OVERVIEW OF ELECTRONIC COMMERCE

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

1. Define electronic commerce (EC) and describe its various categories.
2. Describe and discuss the content and framework of EC.
3. Describe the major types of EC transactions.
4. Describe the digital revolution as a driver of EC.
5. Describe the business environment as a driver of EC.
6. Describe some EC business models.
7. Describe the benefits of EC to organizations, consumers, and society.
8. Describe the limitations of EC.
9. Describe the contribution of EC to organizations responding to environmental pressures.
10. Describe online social and business networks.
EC Application

DELL—USING E-COMMERCE FOR SUCCESS

The Problem/Opportunity

Founded in 1985 by Michael Dell, Dell Computer Corp. (now known as Dell) was the first company to offer personal computers (PCs) via mail order. Dell designed its own PC system (with an Intel 8088 processor running at 8 MHz) and allowed customers to configure their own customized systems using the build-to-order concept (see Chapter 2, Appendix 2A). This concept was, and is still, Dell’s cornerstone business model. By 1993, Dell had become one of the top five computer makers worldwide, threatening Compaq, which started a price war. At that time, Dell was taking orders by fax and snail mail and losing money. Losses reached over $100 million by 1994. The company was in trouble.

The Solution

DIRECT MARKETING ONLINE

The commercialization of the Internet in the early 1990s and the introduction of the World Wide Web in 1993 provided Dell with an opportunity to expand rapidly. Dell implemented aggressive online order-taking and opened subsidiaries in Europe and Asia. Dell also started to offer additional products on its Web site. This enabled Dell to better Compaq, and in 2000 Dell became number one in worldwide PC shipments. At that time, Internet sales topped $50 million per day (about $18 billion per year). Today, Dell (dell.com) sells about $60 billion a year in computer-related products online, from network switches to printers, employing over 63,000 people.

Direct online marketing is Dell’s major electronic commerce (EC) activity. Dell sells to the following groups:

- Individuals for their homes and home offices
- Small businesses (up to 200 employees)
- Medium and large businesses (over 200 employees)
- Government, education, and health-care organizations

Sales to the first group are classified as business-to-consumer (B2C). Sales to the other three groups are classified as business-to-business (B2B). Consumers shop at dell.com using an electronic catalog. The sales are completed using mechanisms described in Chapters 2 and 3.

In addition, Dell sells refurbished Dell computers and other products in electronic auctions at dellauction.com. As will be discussed in Chapters 2 and 10, online auctions are an important sales channel. In 2006, Dell opened physical stores, mainly in reaction to customer demands.

Business-to-Business EC. Most of Dell’s sales are to businesses. Whereas B2C sales are facilitated by standard shopping aids (e.g., catalogs, shopping carts, credit card payments; see Chapters 2 and 3), B2B customers obtain additional help from Dell. Dell provides each of its nearly 100,000 business customers with Premier Dell service.

For example, British Airways (BA) considers Dell to be a strategic supplier. Dell provides notebooks and desktops to 25,000 BA users. Dell offers two e-procurement services to BA purchasing agents. The more basic service, Premier Dell, allows BA (and other businesses) to browse, buy, and track orders on a Dell Web site customized for the user’s requirements. The site enables authorized users to select preconfigured PCs for their business unit or department. A more advanced version, Premier B2B, supports e-procurement systems such as Ariba and Commerce One. This provides automatic requisition and order fulfillment once an authorized user has chosen to buy a PC from Dell. BA has placed the e-procurement tools on Dell's E-Working intranet. This allows authorized staff to purchase PCs through a portal that connects directly into Dell’s systems.

In addition to supporting its business customers with e-procurement tools, Dell also is using EC in its own procurement. Dell developed an e-procurement model that it shares with its business partners, such as BA. One aspect of this model is the use of electronic tendering to conduct bids (see Chapter 5). Dell uses electronic tendering when it buys the components for its products.

In 2000, Dell created a B2B exchange at dell.b2b.com. This venture was a failure, like most other exchanges (see Chapter 6). As a result, Dell’s B2B activities (in addition to direct sales and e-procurement) were shifted to collaborative commerce.

E-Collaboration. Dell has many business partners with whom it needs to communicate and collaborate. For example, Dell uses shippers, such as UPS and FedEx, to deliver its computers to individuals. It also uses third-party logistics companies to collect, maintain, and deliver components from its suppliers, and it has many other partners. As we will see in Chapter 7, Dell is using Web Services, an EC technology, to facilitate communication and reduce inventories. Web Services facilitate B2B integration. Integration efforts began in 2000 with other technologies when Dell encouraged its customers to buy online. The B2B integration offer combines Dell PowerEdge servers based on Intel architecture and webMethods B2B integration software to link customers’ existing ERP (enterprise resource planning) or procurement systems directly with Dell and other trading partners. In addition, Dell can provide e-procurement applications and consulting services. Dell also educates customers in its technologies and offers suggestions on how to use them. This is particularly true for emerging technologies such as wireless.

Finally, Dell has a super communication system with its over 15,000 service providers around the globe.

E-Customer Service. Dell uses a number of different tools to provide superb customer service around the clock. To leverage customer relationship management (CRM)—a customer service approach that is customer centered for lasting relationships—Dell provides a virtual help desk for self-diagnosis and service as well as direct access to technical support data. In addition, a phone-based help desk is open 24/7. Customers can also arrange for a live chat with a customer care agent. Product support includes troubleshooting, user guides,
Chapter One: Overview of Electronic Commerce

升级，下载，新闻和新闻稿，FAQ，订单状态信息，一个“我的帐户”页面，一个社区论坛（用于交换想法，信息，和体验），公告板和另一个客户-客户交互功能，培训书籍（以折扣），以及很多。戴尔还提供教育课程项目在learn.dell.com。

戴尔保持着一个大的客户数据库。使用数据挖掘工具，它学会了很多关于它的客户和尝试让它们快乐。该数据库被用于改进营销策略。

 Intrabusiness EC。支持其建-订购能力，显著地提高其需求计划和工厂执行准确性，减少订单到交货时间，并增强客户服务。戴尔与Accenture合作，创建了一个新的，高性能供应链规划解决方案。现在，在戴尔的工厂在世界各地，该程序，为支付自己的五倍，在这12个月的运行，使戴尔更迅速地适应快速变化的技术和商业环境，保持其作为一个高性能业务。戴尔还自动化了它的工厂调度，需求计划能力，以及库存管理利用信息技术和e供应链模型。

 Affiliate Program。Dell提供了合作伙伴的机会，以链接到它们的网站Dell.com。Dell支付2%到4%的百分比，对于任何合格的产品销售从点击到戴尔的链接的合作伙伴的网站。（referring buyers）。

The Results

Dell是《财富》杂志的前五名“最受尊敬”公司，自1999年以来，它连续在《财富》世界500强和《财富》全球500强的排名中。Dell拥有超过100个面向国家的网站，并且利润接近40亿美元。如果你投资10,000美元在Dell的首次公开募股（IPO）中1987年，你将是一个百万富翁，仅从那笔投资。

戴尔积极参与EC研究在德克萨斯大学的奥斯汀分校（戴尔的总部也在奥斯汀）。它也贡献于慈善事业。戴尔与国家克里斯塔娜基金会（NCF）合作为计算机技术到人们，有残疾的学生，和经济上不利的人。配对了公司与NCF的回收项目，使用计算机被翻新然后再分发通过NCF。通过Dell的TechKnow程序，公司向中小学校捐赠计算机。学生学习计算机知识，拆开它们并重新组装它们，加载软件，设置并运行打印机，升级硬件，诊断和修复基本硬件问题，和利用互联网。在完成课程后，学生带回家它们自己建造的计算机，并在第一年免费生物回收。


WHAT WE CAN LEARN . . .

戴尔是主要的EC业务模式的典范。首先，它推进了直接营销模式的PC，然后它将它推进了网上。此外，戴尔补充了其直接营销与建立-订购模式的大规模（大规模定制）。因此，戴尔从中间商的消除中受益，第一模型和从极低的库存和超级现金流量从第二模型。为了满足其产品的大量需求，戴尔引入了其它EC模型，例如电子采购，以改善购买组件，合作商业与它的伙伴，以及内部业务EC以改善其内部运营。最后，戴尔使用e-CRM（CRM在线；见第13章）与它的客户。通过成功地使用e-Commerce模型，戴尔成为了一个世界级别的公司，超越了它的竞争对手。Dell的EC业务模型已经变成经典和最佳实践并且正在跟随。今天，许多其他制造商，特别是制造商。

这一章定义EC，并列出了执行的交易类型。各种EC模型和EC的好处和限制也将被讨论。
1.1 ELECTRONIC COMMERCE: DEFINITIONS AND CONCEPTS

Let’s begin by looking at what the management guru Peter Drucker has to say about EC:

"The truly revolutionary impact of the Internet Revolution is just beginning to be felt. But it is not "information" that fuels this impact. It is not "artificial intelligence." It is not the effect of computers and data processing on decision making, policymaking, or strategy. It is something that practically no one foresees or, indeed, even talked about 10 or 15 years ago; e-commerce—that is, the explosive emergence of the Internet as a major, perhaps eventually the major, worldwide distribution channel for goods, for services, and, surprisingly, for managerial and professional jobs. This is profoundly changing economics, markets and industry structure, products and services and their flows; consumer segmentation, consumer values and consumer behavior; jobs and labor markets. But the impact may be even greater on society and politics, and above all, on the way we see the world and ourselves in it." (Drucker 2002, pp. 3–4)

DEFINING ELECTRONIC COMMERCE

Electronic commerce (EC) is the process of buying, selling, transferring, or exchanging products, services, and/or information via computer networks, including the Internet. EC can also be defined from the following perspectives:

- **Business process.** From a business process perspective, EC is doing business electronically by completing business processes over electronic networks, thereby substituting information for physical business processes (Weill and Vitale 2001, p. 13).
- **Service.** From a service perspective, EC is a tool that addresses the desire of governments, firms, consumers, and management to cut service costs while improving the quality of customer service and increasing the speed of service delivery.
- **Learning.** From a learning perspective, EC is an enabler of online training and education in schools, universities, and other organizations, including businesses.
- **Collaborative.** From a collaborative perspective, EC is the framework for inter- and intraorganizational collaboration.
- **Community.** From a community perspective, EC provides a gathering place for community members to learn, transact, and collaborate. The most popular type of community is social networks, such as MySpace.

EC is often confused with e-business.

DEFINING E-BUSINESS

Some people view the term commerce only as describing transactions conducted between business partners. If this definition of commerce is used, the term electronic commerce would be fairly narrow. Thus, many use the term e-business instead. E-business refers to a broader definition of EC, not just the buying and selling of goods and services but also servicing customers, collaborating with business partners, conducting e-learning, and conducting electronic transactions within an organization. According to McKay and Marshall (2004), e-business is the use of the Internet and other information technologies to support commerce and improve business performance. However, some view e-business as comprising those activities that do not involve buying or selling over the Internet, such as collaboration and intrabusiness activities (online activities between and within businesses); that is, it is a complement of e-commerce. 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 text.

PURE VERSUS PARTIAL EC

EC can take several forms depending on the degree of digitization (the transformation from physical to digital) of (1) the product (service) sold, (2) the process (e.g., ordering, payment, fulfillment), and (3) the delivery method. Choi et al. (1997) created a framework, shown in
Part 1: EC Area

Chapter One: Overview of Electronic Commerce

Partial Electronic Commerce

Pure Electronic Commerce

EXHIBIT 1.1 The Dimensions of Electronic Commerce


Exhibit 1.1, which explains the possible configurations of these three dimensions. A product may be physical or digital, the process may be physical or digital, and the delivery method may be physical or digital. These alternatives create eight cubes, each of which has three dimensions. In traditional commerce, all three dimensions of the cube are physical (lower-left cube); in pure EC, all dimensions are digital (upper-right cube). All other cubes include a mix of digital and physical dimensions.

If there is at least one digital dimension, we consider the situation EC, but only partial EC. For example, purchasing a computer from Dell’s Web site or a book from Amazon.com is partial EC because the merchandise is physically delivered. However, buying an e-book from Amazon.com or a software product from Buy.com is pure EC because the product, payment, and delivery to the buyer are all digital.

EC Organizations. Purely physical organizations (companies) are referred to as brick-and-mortar (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 EC activities, usually as an additional marketing channel. Gradually, many brick-and-mortar companies are changing to click-and-mortar ones (e.g., Wal-Mart online and Marks & Spencer, see Online File W1.1).

INTERNET VERSUS NON-INTERNET EC

Most EC is done over the Internet, but EC also can be conducted on private networks, such as value-added networks (VANs; networks that add communications services to existing common carriers), on local area networks (LANs) using intranets, or even on a single computerized machine. For example, buying food from a vending machine where you pay with a smart card or a cell phone can be viewed as an EC activity.

An example of non-Internet EC would be field employees (such as sales reps) who are equipped with mobile handwriting-recognition computers so they can write their notes in the field immediately after a sales call. (For a more in-depth example, see the Maybelline Case at Online File W1.2.)
PART 1: INTRODUCTION TO E-COMMERCE AND E-MARKETPLACES

ELECTRONIC MARKETS AND INTERORGANIZATIONAL AND INTRAORGANIZATIONAL INFORMATION SYSTEMS

EC can be conducted in an electronic market (e-marketplace) where buyers and sellers meet online to exchange goods, services, money, or information. Electronic markets may be supplemented by interorganizational or intraorganizational information systems.

Interorganizational information systems (IOSs) are those where only routine transaction processing and information flow take place between two or more organizations using a standard protocol, such as electronic data interchange (EDI). EC activities that take place within individual organizations are facilitated by intraorganizational information systems. These systems also are known as intrabusiness EC.

Section 1.1 REVIEW QUESTIONS
1. Define EC and e-business.
2. Distinguish between pure and partial EC.
3. Define click-and-mortar and pure play organizations.
4. Define electronic markets, IOSs, and intraorganizational information systems.
5. Describe non-Internet EC.

1.2 THE EC FRAMEWORK, CLASSIFICATION, AND CONTENT

Although some people still use a stand-alone computer exclusively, the vast majority of people use computers connected to a global networked environment known as the Internet, or to its counterpart within organizations, an intranet. An intranet is a corporate or government network that uses Internet tools, such as Web browsers, and Internet protocols. Another computer environment is an extranet, a network that uses the Internet to link multiple intranets.

The opening case illustrates a new way of conducting business—electronically, using the Internet, intranet, and private networks. The case demonstrates several ways that businesses can use EC to improve the bottom line. Dell is not the only company that has moved its business online. Thousands of other companies, from retailers (e.g., see Online File W1.1, Marks & Spencer) to hospitals, are moving in this direction. In general, selling and buying electronically can be either business-to-consumer (B2C) or business-to-business (B2B). In B2C, online transactions are made between businesses and individual consumers, such as when a person purchases a computer at dell.com. In B2B, businesses make online transactions with other businesses, such as when Dell electronically buys components from its suppliers. Dell also collaborates electronically with its partners and provides customer service online (e-CRM). Several other types of EC will be described soon.

EC is not yet a significant global economic force (less than 5 percent of all transactions in most industries). However, some predict that it could become globally significant within 10 to 20 years (Drucker 2002). Networked computing is the infrastructure for EC, and it is rapidly emerging as the standard computing environment for business, home, and government applications. Networked computing connects multiple computers and other electronic devices that are located in several different locations by telecommunications networks, including wireless ones. This connection allows users to access information stored in several different physical locations and to communicate and collaborate with people separated by great geographic distances and/or by time.

AN EC FRAMEWORK

The EC field is a diverse one, involving many activities, organizational units, and technologies (e.g., see Khosrow-Pour 2006). Therefore, a framework that describes its content is useful. Exhibit 1.2 introduces one such framework.
As can be seen in the exhibit, there are many EC applications (top of exhibit), some of which were illustrated in the opening case about Dell; others will be shown throughout the book (see also Papazoglou and Ribbers 2006; Lee et al. 2006; and Jelassi and Enders 2005). To execute these applications, companies need the right information, infrastructure, and support services. Exhibit 1.2 shows that EC applications are supported by infrastructure and by the following five support areas:

- **People.** Sellers, buyers, intermediaries, information systems specialists, other employees, and any other participants comprise an important support area.
- **Public policy.** Legal and other policy and regulatory issues, such as privacy protection and taxation, which are determined by governments. Included as part of public policy is the issue of technical standards, which are established by government or industry-mandated policy-making groups. Compliance with the regulations is an important issue.
- **Marketing and advertisement.** Like any other business, EC usually requires the support of marketing and advertising. This is especially important in B2C online transactions, in which the buyers and sellers usually do not know each other.
Support services. Many services are needed to support EC. These range from content creation to payments to order delivery.

Business partnerships. Joint ventures, exchanges, and business partnerships of various types are common in EC. These occur frequently throughout the supply chain (i.e., the interactions between a company and its suppliers, customers, and other partners).

The infrastructure for EC is shown at the bottom of Exhibit 1.2. Infrastructure describes the hardware, software, and networks used in EC. All of these components require good management practices. This means that companies need to plan, organize, motivate, devise strategy, and restructure processes, as needed, to optimize the business use of EC models and strategies. Management also deals with strategic and operational decisions (see Chapter 14 and examples throughout the book).

This text provides details on most of the components of the framework. The infrastructure of EC is described in online Technical Appendices A through C on the book’s Web site (in Online Files) and in online Chapter 19.

CLASSIFICATION OF EC BY THE NATURE OF THE TRANSACTIONS OR INTERACTIONS

A common classification of EC is by the nature of the transactions or the relationship among participants. The following types of EC are commonly distinguished.

Business-to-Business (B2B). All of the participants in business-to-business (B2B) e-commerce are either businesses or other organizations (see Chapters 5 through 7). For example, several of Dell’s and Marks & Spencer’s applications involve B2B with their suppliers. Today, over 85 percent of EC volume is B2B (Mockler et al. 2006).

Business-to-Consumer (B2C). Business-to-consumer (B2C) EC includes retail transactions of products or services from businesses to individual shoppers. The typical shopper at Dell online or at Amazon.com is a consumer or customer. This EC type is also called e-tailing (see Chapter 3).

Business-to-Business-to-Consumer (B2B2C). In business-to-business-to-consumer (B2B2C) EC, a business provides some product or service to a client business. The client business maintains its own customers, who may be its own employees, to whom the product or service is provided without adding any value to it. One example of B2B2C is a company that pays AOL to provide its employees with Internet access rather than having each employee pay an access fee directly to AOL. Another example is wholesaler-to-retailer-to-consumer merchandising, such as airlines and travel units that provide travel services, such as airline tickets and hotel rooms, to business partners, such as travel agencies, who then sell the services to customers. As a final example, Godiva (see Case 1.1) sells chocolates directly to business customers. Those businesses may then give the chocolates as gifts to employees or to other businesses. Godiva may mail the chocolate directly to the recipient (with complements of . . .). An interesting example of B2B2C can be found in wishlist.com.au. The term B2B frequently includes B2B2C as well.

Consumer-to-Business (C2B). The consumer-to-business (C2B) category includes individuals who use the Internet to sell products or services to organizations and individuals who seek sellers to bid on products or services (see Chapter 10). Priceline.com is a well-known organizer of C2B transactions.

Mobile Commerce. EC transactions and activities conducted in full or in part in a wireless environment are referred to as mobile commerce, or m-commerce (see Chapter 9). For example, people can use Internet-enabled cell phones to do their banking or order a book from Amazon.com. Many m-commerce applications involve mobile devices. Some people define m-commerce as those transactions conducted when people are away from their home or office; such transactions can be done both on wireless or wireline systems. (See the Maybelline case at Online File W1.2.) If such transactions are targeted to individuals in specific locations, at specific times, they are referred to as location-based commerce, or l-commerce.

Intrabusiness EC. The intrabusiness EC category includes all internal organizational activities that involve the exchange of goods, services, or information among various units and individuals in an organization.
CASE 1.1
EC Application

BUY CHOCOLATE ONLINE? TRY GODIVA.COM

The Business Opportunity
The demand for high-quality chocolate has been increasing rapidly since the early 1990s. Several local and global companies are competing in this market. Godiva Chocolatier is a well-known international company based in New York whose stores can be found in hundreds of malls worldwide. The company was looking for ways to increase its sales, and after rejecting the use of a CD-ROM catalog, it had the courage to try online sales as early as 1994. The company was a pioneering click-and-mortar e-business that exploited an opportunity years before its competitors.

The Project
Teaming with Fry Multimedia (an e-commerce pioneer), Godiva.com (godiva.com) was created as a division of Godiva Chocolatier. The objective was to sell online both to individuals and to businesses. Since its online beginnings in 1994, the Godiva.com story parallels the dynamic growth of e-commerce. Godiva.com went through difficult times—testing e-commerce technologies as they appeared; failing at times, but maintaining its commitment to online selling; and, finally, becoming the fastest-growing division of Godiva, outpacing projections. Godiva.com embodies a true success story. Here we present some of the milestones encountered.

The major driving factors in 1994 were Internet user groups of chocolate lovers, who were talking about Godiva and to whom the company hoped to sell its product online. Like other pioneers, Godiva had to build its Web site from scratch without EC-building tools. A partnership was made with Chocolatier Magazine, allowing Godiva.com to showcase articles and recipes from the magazine on its site in exchange for providing an online magazine subscription form for e-shoppers. The recognition of the importance of relevant content was correct, as was the need for fresh content. The delivery of games and puzzles, which was considered necessary to attract people to EC sites, was found to be a failure. People were coming to learn about chocolate and Godiva and to buy—not to play games. Another concept that failed was the attempt to make the Web site look like the physical store. It was found that different marketing channels should look different from one another.

Godiva.com is a user-friendly place to shop. Its major features include electronic catalogs, some of which are constructed for special occasions (e.g., Mother’s Day and Father’s Day); a store locator (how to find the nearest physical store and events at stores close to you); a shopping cart to make it easy to collect items to buy; a gift selector and a gift finder; custom photographs of the products; a search engine by product, price, and other criteria; instructions on how to shop online (take the tour); a chocolate guide that shows you exactly what is inside each box; a place to click for live assistance or for a paper catalog; and the ability to create an address list for shipping gifts to friends or employees. The site also features “My Account,” a personalized place where customers can access their order history, account, order status, and so on; general content about chocolate (and recipes); and tools for making shipping and payment arrangements.

Godiva.com sells both to individuals and to corporations. For corporations, incentive programs are offered, including address lists of employees or customers to whom the chocolate is to be sent—an example of the B2B2C EC model.

Godiva.com continues to add features to stay ahead of the competition. The site is now accessible using wireless technologies. For example, the store locator is available to wireless phone users, and Palm Pilot users can download mailing lists.

The Results
Godiva.com’s online sales have been growing at a double-digit rate every year, outpacing the company’s “old economy” divisions as well as the online stores of competitors.

Sources: Compiled from Reda (2004) and from godiva.com (accessed September 2006).

Questions
1. Identify the B2B and B2C transactions in this case.
2. Why did Godiva decide to sell online?
3. List the EC drivers in this case.
4. Visit godiva.com. How user-friendly is the site?

and individuals in that organization. Activities can range from selling corporate products to one’s employees to online training and collaborative design efforts (see Chapter 7). Intrabusiness EC is usually performed over intranets and/or corporate portals (gateways to the Web).

Business-to-Employees (B2E). The business-to-employees (B2E) category is a subset of the intrabusiness category in which the organization delivers services, information, or products to individual employees, as Maybelline is doing (see Online File W1.2). A major category of employees is mobile employees, such as field representatives. EC support to such employees is also called B2ME (business-to-mobile employees).
Part 1: Introduction to E-Commerce and E-Marketplaces

**Collaborative Commerce.** When individuals or groups communicate or collaborate online, they may be engaged in **collaborative commerce**, or e-commerce (see Chapter 7). For example, business partners in different locations may design a product together (see Boeing, Case 1.2), using screen-sharing; manage inventory online, as in the Dell case; or jointly forecast product demand, as Marks & Spencer does with its suppliers (Online File W1.1).

**Consumer-to-Consumer (C2C).** In the **consumer-to-consumer (C2C)** category (see Chapter 8), consumers transact directly with other consumers. Examples of C2C include individuals selling residential property, cars, and so on in online classified ads (e.g., see the Case on Craigslist in Chapter 2). The advertisement of personal services over the Internet and the selling of knowledge and expertise online are other examples of C2C. In addition, many auction sites allow individuals to place items up for auction.

**Peer-to-Peer Applications.** Peer-to-peer (P2P) technology can be used in C2C, B2B, and B2C (see Chapter 8). This technology enables networked peer computers to share data files and processing with each other directly. For example, in a C2C peer application, people can exchange (swap) music, videos, software, and other digitizable goods electronically.

**E-Learning.** In **e-learning**, training or formal education is provided online (see Chapter 8). E-learning is used heavily by organizations for training and retraining employees (called e-training). It is also practiced at virtual universities.

**E-Government.** In **e-government** EC, a government entity buys or provides goods, services, or information from or to businesses (G2B) or from or to individual citizens (G2C) (see Chapter 8). An example of an e-government initiative is provided in Online File W1.3.

**Exchange-to-Exchange (E2E).** An **exchange** describes a public electronic market with many buyers and sellers (see Chapter 6). As B2B exchanges proliferate, it is logical for exchanges to connect to one another. Exchange-to-exchange (E2E) EC is a formal system that connects two or more exchanges.

**Nonbusiness EC.** An increased number of nonbusiness institutions, such as academic institutions, nonprofit organizations, religious organizations, social organizations, and government agencies, are using EC to reduce their expenses or to improve their general operations and customer service. (Note that in the previous categories one can usually replace the word business with organization.)

Many examples of the various types of EC transactions will be presented throughout this book.

**A BRIEF HISTORY OF EC**

EC applications were first developed in the early 1970s with innovations such as **electronic funds transfer** (EFT) (see Chapter 12), whereby funds could be routed electronically from one organization to another. However, the use of these applications was limited to large corporations, financial institutions, and a few other daring businesses. Then came **electronic data interchange** (EDI), a technology used to electronically transfer routine documents, which expanded electronic transfers from financial transactions to other types of transaction processing (see Chapter 5 for more on EDI). EDI enlarged the pool of participating companies from financial institutions to manufacturers, retailers, services, and many other types of businesses. Such systems were called **interorganizational system** (IOS) applications, and their strategic value to businesses has been widely recognized. More new EC applications followed, ranging from travel reservation systems to stock trading.

The Internet began life as an experiment by the U.S. government in 1969, and its initial users were a largely technical audience of government agencies and academic researchers and scientists. When the Internet became commercialized and users began flocking to participate in the World Wide Web in the early 1990s, the term **electronic commerce** was coined. EC applications rapidly expanded. A large number of so-called dot-coms, or Internet start-ups, also appeared (see Cassidy 2002). One reason for this rapid expansion was the development of new networks, protocols, and EC software. The other reason was the increase in competition and other business pressures (see discussion in Section 1.4).

Since 1995, Internet users have witnessed the development of many innovative applications, ranging from online direct sales to e-learning experiences. Almost every...
How does technology facilitate collaboration?

List the levels of collaboration and the parties involved.

Compiled from Cone (2006).

At the same time, building such global collaboration process (from 33 to 50 percent), creating a huge competitive advantage. Boeing's shift goes beyond making planes faster and cheaper. The new business model takes Boeing from manufacturer to a high-end technology systems integrator. In 2004, Boeing's IT systems people were consolidated into the Boeing Technology Group. Now parts are designed from concept to production concurrently by partners (including companies in Japan, Russia, and Italy) and "assembled" in a computer model maintained by Boeing outside its corporate firewall. Boeing's role is integrator and interface to the airlines, while the partners take responsibility for the major pieces, including their design. Boeing still takes the hit if the planes fail and deliveries are late, but the actual cost of development and manufacturing is spread across its network of collaborators. At the same time, building such global relationships may help the company sell its planes overseas. The biggest savings are in the time saved through the online collaboration process (from 33 to 50 percent), creating a huge competitive advantage.

Boeing is a necessity for Boeing for several reasons. Airplanes are huge and enormously complex. Politically, sales of a "global product" are enhanced when people in other countries are building parts of the airplane. Companies in these countries may then buy from Boeing. Basic collaboration is done through information-flow tools such as Microsoft Office and SharePoint. Boeing and partners are using Dassault Systems 3D and Product Lifecycle Management solutions.

Other IT tools used are a product suite from Exostar LLC, with which Boeing can share two-dimensional drawings, conduct forward and reverse auctions, and respond to RFPs, and an application called Catia. The plane is designed at Global Collaboration Environment, a special online site maintained by Boeing.

Three levels of collaboration are facilitated between teams and companies. In the first level—design collaboration—all parties involved log in and make their changes electronically in the blueprints, and the team works together. Quality is improved because the computer finds the mistakes. The next level involves suppliers working with their supply chains. The third level is real-time collaboration that involves a considerable amount of product lifecycle management across multiple countries enabled by technology that differentiates Boeing's new model from the previous kinds of global relationships. Boeing also uses the new partnership to solicit ideas of how to improve designs, integration, and so on. This results in cost-cutting.

Boeing maintains 10 multimedia rooms at its Everett, Washington, complex for the use of collaboration teams. These are open 365 days a year, 24 hours a day. A visualization application developed by Boeing allows the teams to do real-time design reviews of complex geometry without any lag time as the models load. Meetings are conducted in English, with sidebar conversations, as needed, in a team member's native language. Collaborative design also speeds the design process, helping Boeing to avoid expensive penalties from its customers if the plane is not delivered on time, and it gives the company more flexibility in simultaneously designing multiple versions of the 787 that are part of its wide-ranging appeal in the marketplace.

Finished designs are stored in another Dassault product, Enovia, which is also maintained by Boeing. This has become an enormous data-management task. The issue of security has also been a concern; however, security technology has developed to the point that the security of the information is assured.

Collaboration across cultures and time zones can raise a host of issues about the way people work together. The adjustment of management practices to the networked, team-oriented approach is important to consider when redesigning human resources practices to meet virtual resource needs and when developing a custom-tailored collaboration platform.

Sources: Compiled from Cone (2006), Workforce-Performance (2006), and Berstein (2006).

Questions

1. Describe online collaboration and its benefits to Boeing.
2. List the levels of collaboration and the parties involved.
3. How does technology facilitate collaboration?
medium- and large-sized organization in the world now has a Web site, and most large U.S. corporations have comprehensive portals through which employees, business partners, and the public can access corporate information. Many of these sites contain tens of thousand of pages and links. In 1999, the emphasis of EC shifted from B2C to B2B, and in 2001 from B2B to B2E, e-commerce, e-government, e-learning, and m-commerce (see Ariguzo et al. 2006). In 2005, social networks started to receive quite a bit of attention, as did l-commerce and wireless applications. Given the nature of technology and the Internet, EC will undoubtedly continue to shift and change. More and more EC successes are emerging (see Athitakis 2003 and Mullaney 2004). For a comprehensive ready-reference guide to EC including statistics, trends, and in-depth profiles of over 400 companies, see Plunkett (2006) and en.wikipedia.org/wiki/E-commerce.

THE INTERDISCIPLINARY NATURE OF EC

Because EC is a new field, it is just now developing its theoretical and scientific foundations. From just a brief overview of the EC framework and classification, you can probably see that EC is related to several different disciplines. The major EC disciplines include the following: computer science, marketing, consumer behavior, finance, economics, management information systems, accounting, management, human resource management, business law, robotics, public administration, and engineering.

The Google Revolution

During its early years, EC was impacted by companies such as Amazon.com (Chapter 3), eBay (Chapter 10), AOL, and Yahoo! (Chapter 18). However, since 2001 no other company has had more of an impact on EC than Google. As will be seen in Chapter 4, Google related Web searches to targeted advertisements much better than companies such as DoubleClick did. Today, Google is much more than just a search engine; it employs several innovative EC models, is involved in many EC joint ventures, and impacts both organizational activities and individual lives, as described in the Real-World Application Cases at the end of this chapter, Chapter 4, Chapter 18, and Online Chapter 19.

EC Failures

Starting in 1999, a large number of EC companies, especially e-tailing and B2B ones, began to fail (see disobey.com/ghostsites; Carton 2002; and Kaplan 2002). Well-known B2C failures include eToys, Xpeditor, MarchFirst, Drkoop.com, Webvan.com, and Boo.com. Well-known B2B failures include Chemdex.com, Ventro.com, and Verticalnet.com. (Incidentally, the history of these pioneering companies is documented in The Business Plan Archive [businessplanarchive.org] by David Kirch; see also Mark 2004.) A survey by Strategic Direction (2005) found that 62 percent of dot-coms lacked financial skills and 50 percent had little experience with marketing. Similarly, many companies failed to ensure they had the inventory and distribution setup to meet initial demand. The reasons for these and other EC failures are discussed in detail in Hwang and Stewart (2006) and in Chapters 3, 6, and 14.

Does the large number of failures mean that EC’s days are numbered? Absolutely not! First, the dot-com failure rate is declining sharply (Rovenpor 2003). Second, the EC field is basically experiencing consolidation as companies test different business models and organizational structures. Third, most pure EC companies, including giants such as Amazon.com, are expanding operations and generating increasing sales.

EC Successes

The last few years have seen the rise of extremely successful virtual EC companies such as eBay, Google, Yahoo!, VeriSign, AOL, and E-Trade. Click-and-mortar companies such as Cisco, Wal-Mart online, General Electric, IBM, Intel, and Schwab also have seen great success (see Papazoglou and Ribbers 2006; Mullaney 2004; Lee et al. 2006; and Jelassi and Enders 2005). Additional success stories include start-ups such as Alloy.com (a young-adults-oriented portal), Bluenile.com, FTD.com, Expedia.com, and Campusfood.com (see Online File W1.4).

For more on the history of e-commerce, see Tian and Stewart (2006).
THE FUTURE OF EC

In 1996, Forrester Research (forrester.com), a major EC-industry analyst, predicted that B2C would be a $6.6 billion business by 2000, up from $518 million in 1996 (Tewksbury 1998). In 1998, B2C sales in the United States were already about $43 billion, or 1 percent of total retail sales (Greenberg 2004). Today's predictions about the future size of EC, provided by respected analysts such as AMR Research, Jupiter Media, Emarketer.com, and Forrester, vary. For example, 2006 global online shopping and B2B transactions are estimated to be about $7 trillion (Tian and Stewart 2006). According to Jupiter Media (2006), online retail spending will increase from $81 billion in 2005 to $95 billion in 2006, growing to $144 billion in 2010. By 2010, 71 percent of online users will use the Internet to shop, compared to 65 percent in 2005, and the Internet will influence nearly half of total retail sales, compared to just 27 percent in 2005. According to Forrester Research (2006), online sales reached $176 billion in 2005 and were expected to grow to $211 billion in 2006. Excluding travel, online sales account for nearly 5 percent of the U.S. retail market (vs. less than 2 percent in 2000). The number of Internet users worldwide was estimated at 700 million in mid-2006 (Mann 2006). Experts predict that as many as 50 percent of all Internet users will shop online by that time. EC growth will come not only from B2C but also from B2B and from newer applications such as e-government, e-learning, B2E, and c-commerce. Overall, the growth of the field will continue to be strong into the foreseeable future. Despite the failures of individual companies and initiatives, the total volume of EC is growing by 15 to 25 percent every year; as Lashinsky (2006) and Savitz (2005) said: “The Boom is Back.”

Abramson (2005) thinks that the next phase of the new economy will be shaped by public policy decisions to create the necessary technology infrastructure and by entrepreneurs responding to that environment. The key variable is intellectual property rights.

Web 2.0

The term Web 2.0 was coined by O’Reilly Media in 2004 to refer to a supposed second-generation of Internet-based services that let people collaborate and share information online in perceived new ways—such as social networking sites, wikis, communication tools, and folksonomies. O’Reilly Media, in collaboration with MediaLive International, used the phrase as a title for a series of conferences. Since then, it has become a popular, if ill-defined and often criticized, buzzword in the technical and marketing communities.

O’Reilly (2005) provides the following examples to illustrate the differences between Web 2.0 and the previous generation, referred to as Web 1.0.

<table>
<thead>
<tr>
<th>Web 1.0</th>
<th>Web 2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>DoubleClick</td>
<td>Google AdSense</td>
</tr>
<tr>
<td>Ofoto</td>
<td>Flickr</td>
</tr>
<tr>
<td>Akamai</td>
<td>BitTorrent</td>
</tr>
<tr>
<td>mp3.com</td>
<td>Napster</td>
</tr>
<tr>
<td>Britannica Online</td>
<td>Wikipedia</td>
</tr>
<tr>
<td>personal Web sites</td>
<td>blogging</td>
</tr>
<tr>
<td>Evite</td>
<td>upcoming.org and EVDB</td>
</tr>
<tr>
<td>domain name speculation</td>
<td>search engine optimization</td>
</tr>
<tr>
<td>page views</td>
<td>cost per click</td>
</tr>
<tr>
<td>screen scraping</td>
<td>Web services</td>
</tr>
<tr>
<td>publishing</td>
<td>participation</td>
</tr>
<tr>
<td>content management systems</td>
<td>wikis</td>
</tr>
<tr>
<td>directories (taxonomy)</td>
<td>tagging (“folksonomy”)</td>
</tr>
<tr>
<td>stickiness</td>
<td>syndication</td>
</tr>
</tbody>
</table>

He also provided a road map (see O’Reilly 2005), which later was expanded by Angermeier (see Exhibit 1.3).
Part 1: Introduction to E-Commerce and E-Marketplaces

Schonfeld (2006a) believes a major characteristic of Web 2.0 is the global spread of innovative Web sites. As soon as a successful idea is deployed as a Web site in one country, similar sites appear around the globe. He presents 23 Web 2.0 type sites in 10 countries.

Section 1.2 REVIEW QUESTIONS
1. List the major components of the EC framework.
2. List the major transactional types of EC.
3. Describe the major landmarks in EC history.
4. List some EC successes and failures.

Now that you are familiar with the concepts of EC, let’s see what drives it (Sections 1.3 and 1.4).

1.3 THE DIGITAL REVOLUTION DRIVES E-COMMERCE
The major driver of EC is the digital revolution.

THE DIGITAL REVOLUTION AND ECONOMY
The digital revolution is upon us. We see it every day at home and work, in businesses, schools, and hospitals, on roads, and even in wars. One of its major aspects is the digital economy.

The Digital Economy
The digital economy refers to an economy that is based on digital technologies, including digital communication networks (the Internet, intranets, extranets, and VANs), computers, software, and other related information technologies; also called the Internet economy, the new economy, or the Web economy. In this new economy, digital networking and communications infrastructures provide a global platform over which people and organizations interact, communicate, collaborate, and search for information. According to Sharma (2006) and Choi and Whinston (2000), this platform displays the following characteristics:

- A vast array of digitizable products—databases, news and information, books, magazines, TV and radio programming, movies, electronic games, musical CDs, and software—are delivered over a digital infrastructure anytime, anywhere in the world.
- Consumers and firms conduct financial transactions digitally through digital currencies or financial tokens that are carried via networked computers and mobile devices.
Microprocessors and networking capabilities are embedded in physical goods such as home appliances and automobiles.

Information is transformed into a commodity.

Knowledge is codified.

Work and production are organized in new and innovative ways.

The term digital economy also refers to the convergence of computing and communications technologies on the Internet and other networks and the resulting flow of information and technology that is stimulating EC and vast organizational changes. This convergence enables all types of information (data, audio, video, etc.) to be stored, processed, and transmitted over networks to many destinations worldwide (see also Sharma 2006; Kehal and Singh 2004; and Turban et al. 2007).

The digital economy is creating an economic revolution (see Chapter 15 and Chen 2004), which, according to the Emerging Digital Economy II (U.S. Department of Commerce 1999), was evidenced by unprecedented economic performance and the longest period of uninterrupted economic expansion in U.S. history (1991–2000), combined with low inflation. Because of the growth of the Internet and its usage, hardware advances (e.g., PCs, cell phones), progress in communications capabilities (e.g., VoIP, worldwide broadband adoption), advanced usage of digital media (e.g., Internet video, blogs, and wikis), and IT spending for better productivity, the future of the digital economy is looking good (Lenard and Britton 2006).

The digital revolution accelerates EC mainly by providing competitive advantage to organizations.

The digital revolution enables many innovations, some of which are listed in Insights and Additions 1.1. Many, many other innovations characterize the digital revolution, and new ones appear daily.

Exhibit 1.4 describes the major characteristics of the digital economy.

The digital revolution drives EC by providing the necessary technologies, as well as by creating major changes in the business environment, as described in the next section.

Section 1.3 REVIEW QUESTIONS

1. Define the digital economy.

2. List the characteristics of the digital economy (per Choi and Whinston 2000 and Exhibit 1.4).

<table>
<thead>
<tr>
<th>EXHIBIT 1.4</th>
<th>Some Characteristics of the Digital Revolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>Description</td>
</tr>
<tr>
<td>Globalization</td>
<td>Global communication and collaboration; global electronic marketplaces.</td>
</tr>
<tr>
<td>Digital system</td>
<td>From TV to telephones and instrumentation, analog systems are being converted to digital ones.</td>
</tr>
<tr>
<td>Speed</td>
<td>A move to real-time transactions, thanks to digitized documents, products, and services. Many business processes are expedited by 90 percent or more.</td>
</tr>
<tr>
<td>Information overload</td>
<td>Although the amount of information generated is accelerating, intelligent search tools can help users find what they need.</td>
</tr>
<tr>
<td>Markets</td>
<td>Markets are moving online. Physical marketplaces are being replaced by electronic markets; new markets are being created, increasing competition.</td>
</tr>
<tr>
<td>Digitization</td>
<td>Music, books, pictures, and more (see Chapter 2) are digitized for fast and inexpensive distribution.</td>
</tr>
<tr>
<td>Business models and processes</td>
<td>New and improved business models and processes provide opportunities to new companies and industries. Cyberintermediation and no intermediation are on the rise.</td>
</tr>
<tr>
<td>Innovation</td>
<td>Digital and Internet-based innovations continue at a rapid pace. More patents are being granted than ever before.</td>
</tr>
<tr>
<td>Obsolescence</td>
<td>The fast pace of innovation creates a high rate of obsolescence.</td>
</tr>
<tr>
<td>Opportunities</td>
<td>Opportunities abound in almost all aspects of life and operations.</td>
</tr>
<tr>
<td>Fraud</td>
<td>Criminals employ a slew of innovative schemes on the Internet. Cybercons are everywhere.</td>
</tr>
<tr>
<td>Wars</td>
<td>Conventional wars are changing to cyberwars.</td>
</tr>
<tr>
<td>Organizations</td>
<td>Organizations are moving to digital enterprises.</td>
</tr>
</tbody>
</table>


According to Farivar (2004), VIP patrons of the Baja Beach Club in Barcelona, Spain, can have radio frequency identification (RFID) chips, which are the size of a grain of rice, implanted into their upper arms, allowing them to charge drinks to a bar tab when they raise their arm toward the RFID reader. An RFID is a tiny tag that contains a processor and antenna; it can communicate wirelessly with a detecting unit in a reader over a short distance (see Lebbecke 2006 and Chapters 7 and 9). “You don’t call someone crazy for getting a tattoo,” says Conrad Chase, director of Baja Beach Clubs international. “Why would they be crazy for getting this?”

Pearson Education, Inc., the publisher of this book, in collaboration with O’Reilly & Associates, offers professors reasonably priced, customized textbooks for their classes by compiling material from thousands of Pearson’s publications and the instructors’ own materials. The customized books are either electronic (Chapter 8) or more expensive hard copies.

In Japan, a person can wave a Casio watch over a scanner to purchase products from a vending machine, pay for food in a cafeteria, or pay for gasoline.

Dryers and washers in college dorms are hooked to the Web. Students can punch a code into their cell phones or sign in at esuds.net and check the availability of laundry machines. Furthermore, they can pay with their student ID or with a credit card and receive e-mail alerts when their wash and dry cycles are complete. Once in the laundry room, a student activates the system by swiping a student ID card or keying in a PIN number. The system automatically injects premeasured amounts of detergent and fabric softener, at the right cycle time.

More than 50 percent of all airline tickets sold in the United States are electronic tickets. It costs more to purchase a ticket from a local travel agent or by phone directly from the airline. In some airports, travelers can get their boarding passes from a machine. Most airlines allow travelers to print their boarding passes from home.

In January 2004, NASA’s Web site received more than 6.5 billion hits in a few days—the biggest Internet government event to date—because people were interested in viewing the Mars Exploration Rover’s landing on Mars.

Several banks in Japan issue smart cards that can be used only by their owners. When using the cards, the palm vein of the owner’s hand is compared with a prestored template of the vein stored on the smart card. When the owner inserts the card into an ATM or vendors’ card readers that are equipped with the system, it will dispense the card owner’s money. The police are alerted if anyone other than the card’s owner tries to use it.

Jacobi Medical Center in New York tracks the whereabouts of patients in the hospital. Each patient has an RFID in a plastic band strapped to the wrist. Each time a patient passes an RFID reader, the patient’s location is transmitted in real time to the responsible staff member. The RFID is linked to the hospital’s computer network, connecting the patient’s records to labs, billing, and the pharmacy.

To find adoptive parents for himself and a baby sister after both parents died of cancer, a Chinese boy in Zhengzhou, China, created a special Web site that described the children and showed photos. Within a short time, dozens of people from many countries expressed an interest (Zhengzhou Evening News [in Chinese], September 27, 2004).

CompUSA offers an ATM-like service that dispenses software like candy from a vending machine. An ATM-like device with a touch screen lets CompUSA consumers shop for software by choosing an operating system and selecting from categories such as business, education, and games. The consumer is presented with a list of titles and descriptions and prices. Once the consumer picks a title, an order ticket is printed. The consumer then presents the order ticket to a sales rep and pays for the software. The rep then enters information into a second machine, called an order-fulfillment station. It burns the software onto a CD. The sales rep packages the CD and instructions in a box.

According to People’s Daily Online from China (2006), distressed parents have created a blog to track down their missing 24-year-old son (blog.sina.com.cn/m/?xunzi). The blog is linked to some celebrity blogs to get more attention.

Using his blog site (oneredpaperclip.blogspot.com), Kyle MacDonald of Canada was able to trade a red paper clip into a three-bedroom house. He started by advertising in the barter section of Craigslist.com that he wanted something like candy from a vending machine. An ATM-like device with a touch screen lets CompUSA consumers shop for software by choosing an operating system and selecting from categories such as business, education, and games. The consumer is presented with a list of titles and descriptions and prices. Once the consumer picks a title, an order ticket is printed. The consumer then presents the order ticket to a sales rep and pays for the software. The rep then enters information into a second machine, called an order-fulfillment station. It burns the software onto a CD. The sales rep packages the CD and instructions in a box.

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Camera-equipped cell phones are used in Finland as health recorders. A patient’s records are transmitted in real time to the responsible staff member. The RFID is linked to the hospital’s computer network, connecting the patient’s records to labs, billing, and the pharmacy.

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Camera-equipped cell phones are used in Finland as health recorders. A patient’s records are transmitted in real time to the responsible staff member. The RFID is linked to the hospital’s computer network, connecting the patient’s records to labs, billing, and the pharmacy.
to react quickly to both the problems and the opportunities resulting from this new business environment. Because the pace of change and the level of uncertainty are expected to accelerate, organizations are operating under increasing pressures to produce more products, faster, and with fewer resources.

According to Huber (2004), the new business environment is a result of advances in science occurring at an accelerated rate. These advances create scientific knowledge that feeds on itself, resulting in more and more technology. The rapid growth in technology results in a large variety of more complex systems. As a result, the business environment has the following characteristics: a more turbulent environment, with more business problems and opportunities; stronger competition; the need for organizations to make decisions more frequently, either by expediting the decision process or by having more decision makers; a larger scope for decisions because more factors (market, competition, political issues, and global environment) need to be considered; and more information and/or knowledge is needed for making decisions.

THE BUSINESS ENVIRONMENT

Most people, sports teams, and organizations are trying to improve their performance. For some, it is a challenge; for others, it is a requirement for survival. Yet, for some it is the key to improved life, profitability, or reputation.

Most organizations measure their performance periodically, comparing it to some metrics and to the organization’s mission, objectives, and plans. Unfortunately, in business, performance often depends not only on what you do but also on what others are doing, as well as on forces of nature. In the business world, we refer to such events, in totality, as the business environment. Such an environment may create significant pressures that can impact performance in uncontrollable, or sometimes even in unpredictable, ways.

The Business Environment Impact Model

The model shown in Exhibit 1.5 illustrates how the business environment (left) creates problems and opportunities that drive what organizations are doing in their business processes (the “our company” box). Other drivers are the organization’s mission, goals, strategy, and plans. Business processes include competencies, activities, and responses to the environmental pressures that result in problems, constraints, and opportunities (what we term critical response activities or solutions). Organizational activities in business processes result in measurable
Part 1: Introduction to E-Commerce and E-Marketplaces

EXHIBIT 1.6 Major Business Pressures

<table>
<thead>
<tr>
<th>Market and Economic Pressures</th>
<th>Societal Pressures</th>
<th>Technological Pressures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong competition</td>
<td>Changing nature of workforce</td>
<td>Increasing innovations and new technologies</td>
</tr>
<tr>
<td>Global economy</td>
<td>Government deregulation, leading to more competition</td>
<td>Rapid technological obsolescence</td>
</tr>
<tr>
<td>Regional trade agreements</td>
<td>Compliance (e.g., Sarbanes-Oxley Act)</td>
<td>Increases in information overload</td>
</tr>
<tr>
<td>(e.g., NAFTA)</td>
<td>Shrinking government subsidies</td>
<td>Rapid decline in technology cost versus labor cost</td>
</tr>
<tr>
<td>Extremely low labor cost in some countries</td>
<td>Increased importance of ethical and legal issues</td>
<td></td>
</tr>
<tr>
<td>Frequent and significant changes in markets</td>
<td>Increased social responsibility of organizations</td>
<td></td>
</tr>
<tr>
<td>Increased power of consumers</td>
<td>Rapid political changes</td>
<td></td>
</tr>
</tbody>
</table>

performance, which provides the solution to problems/opportunities, as well as feedback on the mission, strategy, and plans.

Notice that in the figure EC and IT provide support to organizations’ activities and to actual performance, countering business pressures. We will demonstrate this throughout the book. Now, let’s examine the two major components of the model: business pressures and organizational responses.

Business Pressures

In this text, business pressures are divided into the following categories: market (economic), societal, and technological. The main types of business pressures in each category are listed in Exhibit 1.6.

Organizational Response Strategies

How can organizations operate in such an environment? How can they deal with the threats and the opportunities? To begin with, many traditional strategies are still useful in today’s environment. However, because some traditional response activities may not work in today’s turbulent and competitive business environment, many of the old solutions need to be modified, supplemented, or discarded. Alternatively, new responses can be devised. Critical response activities can take place in some or all organizational processes, from the daily processing of payroll and order entry to strategic activities such as the acquisition of a company. Responses can also occur in the supply chain, as demonstrated by the cases of Boeing (Case 1.2), Dell (opening case), and in Marks & Spencer (Online File W1.1). A response activity can be a reaction to a specific pressure already in existence, or it can be an initiative that will defend an organization against future pressures. It can also be an activity that exploits an opportunity created by changing conditions.

Many response activities can be greatly facilitated by EC. In some cases, EC is the only solution to these business pressures. The major EC-supported response activities are provided in Exhibit 1.7 and in Online File W1.5.

Section 1.4 REVIEW QUESTIONS

1. List the components of the business environment impact model and explain the model.
2. List the major factors in today’s business environment.
3. List some of the major response activities taken by organizations.

1.5 EC BUSINESS MODELS

One of the major characteristics of EC is that it enables the creation of new business models (see Rappa 2006). A business model is a method of doing business by which a company can generate revenue to sustain itself. The model also spells out where the company is positioned in the value
EXHIBIT 1.7  Innovative Organizational Responses

<table>
<thead>
<tr>
<th>Response Strategy</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic systems</td>
<td>Improve strategic advantage in industry.</td>
</tr>
<tr>
<td>Agile systems</td>
<td>Increase ability to adapt to changes and flexibility.</td>
</tr>
<tr>
<td>Continuous improvements and business process management</td>
<td>Using enterprise systems improve business processes. Introduce e-procurement.</td>
</tr>
<tr>
<td>Customer relationship management</td>
<td>Introduce programs to improve customers relationships using the Internet and EC models (see Online File W1.6).</td>
</tr>
<tr>
<td>Business alliances and Partner Relationship Management (PRM)</td>
<td>Create joint ventures, partnerships, e-collaboration, virtual corporations and others for win-win situations (even with competitors). (See Boeing Case 1.3).</td>
</tr>
<tr>
<td>Electronic markets</td>
<td>Use both private and public electronic market to increase efficiency and effectiveness.</td>
</tr>
<tr>
<td>Cycle time reduction</td>
<td>Increase speed of operation and reduce time-to-market (see Online File W1.7).</td>
</tr>
<tr>
<td>Empowering employees, especially at the frontline (interacting with customers, partners)</td>
<td>Provide employees with computerized decision aids so they can make quick decisions on their own. (See Davenport 2006).</td>
</tr>
<tr>
<td>Supply chain improvements</td>
<td>Reduce problems along the supply chain, expedite flows, reduce inventories.</td>
</tr>
<tr>
<td>Mass customization in a build-to-order system</td>
<td>Produce customized products (services), rapidly at reasonable cost to many, many customers (mass) as Dell does. See Appendix 2A.</td>
</tr>
<tr>
<td>Intrabusiness use of automation</td>
<td>Many intrabusiness activities, from sales force automation to inventory management can be improved with e-commerce and m-commerce.</td>
</tr>
<tr>
<td>Knowledge management</td>
<td>Appropriate creation, storage, and dissemination of knowledge using electronic systems, increases productivity, agility, and competitiveness.</td>
</tr>
<tr>
<td>Customer selection, loyalty, and service</td>
<td>Identify customers with the greatest profit potential; increase likelihood that they will want the product or service offering; retain their loyalty.</td>
</tr>
<tr>
<td>Human capital</td>
<td>Select the best employees for particular tasks or jobs, at particular compensation levels.</td>
</tr>
<tr>
<td>Product and service quality</td>
<td>Detect quality problems early and minimize them.</td>
</tr>
<tr>
<td>Financial performance</td>
<td>Better understand the drivers of financial performance and the effects of nonfinancial factors.</td>
</tr>
<tr>
<td>Research and development</td>
<td>Improve quality, efficacy, and where applicable, safety of products and services.</td>
</tr>
</tbody>
</table>

chain—that is, by what activities the company adds value to the product or service it supplies. (The value chain is the series of value-adding activities that an organization performs to achieve its goals, such as making profit, at various stages of the production process.) Some models are very simple. For example, Wal-Mart buys merchandise, sells it, and generates a profit. In contrast, a TV station provides free broadcasting to its viewers. The station’s survival depends on a complex model involving advertisers and content providers. Public Internet portals, such as Yahoo!, also use a complex business model. One company may have several business models.

Business models are a subset of a business plan or a business case. These concepts frequently are confused. (In other words, some equate a business model with a business plan.) However, as Chapters 14 and 16 explain, business plans (Appendix 16A) and cases differ from business models (also see Preissl et al. 2004; Lee et al. 2006; and Currie 2004).

THE STRUCTURE OF BUSINESS MODELS

Several different EC business models are possible, depending on the company, the industry, and so on. Weill and Vitale (2001) developed a framework for evaluating the viability of e-business initiatives. According to this methodology, eight elementary, or “atomic,” e-business models can be combined in different ways to create operational e-business initiatives. The eight atomic
Part 1: Introduction to E-Commerce and E-Marketplaces

Business models are direct marketing, intermediary, content provider, full-service provider, shared infrastructure, value net integrator, virtual community, and consolidator of services for large organizations. For example, the Amazon.com business model combines direct marketing, the intermediary role, virtual community, and content provider. Each atomic model can be described by four characteristics: strategic objectives, sources of revenue, critical success factors, and core competencies required. However, all business models share common elements.

According to McKay and Marshall (2004), a comprehensive business model is composed of the following six elements:

- A description of the customers to be served and the company’s relationships with these customers, including what constitutes value from the customers’ perspective (customers’ value proposition)
- A description of all products and services the business will offer
- A description of the business process required to make and deliver the products and services
- A list of the resources required and the identification of which ones are available, which will be developed in house, and which will need to be acquired
- A description of the organization’s supply chain, including suppliers and other business partners
- A description of the revenues expected (revenue model), anticipated costs, sources of financing, and estimated profitability (financial viability)

Models also include a value proposition, which is an analysis of the benefits of using the specific model (tangible and intangible), including the customers’ value proposition cited earlier.

A detailed discussion of and examples of business models and their relationship to business plans is presented in Chapter 16. For a list of components and key issues of EC business models, see Lee et al. (2006).

This chapter presents two of the elements that are needed to understand the material in Chapters 2 through 15: revenue models and value propositions.

### Revenue Models

A revenue model outlines how the organization or the EC project will generate revenue. For example, the revenue model for Godiva’s online EC initiative shows revenue from online sales. The major revenue models are:

- **Sales.** Companies generate revenue from selling merchandise or services over their Web sites. An example is when Wal-Mart, Amazon.com, or Godiva sells a product online.

- **Transaction fees.** A company receives a commission based on the volume of transactions made. For example, when a homeowner sells a house, he typically pays a transaction fee to the broker. The higher the value of the sale, the higher the total transaction fee. Alternatively, transaction fees can be levied per transaction. With online stock trades, for example, there is usually a fixed fee per trade, regardless of the volume.

- **Subscription fees.** Customers pay a fixed amount, usually monthly, to get some type of service. An example would be the access fee for AOL. Thus, AOL’s primary revenue model is subscription (fixed monthly payments).

- **Advertising fees.** Companies charge others for allowing them to place a banner on their sites. This is how Google has made its fortune. (See Chapter 4 and the Real-World Application Case at the end of this chapter.)

- **Affiliate fees.** Companies receive commissions for referring customers to others’ Web sites.

- **Other revenue sources.** Some companies allow people to play games for a fee or to watch a sports competition in real time for a fee (e.g., see espn.go.com). Another revenue source is licensing fees (e.g., datadirect-technologies.com). Licensing fees can be assessed as an annual fee or a per usage fee. Microsoft takes fees from each workstation that uses Windows NT, for example.
A company uses its *revenue model* to describe how it will generate revenue and its *business model* to describe the process it will use to do so. Exhibit 1.8 summarizes five common revenue models. For example, Godiva's online revenue model shows that customers can order products online. The customers can pick up the merchandise at a Godiva store or, for an extra charge, have it shipped to their homes. The revenue comes from sales, which take place both off-line and online.

The revenue model can be part of the value proposition or it may complement it.

**Value Proposition**

Business models also include a value-proposition statement. A *value proposition* refers to the benefits, including the intangible, nonquantitative ones, that a company can derive from using the model. In B2C EC, for example, a value proposition defines how a company’s product or service fulfills the needs of customers. The value proposition is an important part of the marketing plan of any product or service.

Specifically, how do e-marketplaces create value? Amit and Zott (2001) identify four sets of values that are created by e-business: search and transaction cost-efficiency, complementarities, lock-in, and novelty. Search and transaction cost-efficiency enables faster and more informed decision making, wider product and service selection, and greater economies of scale—cost savings per unit as greater quantities are produced and sold (e.g., through demand and supply aggregation for small buyers and sellers). Complementarities involve bundling some goods and services together to provide more value than from offering them separately. Lock-in is attributable to the high switching cost that ties customers to particular suppliers. Novelty creates value through innovative ways for structuring transactions, connecting partners, and fostering new markets.

-value proposition-

The benefits a company can derive from using EC.
Bakos (1991) identifies similar values: reduced search cost, significant switching cost, economies of scale and scope, and network externality (i.e., the tendency for consumers to place more value on a good or service as more of the market uses that good or service). Bakos regards search cost reduction as the attribute most specific to e-marketplaces. It is the subject of analysis in many studies on e-marketplaces.

**Functions of a Business Model**

According to Chesbrough and Rosenbloom (2002), business models have the following functions or objectives:

- Articulate a customer value proposition.
- Identify a market segment (who will use the technology for what purpose; specify the revenue-generation process).
- Define the venture’s specific value chain structure.
- Estimate the cost structure and profit potential.
- Describe the venture’s positioning within the value network linking suppliers and customers (includes identification of potential complementors and competitors).
- Formulate the venture’s competitive strategy.

**TYPICAL EC BUSINESS MODELS**

There are many types of EC business models. Examples and details of EC business models can be found throughout this text (and also in Rappa 2006; Currie 2004; Rossi et al. 2003; and Afuah and Tucci 2003). The following list describes some of the most common or visible models. Details are provided throughout the text.

1. **Online direct marketing.** The most obvious model is that of selling products or services online. Sales may be from a manufacturer to a customer, eliminating intermediaries or physical stores (e.g., Godiva), or from retailers to consumers, making distribution more efficient (e.g., Wal-Mart). This model is especially efficient for digitizable products and services (those that can be delivered electronically). This model has several variations (see Chapters 3 and 5). It is practiced in B2C (where it is called e-tailing) and in some B2B types of EC.

2. **Electronic tendering systems.** Large organizational buyers, private or public, usually make large-volume or large-value purchases through a tendering (bidding) system, also known as a reverse auction. Such tendering can be done online, saving time and money. Pioneered by General Electric Corp., e-tendering systems are gaining popularity. Indeed, several government agencies mandate that most of their procurement must be done through e-tendering (see Chapter 5).

3. **Name your own price.** Pioneered by Priceline.com, the name-your-own-price model allows buyers to set the price they are willing to pay for a specific product or service. Priceline.com will try to match a customer’s request with a supplier willing to sell the product or service at that price. This model is also known as a demand-collection model (see Chapter 10).

4. **Find the best price.** According to this model, also known as a search engine model (see Bandyopadhyay 2001), a customer specifies a need and then an intermediate company, such as Hotwire.com, matches the customer’s need against a database, locates the lowest price, and submits it to the consumer. The potential buyer then has 30 to 60 minutes to accept or reject the offer. A variation of this model is available for purchasing insurance: A consumer can submit a request for insurance to Insweb.com and receive several quotes. Many companies employ similar models to find the lowest price. For example, consumers can go to eloan.com to find the best interest rate for auto or home loans. A well-known company in this area is Shopping.com, which is described with similar companies in Chapter 3.

5. **Affiliate marketing.** Affiliate marketing is an arrangement whereby a marketing partner (a business, an organization, or even an individual) refers consumers to the selling company’s Web site (see Chapter 4). The referral is done by placing a banner ad or the logo of the
selling company on the affiliated company’s Web site. Whenever a customer who was referred to the selling company’s Web site makes a purchase there, the affiliated partner receives a commission (which may range from 3 to 15 percent) of the purchase price. In other words, by using affiliate marketing, a selling company creates a virtual commissioned sales force. Pioneered by CDNow (see Hoffman and Novak 2000), the concept is now employed by thousands of retailers and manufacturers. For example, Amazon.com has over 1,000,000 affiliates, and even tiny Cattoys.com offers individuals and organizations the opportunity to put its logo and link on their Web sites to generate commissions.

6. Viral marketing. According to the viral marketing model (see Chapter 4), an organization can increase brand awareness or even generate sales by inducing people to send messages to other people or to recruit friends to join certain programs. It is basically Web-based word-of-mouth marketing.

7. Group purchasing. In the off-line world of commerce, discounts are usually available for purchasing large quantities. So, too, EC has spawned the concept of demand aggregation, wherein a third party finds individuals or SMEs (small-to-medium enterprises), aggregates their small orders to attain a large quantity, and then negotiates (or conducts a tender) for the best deal. Thus, using the concept of group purchasing, a small business, or even an individual, can get a discount. This model, also known as the volume-buying model, is described in Chapter 5. One leading aggregator is Letsbuyit.com (see also Krishnan and Ravi 2003) Online purchasing groups are also called e-co-ops.

8. Online auctions. Almost everyone has heard of eBay, the world’s largest online auction site. Several hundred other companies, including Amazon.com and Yahoo!, also conduct online auctions. In the most popular type of auction, online shoppers make consecutive bids for various goods and services, and the highest bidders get the items auctioned. E-auctions come in different shapes (Chapters 2 and 10) and use different models. For example, eBay is using about 40,000 “assistants” in a model where the assistants perform the order fulfillments (see Chapter 2).

9. Product and service customization. With customization, a product or service is created according to the buyer’s specifications. Customization is not a new model, but what is new is the ability to quickly configure customized products online for consumers at costs not much higher than their noncustomized counterparts (see Chapters 3 and 5). Dell is a good example of a company that customizes PCs for its customers.

Many other companies are following Dell’s lead: The automobile industry is customizing its products and expects to save billions of dollars in inventory reduction alone every year by producing made-to-order cars (see Li and Du 2004). Mattel’s My Design lets fashion-doll fans custom-build a friend for Barbie at Mattel’s Web site; the doll’s image is displayed on the screen before the person places an order. Nike allows customers to customize shoes, which can be delivered in a week. Lego.com allows customers to configure several of their toys. Finally, De Beers allows customers to design their own engagement rings.

Configuring the details of the customized products, including the final design, ordering, and paying for the products, is done online. Also known as build-to-order, customization can be done on a large scale, in which case it is called mass customization. For a historical discussion of the development of the idea of mass customization, see Appendix 2A at the end of Chapter 2.

10. Electronic marketplaces and exchanges. Electronic marketplaces existed in isolated applications for decades (e.g., stock and commodities exchanges). But as of 1996, hundreds of e-marketplaces have introduced new efficiencies to the trading process. If they are well organized and managed, e-marketplaces can provide significant benefits to both buyers and sellers. Of special interest are vertical marketplaces, which concentrate on one industry (e.g., GNX.com for the retail industry and Chemconnect.com for the chemical industry).

11. Information brokers (informediaries). Information brokers (see Chapters 3 through 8) provide privacy, trust, matching, search, content, and other services (e.g., Bizrate.com, Froogle.com).
12. **Bartering.** Companies use bartering (see Chapters 2 and 10) to exchange surpluses they do not need for things that they do need. A market maker (e.g., Web-barter.com or Tradeaway.com) arranges such exchanges.

13. **Deep discounting.** Companies such as Half.com offer products and services at deep discounts, as much as 50 percent off the retail price (see Chapter 3).

14. **Membership.** A popular off-line model, in which only members get a discount, also is being offered online (e.g., Netmarket.com and NYTimes.com) (for details, see Bandyopadhyay 2001).

15. **Value-chain integrators.** This model offers services that aggregate information-rich products into a more complete package for customers, thus adding value. For example, Carpoint.com provides several car-buying-related services, such as financing and insurance.

16. **Value-chain service providers.** These providers specialize in a supply chain function such as logistics (UPS.com) or payments (PayPal.com, now part of eBay) (see Chapters 7, 12, and 13).

17. **Supply chain improvers.** One of the major contributions of EC is in the creation of new models that change or improve supply chain management, as shown in the opening case about Dell. Most interesting is the conversion of a linear supply chain, which can be slow, expensive, and error prone, into a hub.

18. **Social networks, communities, and blogging.** Many companies are developing commercial benefits from social networks (see Section 1.7), communities, and blogging (e.g., for paid advertising or as a sales channel).

19. **Direct sale by manufacturers.** According to this model, the manufacturer eliminates all intermediaries, selling directly to customers.

20. **Negotiation.** The Internet offers negotiation capabilities between individuals (e.g., Ioffer.com) or between companies (e.g., in exchanges, Chapter 6). Negotiation can also be facilitated by intelligent agents. See Online Appendix C.

To succeed in the fast-moving marketplace, business and revenue models must change with changing market conditions. A good example is Amazon.com, which moved from selling only books to becoming a huge online store for products and services. Amazon.com also added auctions as a marketing channel. In addition, it provides order-fulfillment services as a subcontractor to others, and much more.

Any of the business models presented in this section can be used alone or in combination with each other or with traditional business models. One company may use several different business models. The models can be used for B2C, B2B, and other forms of EC. Although some of the models are limited to B2C or B2B, others can be used in several types of transactions, as will be illustrated throughout the text.

**Section 1.5 REVIEW QUESTIONS**

1. Define the following: business plan, business case, and business model.
2. Describe a revenue model and a value proposition.
3. Describe the following business models: name your own price, affiliate marketing, viral marketing, and product customization.
4. Identify business models related to buying and those related to selling.

**1.6 BENEFITS AND LIMITATIONS OF EC**

Few innovations in human history encompass as many benefits as EC does. The global nature of the technology, the opportunity to reach hundreds of millions of people, its interactive nature, the variety of possibilities for its use, and the resourcefulness and rapid growth of its supporting infrastructures, especially the Web, result in many potential benefits to organizations, individuals, and society. These benefits are just starting to materialize, but they will increase significantly as EC expands. It is not surprising that some maintain that the EC revolution is as profound as the change that accompanied the Industrial Revolution (Drucker 2002).
THE BENEFITS OF EC

EC provides benefits to organizations, individual customers, and society. These benefits are summarized in Exhibit 1.9. An example of how EC technologies assist homeland security can be found in Insights and Additions 1.2. More details are shown in Online File W1.8.

Facilitating Problem Solving

One of the major benefits of EC is its ability to solve complex problems that have remained unsolved for generations. Such problems may require several EC and IT tools. Problems exist in small organizations and large ones, as well as in cities and even countries.

EXHIBIT 1.9  Benefits of E-Commerce

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits to Organizations</td>
<td>Locating customers and/or suppliers worldwide, at reasonable cost and fast. Lower cost of information processing, storage, distribution (see examples at Online File W1.9). Reduce delays, inventories, and cost. Open 24/7/365; no overtime or other cost. Make it to consumers' wish, fast and at reasonable cost. Seller can specialize in a narrow field (e.g., dog toys), yet make money. Facilitate innovation and enable unique business models. Expedite processes; higher speed and productivity. The Internet is cheaper than VAN private lines. Saves time and reduces cost by enabling e-procurement. Direct interaction with customers, better CRM. May need fewer permits and be able to avoid sales tax. All distributed material is up-to-date. EC may help small companies to compete against large ones by using special business models. Using customization inventories can be minimized. Delivery online can be 90 percent cheaper.</td>
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<tr>
<td>Global reach</td>
<td></td>
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<tr>
<td>Cost reduction</td>
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<td>Supply chain improvements</td>
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<td>Business always open</td>
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<tr>
<td>Customization/personalization</td>
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<tr>
<td>Sellers specialization (niche market)</td>
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<tr>
<td>Ability to innovate, use new business models</td>
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<td>Rapid time-to-market and increased speed</td>
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<td>Lower communication cost</td>
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<td>Efficient procurement</td>
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<tr>
<td>Improved customer service and relationship</td>
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<tr>
<td>Fewer permits and less tax</td>
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<tr>
<td>Up-to-date company material</td>
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<tr>
<td>Help SME to compete</td>
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<tr>
<td>Lower inventories</td>
<td></td>
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<tr>
<td>Lower cost of distributing digitalizable product</td>
<td></td>
</tr>
<tr>
<td>Benefits to consumers</td>
<td>Can shop any time from any place. Large selection to choose from (vendor, products, styles). Can customize many products and/or services. Can compare and shop for lowest prices. Digitalized products can be downloaded immediately upon payment. Easy finding what you need, with details, demos, etc. Do auctions any time and from any place. Sometimes. Can work or study at home. Can socialize online in communities yet be at home. Using online auctions, collectible items can be found.</td>
</tr>
<tr>
<td>Ubiquity</td>
<td></td>
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<tr>
<td>More products/services</td>
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<tr>
<td>Customized products/services</td>
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<tr>
<td>Cheaper products/services</td>
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<td>Instant delivery</td>
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<tr>
<td>Information availability</td>
<td></td>
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<tr>
<td>Convenient auction participation</td>
<td></td>
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<tr>
<td>No sales tax</td>
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<tr>
<td>Enable telecommuting</td>
<td></td>
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<tr>
<td>Electronic socialization</td>
<td></td>
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<tr>
<td>Find unique items</td>
<td></td>
</tr>
<tr>
<td>Benefits to Society</td>
<td>Facilitate work at home; less traffic, pollution. Make education, health, etc., available for more people. Rural area can share benefits; more services for the poor. Facilitate home security (see Insights and Additions 1.2). Can buy more and cheaper goods/services. Allow people in developing countries and rural areas to accept more services and purchase what they really like.</td>
</tr>
<tr>
<td>Enable telecommuting</td>
<td></td>
</tr>
<tr>
<td>More public services</td>
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</tr>
<tr>
<td>Improved homeland security</td>
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<tr>
<td>Increased standard of living</td>
<td></td>
</tr>
<tr>
<td>Close the digital divide</td>
<td></td>
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</tbody>
</table>
Part 1: Introduction to E-Commerce and E-Marketplaces

Insights and Additions 1.2 Enhancing Homeland Security Electronically

The U.S. Department of Homeland Security (DHS) must determine which preexisting applications and data can help the organization meet its goals; migrate data to a secure, usable, state-of-the-art framework; and integrate the disparate networks and data standards of 22 federal agencies, with 170,000 employees, that merged to form the DHS. The real problem is that federal agencies have historically operated autonomously, and their IT systems were not designed to interoperate with one another. Essentially, the DHS needs to link large and complex silos of data together.

Major problems have occurred because each agency has its own set of business rules that dictate how data are described, collected, and accessed. Some of the data are unstructured and not organized in relational databases, and they cannot be easily manipulated and analyzed. Commercial applications, mostly data warehouse and data-mart technologies, are being used for the major integration activities. Informatica, one of several software vendors working with the DHS, has developed data integration solutions that will enable the DHS to combine disparate systems to make information more widely accessible throughout the organization (see informatica.com).

The new DHS system will have information-analysis and infrastructure-protection components. The DHS not only has to make sense of a huge mountain of intelligence gathered from disparate sources, but then it must get that information to the people who can most effectively act on it. Many of these people are outside the federal government.

Sources: Compiled from Foley (2003), Peters (2003), and Thibodeau (2003).

THE LIMITATIONS AND BARRIERS OF EC

Barriers to EC can be classified as either technological or nontechnological. The major barriers are summarized in Exhibit 1.10.

According to a 2006 study (Harmonyhollow.net 2006), the major barriers to EC are (1) resistance to new technology, (2) implementation difficulties, (3) security concerns, (4) lack of technology skills, (5) lack of potential customers, and (6) cost. Van Toorn et al. (2006) believe that the barriers are sectoral barriers (e.g., government, private sector, international organizations), internal barriers (e.g., security, lack of technical knowledge, and lack of time and resources), and external barriers (e.g., lack of government support). Van Toorn et al. (2006) also list the top barriers with regards to global EC, cultural differences, organizational differences, incompatible B2B interfaces, international trade barriers, and lack of standards.

### EXHIBIT 1.10 Limitations of Electronic Commerce

<table>
<thead>
<tr>
<th>Technological Limitations</th>
<th>Nontechnological Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>The telecommunications bandwidth is insufficient, especially for m-commerce.</td>
<td>Lack of trust in EC and in unknown sellers hinders buying.</td>
</tr>
<tr>
<td>Software development tools are still evolving.</td>
<td>People do not yet sufficiently trust paperless, faceless transactions.</td>
</tr>
<tr>
<td>It is difficult to integrate Internet and EC software with some existing (especially legacy) applications and databases.</td>
<td>Many legal and public policy issues, including taxation, have not yet been resolved or are not clear.</td>
</tr>
<tr>
<td>Special Web servers are needed in addition to the network servers, which add to the cost of EC.</td>
<td>National and international government regulations sometimes get in the way.</td>
</tr>
<tr>
<td>Internet accessibility is still expensive and/or inconvenient.</td>
<td>It is difficult to measure some of the benefits of EC, such as online advertising.</td>
</tr>
<tr>
<td>Order fulfillment of large-scale B2C requires special automated warehouses.</td>
<td>Mature measurement methodologies are not yet available.</td>
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<tr>
<td></td>
<td>Some customers like to feel and touch products. Also, customers are resistant to the change from shopping at a brick-and-mortar store to a virtual store.</td>
</tr>
<tr>
<td></td>
<td>People do not yet sufficiently trust paperless, faceless transactions.</td>
</tr>
<tr>
<td></td>
<td>In many cases, the number of sellers and buyers that are needed for profitable EC operations is insufficient.</td>
</tr>
<tr>
<td></td>
<td>Online fraud is increasing.</td>
</tr>
<tr>
<td></td>
<td>It is difficult to obtain venture capital due to the failure of many dot-coms.</td>
</tr>
</tbody>
</table>
Despite these barriers, EC is expanding rapidly. For example, the number of people in the United States who buy and sell stocks electronically increased from 300,000 at the beginning of 1996 to over 25 million by the spring of 2002 (Emarketer.com 2002). In Korea, about 60 percent of all stock market transactions took place over the Internet in the summer of 2004, versus 2 percent in 1998 (Seoul Digital City 2004). According to IDC Research (2000), the number of online brokerage customers worldwide will reach 122.3 million in 2004, compared with 76.7 million in 2002 (as reported by Plunkett Research 2004). As experience accumulates and technology improves, the cost-benefit ratio of EC will increase, resulting in greater rates of EC adoption.

The benefits presented here may not be convincing enough reasons for a business to implement EC. Much more compelling, perhaps, are the omnipresence of the digital revolution and the influence of EC on the business environment, as described in Sections 1.3 and 1.4.

Section 1.6 ❑ REVIEW QUESTIONS
1. Describe some EC benefits to organizations, individuals, and society.
2. List the major technological and nontechnological barriers to EC.
3. Describe some contributions of EC to homeland security.

1.7 SOCIAL AND BUSINESS NETWORKS

The most interesting e-commerce application in recent years has been the emergence of social and business networks. Originating from online communities (Chapter 17), these networks are growing rapidly and providing many new EC initiatives.

SOCIAL NETWORKS

Social networks are Web sites that connect people with specified interests by providing free services, such as photo presentation, e-mail, blogging, and so on. The transactions in social networks are mostly people-to-people. But as we will see in Chapters 17 and 18 (Case 18.1), corporations are starting to have an interest in this EC feature (e.g., see linkedin.com, a network that connects businesses by industry, functions, geography, and areas of interest).

According to Lashinsky (2006) and Schonfeld (2006b), the action today is with the following social networks:

- Facebook.com—facilitates socialization by students
- Gawker.com—features snarky gossip and celebrity stalking
- YouTube.com and Metcafe.com—users can upload and view videoclips
- Flickr.com—users share photos
- Friendster.com—provides a platform to find friends and make contacts
- Myheritage.com—face recognition in genealogy; recognizes faces in different stages of peoples’ lives
- Cyworld.rate.com—Asia’s largest social network
- Habbohotel.com—Entertaining country-specific sites (18) for kids and adults
- MySpace.com—The most visited social network (see Case 1.3)
- YUB.com—A social network for discount shoppers

Business-Oriented Networks

Business-oriented networks are social networks whose primary objective is to facilitate business. For example, YUB.com is a network of shoppers looking for discounts and bargains. Another example is Craigslist.com, the super site for classified ads that offers many social-oriented features (see Case 2.4 in Chapter 2). Yet, its major objective is to help people find accommodations, barter items, or conduct other business-oriented activities. Many B2B portals offer community services for thousands of members.
CASE 1.3
EC Application

MYSPACE: THE WORLD’S MOST POPULAR SOCIAL NETWORKING WEB SITE

MySpace is an interactive social network of user-submitted blogs, profiles, groups, photos, MP3s, videos and an internal e-mail system. It has become an increasingly influential part of contemporary pop culture. The site claims to have over 100 million members (the world’s fourth most popular English-language Web site) and draws 500,000 new members each week.

MySpace is also used by some independent musicians and filmmakers who upload songs and short films on their profiles. These songs and films can also be embedded in other profiles, an interconnectedness that adds to MySpace’s appeal.

Contents of a MySpace Profile
Each member’s profile contains two “blurbs”: “About Me” and “Who I’d Like to Meet.” Profiles also can contain optional sections about personal features such as marital status, physical appearance, and income. Profiles also contain a blog with standard fields for content, emotion, and media. MySpace also supports uploading images and videos.

Users can choose a certain number of friends to be displayed on their profile in the “Top Friends” area. In 2006, MySpace allowed up to 24 friends to be displayed. The “Comments” area allows the user’s friends to leave comments. MySpace users can delete comments or require all comments to be approved before posting. The site gives users some flexibility to modify their user pages, or “MySpace editors” are available to help.

MySpace Celebrities
MySpace has led to the emergence of MySpace celebrities, popular individuals who have attracted hundreds of thousands of “friends,” leading to coverage in other media. Some of these individuals have remained only Internet celebrities, others have been able to jump to television, magazines, and radio.

Major Issues Surrounding MySpace
The following are several major issues surrounding MySpace use.

Accessibility
Sometimes there are accessibility problems on users’ profiles, because the site is set up so that anyone can customize the layout and colors of their profile page with virtually no restrictions. Poorly constructed MySpace profiles may freeze up Web browsers. Also, new features, such as song and video sharing through streaming media and the huge number of MySpace users joining daily means that more users are online for longer periods; this increase in usage slows down the MySpace servers at peak times.

Restricting Access
Many schools and public libraries in the United States and the United Kingdom have begun to restrict access to MySpace because it has become “such a haven for student gossip and malicious comments” and because MySpace was consuming up to 40 percent of the daily Internet bandwidth, impeding delivery of Web-based courses. Regular administrative functions may also be slowed down, making the normal running of universities difficult.

Potential Damage to Students
The Chicago Tribune’s RedEye printed an article concerning MySpace and an individual’s search for employment. The author argued that young college graduates compromise their chances of starting careers because of the content they post on their accounts. An employer may not hire a highly qualified candidate because the candidate maintains an account that suggests overly exuberant behavior.

Security and Safety
MySpace allows registering users to be as young as 14. Profiles of users with ages set to 14 to 15 years are automatically private. Users whose ages are set at 16 or over do have the option to restrict their profiles, as well as the option of merely allowing certain personal data to be restricted to people other than those on their “friends list.” The full profiles of users under age 18 are restricted to direct MySpace friends only.

Globalization and Competition
In 2006, News Corporation took MySpace to China where it is spreading rapidly (in Chinese, of course). In Korea, a competitor, Cyworld, launched a U.S. version in 2006 (see Schonfeld 2006b and Chapter 18).

Other Issues
Other issues affecting MySpace are musicians’ rights and the user agreement, social and cultural issues, and legal issues. These and other issues are discussed in Chapter 18.

Revenue Model and Competition
When News Corporation purchased MySpace in July 2005 for $580 million, many questioned the wisdom of paying so much for a site with no income and questionable advertisement revenue sources. However, in August 2006 Google paid MySpace almost the entire purchase sum for allowing Google to place its search and advertising on MySpace pages. This is helpful to MySpace, too, because now its users do not have to leave the site to conduct a Google search.

As of 2006, MySpace’s major competitors were Xanga, Wayn, Reunion, Friendster, and Facebook. See Chapter 18 for details.

Sources: Compiled from Miller (2005), Sellers (2006), and en.wikipedia.org/wiki/MySpace (accessed August 2006).

Questions
1. Why does MySpace attract so many visitors?
2. List the major issues faced by the company.
3. What are the benefits to MySpace and Google from their collaboration?
Carnival Cruise Lines is sponsoring a social networking site (carnivalconnections.com) to attract cruise fans. Visitors can use the site to exchange opinions, organize groups for trips, and much more. It cost the company $300,000 to set up the site, but Carnival anticipates that the cost will be covered by increased business. For details, see Fass (2006).

One of the most interesting emerging business-social networks is Xing.com (xing.com).

**Example: Xing.com**

Originating in Germany, Xing.com is a business network that attracts millions of executives, sales representatives, and job seekers from many countries, mostly in Europe. The site offers secure services in 16 languages. Users can use the site to:

- Establish new business contacts.
- Systematically expand their networks.
- Easily manage their contacts.
- Market themselves in a professional business context.
- Identify experts and receive advice on any topic.
- Organize meetings and events.
- Manage contacts from anywhere.
- Control the level of privacy and ensure that their personal data are protected.

For additional details, take the site’s “Guided Tour.” Services also are available for mobile device users.

**Revenue Models of Social and Business Networks**

Most of the social-networking sites expect to earn revenue from advertising (as MySpace does with Google). In contrast, business-oriented networks may collect registration fees or even transaction fees. Due to the huge number of members, fees can be minimal. Recruiters, for example, already use the social networks to find people whom other people know. This enables a warm call by the recruiter (“Hi, your friend Mr. Z suggested we contact you”). For details on how recruiters use social networks, see Totty (2006). How many of these networks will survive is not known, but some already have been sold for hundreds of millions of dollars (e.g., Google paid $1.65 billion for YouTube in 2006).

**Section 1.7 REVIEW QUESTIONS**

1. What is a social network? Identify major features offered by social networks.
2. Describe MySpace. Why is it so popular?
3. What are some major issues faced by social network sites?
4. What is a business-oriented network?
5. Describe Xing.com and list five of its major benefits.

**1.8 THE DIGITAL ENTERPRISE**

The task facing each organization is how to put together the components that will enable it to transform itself within the digital economy and gain competitive advantage by using EC. The first step is to put in the right infrastructure—connective networks—upon which applications can be structured. The second step is to create (or transform) to the *digital enterprise*.

**THE DIGITAL ENTERPRISE**

The term *digital enterprise* has a number of definitions. It usually refers to an enterprise such as Dell, which uses computers and information systems to automate most of its business processes. Davis (2005) believes that the *digital enterprise* is a new business model that uses IT in a fundamental way to accomplish one or more of three basic objectives: reach and engage...
### EXHIBIT 1.11 The Digital Versus Brick-and-Mortar Company

<table>
<thead>
<tr>
<th>Brick-and-Mortar Organizations</th>
<th>Digital Organizations</th>
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<tbody>
<tr>
<td>Selling in physical stores</td>
<td>Selling online</td>
</tr>
<tr>
<td>Selling tangible goods</td>
<td>Selling digital goods as well</td>
</tr>
<tr>
<td>Internal inventory/production planning</td>
<td>Online collaborative inventory forecasting</td>
</tr>
<tr>
<td>Paper catalogs</td>
<td>Smart electronic catalogs</td>
</tr>
<tr>
<td>Physical marketplace</td>
<td>Marketplace (electronic)</td>
</tr>
<tr>
<td>Use of telephone, fax, VANs, and traditional EDI</td>
<td>Use of the Internet and extranets</td>
</tr>
<tr>
<td>Physical and limited auctions</td>
<td>Online auctions, everywhere, any time</td>
</tr>
<tr>
<td>Broker-based services, transactions</td>
<td>Electronic infomediaries, value-added services</td>
</tr>
<tr>
<td>Paper-based billing</td>
<td>Electronic billing</td>
</tr>
<tr>
<td>Paper-based tendering</td>
<td>Electronic tendering (reverse auctions)</td>
</tr>
<tr>
<td>Push production, starting with demand forecast</td>
<td>Pull production, starting with an order</td>
</tr>
<tr>
<td>Mass production (standard products)</td>
<td>Mass customization, build-to-order</td>
</tr>
<tr>
<td>Physical-based commission marketing</td>
<td>Affiliated, virtual marketing</td>
</tr>
<tr>
<td>Word-of-mouth, slow and limited advertisement</td>
<td>Explosive viral marketing</td>
</tr>
<tr>
<td>Linear supply chains</td>
<td>Hub-based supply chains</td>
</tr>
<tr>
<td>Large amount of capital needed for mass production</td>
<td>Less capital needed for build-to-order; payments can flow in before production starts</td>
</tr>
<tr>
<td>Large fixed cost required for plant operation</td>
<td>Small fixed cost required for plant operation</td>
</tr>
<tr>
<td>Customers’ value proposition is frequently a mismatch (cost &gt; value)</td>
<td>Perfect match of customers’ value proposition (cost = value)</td>
</tr>
</tbody>
</table>

customers more effectively, boost employee productivity, and improve operating efficiency. It uses converged communication and computing technology in a way that improves business processes. The major characteristics of the digital enterprise are illustrated in Exhibit 1.11, where they are compared with those of a traditional enterprise.

The digital enterprise shifts the focus from managing individual information resources—devices, applications, and datasets—to orchestrating the services and workflows that define the business and ultimately deliver value to customers and end users.

A digital enterprise uses networks of computers to electronically connect:

- All its internal parts via an intranet, which is the counterpart of the Internet.
- All its business partners via the Internet, or via a secured Internet, called an extranet, or via value-added private communication lines.

The vast majority of EC is done on computers connected to these networks. Many companies employ a corporate portal, which is a gateway for customers, employees, and partners to reach corporate information and to communicate with the company. For additional details, see Tatnall (2006) and Chapter 7.

The major concern of many companies today is how to transform themselves to take part in the digital economy, where e-business is the norm. For example, Harrington (2006) describes why and how, as a CEO, he transformed the Thomson Corp. from a traditional $8 billion publishing business into an electronic information services provider and publisher for professionals in targeted markets. In 5 years, revenue increased over 20 percent and profit increased by more than 65 percent. For more on transformation to the digital economy, see Chapter 16. If the transformation is successful, many companies will reach the status of our hypothetical company shown in Exhibit 1.12, which uses the Internet, intranets, and extranets in an integrated manner to conduct various EC activities.

It may take 5 to 10 years for companies to become fully digitized like the hypothetical Toys, Inc. Major companies, such as Schwab, IBM, Intel, and General Electric, are moving rapidly toward such a state.
Section 1.8 REVIEW QUESTIONS
1. Define a digital enterprise.
2. Define intranets and extranets.
3. What is a corporate portal?
4. Identify EC transaction models (e.g., B2B) in Exhibit 1.11.

1.9 OVERVIEW OF THIS BOOK
This book is composed of 18 chapters grouped into 6 parts, as shown in Exhibit 1.13. Additional content is available online at the book’s Web site. The Web site provides a seventh part, one additional chapter, a tutorial, an appendix on EC research, three technical appendices, and online supplemental material for each chapter.
The specific parts and chapters of this textbook are as follows.

**PART 1: INTRODUCTION TO E-COMMERCE AND E-MARKETPLACES**

This section of the book includes an overview of EC and its content, benefits, limitations, and drivers, which are presented in Chapter 1. Chapter 2 presents electronic markets and their mechanisms, such as electronic catalogs and auctions. Chapter 2 also includes a discussion of the impacts of EC on industries and companies.

**PART 2: INTERNET CONSUMER RETAILING**

This section includes two chapters. Chapter 3 describes e-tailing (B2C), including some of its most innovative applications for selling products online. It also describes the delivery of services, such as online banking, travel, and insurance. Chapter 4 explains consumer behavior in cyberspace, online market research, and Internet advertising.
PART 3: BUSINESS-TO-BUSINESS E-COMMERCE

Part 3 is composed of three chapters. In Chapter 5, we introduce B2B EC and describe primarily company-centric models (one buyer—many sellers, one seller—many buyers). Electronic exchanges (many buyers and many sellers) are described in Chapter 6. Chapter 7 deals with e-supply chain topics, c-commerce, and corporate portals.

PART 4: OTHER EC MODELS AND APPLICATIONS

Several other EC models and applications are presented in Part 4. E-government, e-learning, C2C, and knowledge management are the major subjects of Chapter 8. In Chapter 9, we introduce the topics of m-commerce and pervasive computing.

PART 5: EC SUPPORT SERVICES

Part 5 examines issues involving the support services needed for EC applications. Chapter 10 describes the use of e-auctions to conduct EC. Chapter 11 delves into EC security. Of the many diverse Web support activities, we concentrate on three: payments (Chapter 12), order fulfillment (Chapter 13), and CRM (Chapter 13).

PART 6: EC STRATEGY AND IMPLEMENTATION

Part 6 includes five chapters on EC strategy and implementation. Chapter 14 deals with e-strategy and planning, including going global and the impact of EC on small businesses. Chapter 15 deals with the economics of EC. Chapter 16 deals with creating, operating, and maintaining an Internet company. It also deals with initiating EC initiatives and creating EC content. Chapter 17 provides an examination of legal and societal issues in EC. Finally, Chapter 18 is a study of the new trends of social networking and industry disruptors in the Web 2.0 environment.

ONLINE PART 7: APPLICATION DEVELOPMENT

One additional complete chapter is available online at the book’s Web site (prenhall.com/turban). Chapter 19 addresses EC application development processes and methods, including the emerging topics of software as a service, Web Services, and service-oriented architecture (SOA).

ONLINE TUTORIAL

Two tutorials are available at the book’s Web site (prenhall.com/turban):

- Tutorial T1: Business Plan
- Tutorial T2: Supply Chain

ONLINE APPENDICES

Four appendices are available on the book’s Web site (prenhall.com/turban). Three of these we call Technical Appendices because of the technical nature of their content. The online appendices are:

A. Current EC Research
B. Structure and Components of E-Commerce Business Model
C. E-Business Planning and Analysis Framework

Technical Appendices:

- Appendix A: Infrastructure for Electronic Commerce
- Appendix B: Web Page Design and Creation
- Appendix C: Software (Intelligent) Agents

ONLINE SUPPLEMENTS

A large number of Online Files organized by chapter number support the content of each chapter.
Part 1: Introduction to E-Commerce and E-Marketplaces

MANAGERIAL ISSUES

Many managerial issues are related to EC. These issues are discussed throughout the book and also are summarized in a separate section (like this one) near the end of each chapter. Some managerial issues related to this introductory chapter are as follows.

1. **Is it real?** For those not involved in EC, the first question that comes to mind is, “Is it real?” We believe that the answer is an emphatic “yes.” Just ask anyone who has banked from home, purchased company stocks online, or bought a book from Amazon.com. Randy Mott, Wal-Mart’s Chief Information Officer (CIO), gives an interesting tip for organizations and managers: “Start EC as soon as possible; it is too dangerous to wait.” Jack Welch, former Chief Executive Officer (CEO) of General Electric, has commented, “Any company, old or new, that doesn’t see this technology literally as important as breathing could be on its last breath” (McGee 2000).

2. **Why is B2B e-commerce so attractive?** B2B EC is attractive for several reasons. First, some B2B models are easier to implement than traditional off-line models. In contrast, B2C has several major problems, ranging from channel conflict with existing distributors to lack of a critical mass of buyers. Also, the value of transactions is larger in B2B, and the potential savings are larger and easier to justify. Rather than waiting for B2C problems to be worked out, many companies can start B2B by simply buying from existing online stores or selling electronically by joining existing marketplaces or an auction house. The problem is determining where to buy or sell.

3. **There are so many EC failures—how can one avoid them?** Beginning in early 2000, the news was awash with stories about the failure of many EC projects within companies as well as the failure of many dot-coms. Industry consolidation often occurs after a “gold rush.” About 100 years ago, hundreds of companies tried to manufacture cars, following Ford’s success in the United States; only three survived. The important thing is to learn from the successes and failures of others. For lessons that can be learned from EC successes and failures, see Chapters 3, 6, and 16.

4. **How do we transform our organization into a digital one?** Once a company determines its strategy and decides to move to EC, it is necessary to plan how to implement the strategy. This process is shown in Chapters 14 and 16. It is also discussed by Davenport et al. (2004) and at digitalenterprise.org.

5. **How should we evaluate the magnitude of business pressures and technological advancement?** A good approach is to solicit the expertise of research institutions, such as Gartner or Forrester Research, which specialize in EC. Otherwise, by the time you determine what is going on, it may be too late. The consulting arms of big certified public accounting companies may be of help too. (Price-waterhouseCoopers, Accenture, and others provide considerable EC information on their Web sites.) It is especially important for management to know what is going on in its own industry.

6. **How can we exploit social/business networking?** There are major possibilities here. Some companies even open their own social networks. Advertising is probably the first thing to consider. Recruiting can be a promising avenue as well. Offering discounted products and services should also be considered. Finally, sponsoring a site may be rewarding as well.

7. **What should be my company’s strategy toward EC?** A company can choose one of three basic strategies: lead, wait, or experiment. This issue is revisited in Chapter 14, together with related issues such as the cost-benefit trade-offs of EC, integrating EC into the business, outsourcing, going global, and how SMEs can use EC. Another strategic issue is the prioritization of the many initiatives and applications available to a company.

8. **What are the top challenges of EC?** The top 10 technical issues for EC (in order of their importance) are security, adequate infrastructure, data access, back-end systems integration, sufficient bandwidth, network connectivity, up time, data warehousing and mining, scalability, and content distribution. The top 10 managerial issues for EC are budgets, project deadlines, keeping up with technology, privacy issues, the high cost of capital expenditures, unrealistic management expectations, training, reaching new customers, improving customer ordering services, and finding qualified EC employees. Most of these issues are discussed throughout this book.
Chapter One: Overview of Electronic Commerce

RESEARCH TOPICS

Here are some suggested research topics related to this chapter. For details, references, and additional topics, refer to the Online Appendix A “Current EC Research.”

1. The EC Life Cycle
   - Examine the evolution of EC with the view of stage theory.
   - Conduct an empirical study of the EC evolution stages of an industry in a given country and compare it with EC stages in other countries.
   - Where is EC going? Find and analyze future trends.
   - Research the impact of EC adoption on the market value of firms.
   - Examine the benefits of e-marketplaces by industry and by product type.
   - Study the roles of e-marketplaces as coordinators among partners and as an unbiased open-to-all third-party platform.
   - Determine if traditional personal roles can be moved to e-marketplaces.

2. The Potential and the Limitations of EC Penetration at the Macro Level
   - Does the nature of an industry impact the potential for EC penetration?
   - Examine, compare, and analyze the level of EC penetration in different countries.
   - Conduct a cross-country and cross-product/service comparative survey to explore differences in EC penetration.
   - Identify generic factors that deter EC penetration and develop a strategy to eliminate such hurdles.

3. Synergy of EC with Traditional Commerce
   - Study the optimal and synergetic design of EC, including both online activities and the physical process.
   - Examine synergies between electronic retailing and traditional retailing.
   - Examine synergies between traditional logistic services and electronic services.
   - For EC resources, see Online File W1.10.

4. E-Business Models
   - Determine the relationship between a model’s success and the characteristics of organizations using it.
   - Examine the proliferation of social networks and describe their impact on EC.
   - How can the best models for a specific situation be identified?
   - Why do some EC models fail?

SUMMARY

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

1. Definition of EC and description of its various categories. EC involves conducting transactions electronically. Its major categories are pure versus partial EC, Internet-based versus non-Internet based, and electronic markets versus interorganizational systems.

2. The content and framework of EC. The applications of EC, and there are many, are based on infrastructures and are supported by people; public policy and technical standards; marketing and advertising; support services, such as logistics, security, and payment services; and business partners—all tied together by management.


4. The role of the digital revolution. EC is a major product of the digital and technological revolution, which enables companies to simultaneously increase both growth and profits. This revolution enables digitization of products, services, and information.

5. The role of the business environment as an EC driver. The business environment is changing rapidly due to technological breakthroughs, globalization, societal changes, deregulations, and more. The changing business environment forces organizations to respond. Traditional responses may not be sufficient because of the magnitude of the pressures and the pace of the changes involved. Therefore, organizations must frequently innovate and reengineer their operations. In many cases, EC is the major facilitator of such organizational responses.
6. **The major EC business models.** The major EC business models include online direct marketing, electronic tendering systems, name-your-own-price, affiliate marketing, viral marketing, group purchasing, online auctions, mass customization (make-to-order), electronic exchanges, supply chain improvers, finding the best price, value-chain integration, value-chain providers, information brokers, bartering, deep discounting, and membership.

7. **Benefits of EC to organizations, consumers, and society.** EC offers numerous benefits. Because these benefits are substantial, it looks as though EC is here to stay and cannot be ignored.

8. **Barriers to EC.** The barriers to EC can be categorized as technological and nontechnological. As time passes and network capacity, security, and accessibility continue to improve through technological innovations, the barriers posed by technological limitations will continue to diminish. Nontechnological barriers also will diminish over time, but some, especially the behavioral ones, may persist for many years in some organizations, cultures, or countries.

9. **Contribution to organizations responding to environmental changes.** EC provides strategic advantage so organizations can compete better. Also, organizations can go into remote and global markets for both selling and buying at better prices. Organizations can speed time-to-market to gain competitive advantage. They can improve the internal and external supply chain as well as increase collaboration. Finally, they can better comply with government regulations.

10. **Social and business Online Networks.** Social and business networks attract huge numbers of visitors. Many of the visitors are young future EC customers. Therefore, advertisers are willing to spend money on advertising, either to an entire group or to individuals (e.g., using Google’s technology). Already among the most visited sites, they offer many innovative applications as well.

### KEY TERMS

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<td>Brick-and-mortar (old-economy) organizations</td>
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<tr>
<td>Intranet</td>
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</table>

### QUESTIONS FOR DISCUSSION

2. Why is buying with a smart card from a vending machine considered EC?
3. Why is e-learning considered EC?
4. Why is it said that EC is a catalyst for fundamental changes in organizations?
5. How does EC facilitate customization of products and services?
6. Discuss the relationships among the various components of a business model.
7. Explain how EC can reduce cycle time, improve employees’ empowerment, and facilitate customer support.
8. Compare and contrast viral marketing with affiliate marketing.

9. Explain how EC is related to supply chain management.

10. Discuss the contribution of EC technologies to homeland security.

11. Carefully examine the nontechnological limitations of EC. Which are company dependent and which are generic?

12. Which of the EC limitations do you think will be more easily overcome—the technological or the nontechnological limitations? Why?

13. Why are social networks, such as MySpace, considered EC?

14. Would you consider eDiets.com to be a social network? Why or why not?

### INTERNET EXERCISES

1. Visit bigboxx.com and identify the services the company provides to its customers. What type of EC is this? What business model(s) does Bigboxx use?

2. Visit Amazon.com's site (amazon.com) and locate recent information in the following areas:
   a. Find the five top-selling books on EC.
   b. Find a review of one of these books.
   c. Review the customer services you can get from Amazon.com and describe the benefits you receive from shopping there.
   d. Review the products directory.

3. Visit priceline.com and identify the various business models used by Priceline.com.

4. Go to ups.com and find information about recent EC projects that are related to logistics and supply chain management. How is UPS using wireless services?

5. Go to nike.com and design your own shoes. Next visit office.microsoft.com and create your own business card. Finally, enter jaguar.com and configure the car of your dreams. What are the advantages of each activity? The disadvantages?

6. Visit chemconnect.com. What kind of EC does this site represent? What benefits can it provide to buyers? To sellers?

7. It is time to sell or buy on an online auction. You can try ebay.com, auction.yahoo.com, or an auction site of your choice. You can participate in an auction in almost any country. Prepare a short report describing your experiences.


9. Enter espn.go.com and identify and list all of the revenue sources on the site.

10. Enter eDiets.com. Find the personalized programs. Explain their benefits. Also, identify eDiets' revenue model.

11. Enter philatino.com and statusint.com. Identify the business model(s) and revenue models they use.

12. Enter lowes.com. View the “design it” online feature and the animated “How Tos.” Examine the Project Calculators and Gift Advisor features. Relate these to the business models and other EC features of this chapter.

### TEAM ASSIGNMENTS AND ROLE PLAYING

1. Visit smallbusiness.yahoo.com and google.com and find 15 EC success stories. For each, identify the types of EC transactions and the business model used.

2. Each team will research two EC success stories. Members of the group should examine companies that operate solely online and some that extensively utilize a click-and-mortar strategy. Each team should identify the critical success factors for their companies and present a report to the other teams.

3. Each team member studies three social networks (see wikipedia.org for a list). Then the team makes a presentation on the features of the companies, the revenue models, the unique characteristics, and the IT support.

4. Enter the customer video library at citrix.com. Each team member reviews an EC-related case. Relate each case to the nature of EC transaction and to the business model used.
Real-World Case

GOOGLE IS CHANGING EVERYTHING

Introduction

Of all the companies associated with EC, probably no other company has impacted our work and life as much as Google has. More than that, according to Carr (2006), Google’s unconventional IT and EC management strategy is both effective and efficient, and it offers a glimpse into how organizations might deploy technology in the future. Google runs on close to 500,000 servers. Google has grown more quickly than any other EC company, and it started to generate profit faster than most start-ups. By 2005, its revenue had reached $6 billion and its net profit $1.46 billion (estimates for 2006 are $9 billion and $2 billion, respectively).

Google is known primarily for its search engine and its related targeted-advertising tools. Google delivers its advertisers far more revenue per click in search results than its competitors (mainly Microsoft and Yahoo!) do. In Chapter 4, we will explain Google’s ad-matching strategy. However, Google is doing many other things. Let’s examine some of Google’s many activities.

A Glimpse at Google’s Activities

Google’s goal is to deliver technologies to organize the world’s information and make it universally accessible and useful. For example, Google is trying to reinvent the spreadsheet as a Web-based application that makes it simple for users to input and share data. Google Spreadsheet is a free Web-based application that can be shared with up to 10 users simultaneously, overcoming a key limitation of Microsoft’s Excel. Google chose spreadsheets because that is what most people use to organize information; most individual users do not create databases. Google Spreadsheet, which can import or export data from Excel’s .xls format or the open Comma Separated Value (.csv) format, is aimed at small workgroups, whereas Microsoft Excel is targeted at enterprises.

The program is designed to help people organize their own information and make it more easily accessible to others via the Web. Data in the spreadsheets are saved automatically with each user action over the Web onto Google computer servers. Users can sort data and take advantage of 200 functions and common spreadsheet formulas for doing basic calculations. Google Spreadsheet is one of several user productivity applications that Google has been testing, including the Writely word processing application it acquired in 2006 and its internally developed Google Calendar.

Google is currently studying how much demand there is for Google Spreadsheet to work with Google Base, an online database service that allows Google users to post information; most individual users do not create databases. Google can import or export information; most individual users do not create databases. Google has partnered with BearingPoint, an IT consulting firm, to supply enterprise search capabilities. BearingPoint has experience in extending Google to provide search services to specific industries. A crucial enterprise search issue is programming search engines to crawl through all the various data sources at a company and index their contents.

Enterprise searches can be integrated with other applications to improve performance. For example, Cognos Go! Search Service is a BI (business intelligence) search utility. It offers a familiar search interface for accessing strategic enterprise information, such as reports, metrics, analyses, and business events, that answer critical business questions with a simple keyword search. Oracle offers a search engine for enterprise systems, such as ERP and CRM.

Example

Kaiser Permanente (kaiserpermanente.org), America’s largest nonprofit health maintenance organization (HMO), has almost 9 million members. The amount of available medical knowledge doubles about every 7 years, so keeping up with new knowledge is an important aspect of good caregiving by HMOs.

When Kaiser Permanente developed a clinical knowledge corporate portal for its 50,000 doctors, nurses, and other caregivers, enterprise search was a part of the plan. The Permanente Knowledge Connection, available from anywhere in the Kaiser wide area network, gives medical staff access to diagnostic information, best practices, publications, educational material, and other clinical resources. The portal’s resources are distributed across the entire United States. Putting the right information quickly and easily into caregivers’ hands is essential to the clinical portal’s success.

Kaiser turned to the Google Search Appliance, which enabled the HMO to index 150,000 documents across the Kaiser network. Clinicians now search the site in situations that range from leisurely research to...
urgent care, from the exam room to the emergency room. Doctors and nurses use the search engine to help them reach diagnoses and specify treatments, check the side effects of new medications, and consult clinical research studies and other medical publications. Google’s spell-checking capability is especially useful in the medical profession: Doctors’ handwriting can be problematic and pharmaceutical product names are difficult.

Sources: Compiled from Carr (2006), Brown (2006), and Hicks (2004).

Questions

1. Use Google to conduct a search. What advertisements appear next to the search results?
2. What is Google trying to do with spreadsheets?
3. What is an enterprise search?
4. Identify potential revenue models in Google’s activities described here and on its Web site.
5. How do Google’s services benefit a company such as Kaiser?

REFERENCES


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