W5.8 and Technology Guides 4 and 5). But, their detailed description is outside the scope of this book. Here we deal with only two infrastructures: EDI and extranets.

**Electronic Data Interchange (EDI)**

As discussed briefly in Chapter 2, **EDI** is the electronic movement of specially formatted standard business documents, such as orders, bills, and confirmations sent between business partners. Figure 5A.1 shows the order-delivery cycle with and without EDI. Many companies use EDI to foster relationships with their suppliers and/or customers. The major advantages of

![Figure 5A.1](image-url)
EDI are summarized in Online File W5.9 at the book’s Web site.

Like e-mail, EDI allows sending and receiving of messages between computers connected by a communication link. However, EDI has the following special characteristics:

- **Business transactions messages.** EDI is used primarily to electronically transfer repetitive business transactions. These include various transactions essential in EC: purchase orders, invoices, approvals of credit, shipping notices, confirmations, and so on.

- **Data formatting standards.** Since EDI messages are repetitive, it is sensible to use some formatting (coding) standards. Standards can shorten the length of the messages and eliminate data entry errors, since data entry occurs only once. In the United States and Canada, data are formatted according to the ANSI X.12 standard. An international standard developed by the United Nations is called EDIFACT.

- **EDI translators.** An EDI translator converts data into standard EDI format code. An example of such formatting for a shipping company is shown in Figure 5A.2.

- **Private lines versus the Internet.** In the past, EDI ran on expensive value-added networks. These networks provided a high level of security and capacity. However, because of cost, their implementation was confined mainly to large trading partners. There were also some problems of compatibility. As a result, large companies doing business with thousands of other companies were unable to place most of them on the EDI. For example, Boeing Commercial Airplane Group, which sells aircraft parts, was using EDI with only 30 out of 500 customers. With the emergence of Internet-based EDI (EDI/Internet), this situation is rapidly changing, as shown in a story about Hewlett-Packard in Online File W5.10 at our Web site.

Note that Internet-based EDI does not have the same capabilities as VAN-based EDI. Therefore, at least in the short run, it is viewed as supplementary to the VAN, permitting more companies to use EDI. Also, Internet EDI may be cheaper, but it still requires coordination and integration with the company’s back-end processing systems. In cases of high use of EDI, such as in financial services, the traditional EDI must be used. But in many cases where low volume of transactions is involved, EDI/Internet is becoming the chosen solution.

**How does EDI work?** A Closer Look 5A.1 illustrates how EDI works. Information flows from the hospital’s information systems into an EDI station that includes a PC and an EDI translator. From there the information moves, using a modem if necessary, to a VAN. The VAN transfers the formatted information to a vendor(s) where an EDI translator converts it to a desired format.

**Internet-based EDI.** There are a number of reasons for firms to create EDI ability over the Internet: The Internet is a publicly accessible network with few geographical constraints. The Internet’s global

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### Sample Invoice

<table>
<thead>
<tr>
<th>Ship To:</th>
<th>Formatted Into X12 Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Corner Store</td>
<td>N1<em>ST</em>THE CORNER STOREN/L</td>
</tr>
<tr>
<td>601 First Street</td>
<td>N3*601 FIRST STREETN/L</td>
</tr>
<tr>
<td>Crossroads, MI</td>
<td>N4<em>CROSSROADS</em>MI*48106N/L</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Charge To:</th>
<th>N1<em>BT</em>ACME DISTRIBUTING CORNL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acme Distributing Company</td>
<td>N3*P.O. BOX 33327N/L</td>
</tr>
<tr>
<td>Anytown, NJ</td>
<td>N4<em>ANYTOWN</em>NJ*44509N/L</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Terms of Sale</th>
<th>ITD<em>01</em>3<em>2</em>10N/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>2% 10 days</td>
<td>from invoice date</td>
</tr>
</tbody>
</table>

**FIGURE 5A.2** Translating Data to EDI Code
network connections offer the potential to reach the widest possible number of trading partners of any viable alternative currently available. In addition, the Internet’s largest attribute—large-scale connectivity (without the need to have any special networking architecture)—is a seedbed for growth of a vast range of business applications. Internet-based EDI can complement or replace current EDI applications. Internet tools such as browsers and search engines are very user-friendly; most users today know how to use them, so new training is minimized. Using the Internet to exchange EDI transactions is consistent with the growing interest of businesses in delivering an ever-increasing variety of products and services electronically, particularly through the Web. Finally, a “bottom-line” reason to move to Internet-based EDI is cost: Using the Internet can cut EDI communication costs by over 50 percent. For implementation of EDI in Singapore (Tradenet) see Online File W5.11 at our Web site.

Extranets

The major network structure used in e-marketplaces and exchanges is an extranet, or “extended intranet.” As discussed in Chapters 2, an extranet is a network that links business partners to one another over the Internet by tying together their corporate intranets. It connects with both the Internet and individual companies’ intranets. An extranet adds value to the Internet by increasing its security and expanding the available bandwidth.
The use of an extranet as a B2B infrastructure is growing rapidly. In contrast with electronic data interchange (EDI), which mostly supports transaction processing between two business partners, an extranet can be used for collaboration, discovery of information, trading support, and other activities. Also, EDI is mostly used to support company-centric transactions (where relationships are fairly permanent), whereas extranets are used also in exchanges (where relationships may be of a “one-deal-only” nature).

The main goal of extranets is to foster collaboration between organizations. Extranets may be used, for example, to allow inventory databases to be searched by business partners, or to transmit information on the status of an order. An extranet typically is open to selected suppliers, customers, and other business partners, who access it on a private wide-area network, or usually over the Internet with a virtual private network (VPN) for increased security and functionality.

Extranets allow the use of capabilities of both the Internet and intranets among business partners. External partners and telecommuting employees can use the extranet to place orders, access data, check status of shipments, and send e-mail. The Internet-based extranet is far more economical than the creation and maintenance of proprietary networks. Extranets support all types of the B2B models described earlier, but especially many-to-many exchanges. Buy-side and sell-side e-marketplaces are supported frequently by EDI/Internet. Extranets are especially useful in supporting collaborative commerce (c-commerce).

An extranet uses the TCP/IP protocol to link intranets in different locations (as shown in Exhibit 5A.3). Extranet transmissions are usually conducted over the Internet, which offers little privacy or transmission security. Therefore, it is necessary to add security features. This is done by creating tunnels of secured data flows, using cryptography and authorization algorithms, to provide secure transport of private communications. An Internet with tunneling technology is known as a virtual private network (VPN) (see Technology Guide 4 for details).

Extranets provide secured connectivity between a corporation’s intranets and the intranets of its business partners, materials suppliers, financial services, government, and customers. Access to an extranet is usually limited by agreements of the collaborating parties, is strictly controlled, and is available only to authorized personnel. The protected environment of an extranet allows partners to collaborate and share information and to perform these activities securely.

Because an extranet allows connectivity between businesses through the Internet, it is an open and flexible platform suitable for supply chain activities. To further increase security, many companies replicate...
the portions of their databases that they are willing to share with their business partners and separate them physically from their regular intranets.

According to Szuprowicz (1998), the benefits of extranets fall into five categories:

1. **Enhanced communications.** The extranet enables improved internal communications; improved business partnership channels; effective marketing, sales, and customer support; and facilitated collaborative activities support.

2. **Productivity enhancements.** The extranet enables just-in-time information delivery, reduction of information overload, productive collaboration between work groups, and training on demand.

3. **Business enhancements.** The extranet enables faster time to market, potential for simultaneous engineering and collaboration, lower design and production costs, improved client relationships, and creation of new business opportunities.

4. **Cost reduction.** The extranet results in fewer errors, improved comparison shopping, reduced travel and meeting time and cost, reduced administrative and operational costs, and elimination of paper-publishing costs.

5. **Information delivery.** The extranet enables low-cost publishing, leveraging of legacy systems, standard delivery systems, ease of maintenance and implementation, and elimination of paper-based publishing and mailing costs.

Rihao-Ling and Yen (2001) reported additional advantages of extranets, such as ready access to information, ease of use, freedom of choice, moderate setup cost, simplified workflow, lower training cost, and better group dynamics. They also listed a few disadvantages, such as difficulty in justifying the investment (measuring benefits and costs), high user expectations, and drain on resources.

While the extranet provides the communication line between intranets, it is still necessary to connect applications. For example, Brunswick Corp. connects all of its boat-brand manufacturing with an extranet called Compass, using IBM’s WebSphere and Web services to provide the connectivity (see Chen, 2003, for details).

**KEY TERMS**

| Electronic data interchange (EDI) (p. •••) | Extranet (p. •••) | Virtual private network (VPN) (p. •••) |

**REFERENCES**

