E-MARKETPLACES: STRUCTURES, MECHANISMS, ECONOMICS, AND IMPACTS

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

1. Define e-marketplaces and list their components.
2. List the major types of e-marketplaces and describe their features.
3. Describe the various types of EC intermediaries and their roles.
4. Describe electronic catalogs, shopping carts, and search engines.
5. Describe the major types of auctions and list their characteristics.
6. Discuss the benefits, limitations, and impacts of auctions.
7. Describe bartering and negotiating online.
8. Define m-commerce and explain its role as a market mechanism.
9. Discuss competition in the digital economy.
10. Describe the impact of e-marketplaces on organizations and industries.

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HOW BLUE NILE INC. IS CHANGING THE JEWELRY INDUSTRY

Blue Nile Inc. (bluenile.com), a pure-play online e-tailer that specializes in diamonds and jewelry, capitalized on online diamond sales as a dot-com start-up in 1999. The company provides a textbook case of how EC fundamentally undercuts the traditional way of doing business.

The Results

Blue Nile sales reached $129 million in 2003 (a 79 percent increase over 2002), with a net income of $27 million. In 2006, sales exceeded $210 million (40 percent annual growth). The company became the eighth-largest specialty jewelry company in the United States and went public in 2004 (one of the most successful IPOs of 2004).

To sell $210 million in jewelry, a traditional retail chain needs 200 stores and close to 1,800 employees. Blue Nile does it with one 10,000-square-foot warehouse and 115 staffers. The company also bypasses the industry’s tangled supply chain, in which a diamond can pass through five or more middlemen before reaching a retailer. Blue Nile deals directly with original suppliers, such as Thaigem.com (thaigem.com; see Online File W2.5).

This is one reason why in the United States some 465 small jewelry stores closed in 2003 alone. The survivors specialize in custom-crafted pieces. Large rivals try to fight back, streamlining the supply chain, emphasizing customer service, and even trying to sell some products online.

The Opportunity

Using the B2C EC model—knocking out expensive stores and intermediaries and then slashing prices (up to 35 percent less than rivals to gain market share), Blue Nile captured a high market share in a short time, inducing more and more people to buy online and making a sizable profit. How did the start-up defy conventional wisdom that diamonds could not be sold online? Basically, Blue Nile offers a huge selection of diamonds and more information on diamonds than a jewelry expert offers in a physical store. It features educational guides in plain English and provides independent (and trusted) quality ratings for every stone. A customer can look over a rating scale for cut, clarity, color, and so on and then conduct a price comparison with Diamond.com (diamond.com) and other online stores. Most important is the 30-day money-back guarantee (now an online industry standard). This provides customers a comfort level against fraud and gives Blue Nile a competitive edge against stores that take the stones back but charge a fee to do so.

What can we learn . . .

Blue Nile is a pure-play online store (a storefront) that uses electronic catalogs, virtual shopping carts, and superb customer service to sell diamonds and jewelry. Storefronts, carts, and catalogs are the major mechanisms for selling online, and they are described here and in Chapter 16. This case also shows the impact of online sales on an industry. Because of low operating costs and global reach, Blue Nile and other online jewelers quickly conquered an impressive market share, driving hundreds of small traditional jewelry retailers out of business. This competitive impact and other impacts of EC are discussed in this chapter.
2.1 E-MARKETPLACES

According to Bakos (1998), electronic markets play a central role in the economy, facilitating the exchange of information, goods, services, and payments. In the process, they create economic value for buyers, sellers, market intermediaries, and for society at large.

Markets (electronic or otherwise) have three main functions: (1) matching buyers and sellers; (2) facilitating the exchange of information, goods, services, and payments associated with market transactions; and (3) providing an institutional infrastructure, such as a legal and regulatory framework that enables the efficient functioning of the market (see Zwass 2003 for details).

**ELECTRONIC MARKETS**

The major place for conducting EC transactions is the electronic market (e-market). An **e-marketplace** is a virtual marketplace in which sellers and buyers meet and conduct different types of transactions. Customers exchange these goods and services for money (or other goods and services if bartering is used). The functions of an e-market are the same as that of a physical marketplace; however, computerized systems tend to make markets much more efficient by providing more updated information to buyers and sellers.

In recent years, markets have seen a dramatic increase in the use of IT and EC (Turban et al. 2007). EC has increased market efficiencies by expediting or improving the functions listed in Exhibit 2.1. Furthermore, EC has been able to significantly decrease the cost of executing these functions.

The emergence of **electronic marketplaces** (also called e-marketplaces or marketspaces), especially Internet-based ones, changed several of the processes used in trading and supply chains. These changes, driven by technology, resulted in:

- Greater information richness of the transactional and relational environment
- Lower information search costs for buyers
- Diminished information asymmetry between sellers and buyers
- Greater temporal separation between time of purchase and time of possession of physical products purchased in the e-marketplace
- Greater temporal proximity between time of purchase and time of possession of digital products purchased in the e-marketplace
- The ability of buyers and sellers to be in different locations

**EXHIBIT 2.1 Functions of a Market**

<table>
<thead>
<tr>
<th>Matching of Buyers and Sellers</th>
<th>Facilitation of Transactions</th>
<th>Institutional Infrastructure</th>
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<tbody>
<tr>
<td>• Determination of product offerings</td>
<td>• Logistics</td>
<td>• Legal</td>
</tr>
<tr>
<td>Product features offered by sellers</td>
<td>Delivery of information, goods, or services to buyers</td>
<td>Commercial code, contract law, dispute resolution, intellectual property protection</td>
</tr>
<tr>
<td>Aggregation of different products</td>
<td>• Settlement</td>
<td>Export and import law</td>
</tr>
<tr>
<td>• Search (of buyers for sellers and of sellers for buyers)</td>
<td>• Trust</td>
<td>• Regulatory</td>
</tr>
<tr>
<td>Price and product information</td>
<td>Credit system, reputations, rating agencies such as Consumer Reports and the BBB, special escrow and online trust agencies</td>
<td>Rules and regulations, monitoring, enforcement</td>
</tr>
<tr>
<td>Organizing bids and bartering</td>
<td>• Communication</td>
<td>• Discovery</td>
</tr>
<tr>
<td>Matching seller offerings with buyer preferences</td>
<td>Posting buyers’ requests</td>
<td>Provides market information (e.g., about competition, government regulations</td>
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<tr>
<td>• Price discovery</td>
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<tr>
<td>Process and outcome in determination of prices</td>
<td></td>
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<tr>
<td>Enabling price comparisons</td>
<td></td>
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<tr>
<td>• Others</td>
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<tr>
<td>Providing sales leads</td>
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**Sources:** Compiled from Bakos (1998) and from E-Market Services (2006).
Chapter Two: E-Marketplaces: Structures, Mechanisms, Economics, and Impacts

EC leverages IT with increased effectiveness and lower transaction and distribution costs, leading to more efficient, “friction-free” markets. An example of such efficiency is the Blue Nile case. For more on e-marketplaces, see Li and Du (2005) and Varadarajan and Yadav (2002).

E-MARKETPLACE COMPONENTS AND PARTICIPANTS

A **marketspace** includes electronic transactions that bring about a new distribution of goods and services. The major components and players in a marketspace are customers, sellers, goods and services (physical or digital), infrastructure, a front end, a back end, intermediaries and other business partners, and support services. A brief description of each follows:

- **Customers.** The 1.6 billion people worldwide who surf the Web are potential buyers of the goods and services offered or advertised on the Internet. These consumers are looking for bargains, customized items, collectors’ items, entertainment, socialization, and more. They are in the driver’s seat. They can search for detailed information, compare, bid, and sometimes negotiate. Organizations are the largest consumers, accounting for more than 85 percent of EC activities.

- **Sellers.** Millions of storefronts are on the Web, advertising and offering a huge variety of items. These stores are owned by companies, government agencies, or individuals. Every day it is possible to find new offerings of products and services. Sellers can sell direct from their Web sites or from e-marketplaces.

- **Products and services.** One of the major differences between the marketplace and the marketspace is the possible digitization of products and services in a marketspace. Although both types of markets can sell physical products, the marketspace also can sell **digital products**, which are goods that can be transformed to digital format and instantly delivered over the Internet. In addition to digitization of software and music, it is possible to digitize dozens of other products and services, as shown in Online File W2.1. Digital products have different cost curves than those of regular products. In digitization, most of the costs are fixed, and variable costs are very low. Thus, profit will increase very rapidly as volume increases, once the fixed costs are paid for.

- **Infrastructure.** The marketspace infrastructure includes electronic networks, hardware, software, and more. (EC infrastructure is presented in Chapter 1; also see Online Chapter 19.)

- **Front end.** Customers interact with a marketspace via a **front end**. The components of the front end can include the **seller’s portal**, electronic catalogs, a shopping cart, a search engine, an auction engine, and a payment gateway. (For details, see Beynon-Davies 2004.)

- **Back end.** All the activities that are related to order aggregation and fulfillment, inventory management, purchasing from suppliers, accounting and finance, insurance, payment processing, packaging, and delivery are done in what is termed the **back end** of the business. (For details, see Beynon-Davies 2004.)

- **Intermediaries.** In marketing, an **intermediary** is typically a third party that operates between sellers and buyers. Intermediaries of all kinds offer their services on the Web. The role of these electronic intermediaries (as will be seen throughout the text and especially in Chapters 3, 5, and 10) is frequently different from that of regular intermediaries (such as wholesalers). For example, online intermediaries create and manage the online markets. They help match buyers and sellers, provide some infrastructure services, and help customers and/or sellers to institute and complete transactions. They also support the vast number of transactions that exist in providing services, as demonstrated in the WebMD case (Case 2.1). Most of these online intermediaries operate as computerized systems.

- **Other business partners.** In addition to intermediaries, several types of partners, such as shippers, use the Internet to collaborate, mostly along the supply chain.

- **Support services.** Many different support services are available, ranging from certification and escrow services (to ensure security) to content providers.

**marketspace** A marketplace in which sellers and buyers exchange goods and services for money (or for other goods and services) but do so electronically.

digital products Goods that can be transformed to digital format and delivered over the Internet.

front end The portion of an e-seller’s business processes through which customers interact, including the seller’s portal, electronic catalogs, a shopping cart, a search engine, and a payment gateway.

back end The activities that support online order fulfillment, inventory management, purchasing from suppliers, payment processing, packaging, and delivery.

intermediary A third party that operates between sellers and buyers.
CASE 2.1  EC Application

WEBMD

WebMD is the largest medical services company in the United States. Although the company is known mainly for its consumer portal, webmd.com, the most visited medical-related Web site, its core business is being an e-intermediary. The health-care industry is huge (close to $2 trillion per year, the largest in terms of GNP). Almost $600 billion is spent just on administrative expenses. The government (federal and state) provides large amounts of money to health-care providers (e.g., physicians, hospitals, drug companies), and it attempts to control costs. A major instrument for cost control is the Health Insurance Portability and Accountability Act of 1996 (HIPAA), which requires digital medical records and standardized documents for the health-care industry. WebMD is attempting to capitalize on this legislation by providing computer-related services to both the providers and purchasers (government, insurance companies, HMOs) of services, mainly in terms of standardized electronic transactions. The company provides services to health-care providers, vendors, customers, and government entities.

WebMD’s major objective is to reduce costs for the participants by facilitating electronic communication and collaboration because paper-based transactions are 20 to 30 times more expensive than electronic ones. It also seeks to speed cycle time.

WebMD operates via several separate, but electronically linked, divisions:

- **WebMD Envoy.** This division (now a subsidiary of Emdeon) is the leading clearinghouse for real-time transactions (over $2.5 billion a year) among over 300,000 medical and dental providers, 600 hospitals, 650 software vendors, 36,000 pharmacies and laboratories, and 1,200 government and commercial health agencies. Transactions are secure; large customers use EDI (Chapter 5), and others use the Internet. The system handles all types of transactions, from clinical data to billing.

- **WebMD Practice Services.** This division provides software and programs that help physicians and other providers manage their businesses. Hundreds of different applications are available (this service is referred to as Intergy EHR). Some provide access to patient information, whereas others retrieve medical knowledge. Practice Services is a leading provider of payment and transaction services at the vanguard of bringing innovative practice management solutions to the rapidly changing health-care industry.

- **WebMD Health.** This information gateway has portals for both consumers and professionals. For consumers, information is provided about wellness, diseases, and treatments. For professionals (physicians, nurses, medical technicians, etc.), the Medscape portal provides medical news, medical education, research-related information, and more.

- **Porex.** The medical product unit manufactures and sells specialty medical products.

Of the many services available on the portal, notable are:

- **News Center.** Provides the latest in health news.

- **A-Z Guides.** Provides guides on topics ranging from medical tests to prescription drugs to common symptoms.

- **Health Search.** An enhanced search tool that enables users to find the information they need, quickly and completely.

- **WebMD.** Videos are offered on a number of health-related topics.

- **Family and Pregnancy.** Provides valuable information for parents, future parents, grandmothers and grandfathers, and caregivers.

- **Blogs for Experts.** Blogs devoted to specific topics within an industry.

- **Blogs for Readers.** Blogs on multiple topics made available to any and all who are interested.

According to O’Buyonge and Chen (2006), the success of WebMD is a result of the proper value proposition in its business model. Most important are the value-added services provided to health-care providers, insurers, and other B2B participants.

WebMD’s future as an intermediary is not clear. On the one hand, disintermediation is possible due to the fact that the largest customers may develop their own B2B connections. On the other hand, the need to comply with HIPAA may facilitate the role of WebMD, especially for small- and medium-sized health-care participants.

**Sources:** Compiled from Southwick (2004), webmd.com (accessed September 2006), and webmd.com (accessed September 2006).

Questions

1. Visit webmd.com to learn more about the types of intermediation it provides. Write a report based on your findings.

2. What kinds of reintermediation do you foresee for the company?

3. WebMD Health does not bring in much revenue. Should the company close it? Why or why not?

4. What impact can WebMD have on the health-care industry? (Use the chapter’s framework in your answer.)

Section 2.1  REVIEW QUESTIONS

1. What is the difference between a physical marketplace and an e-marketplace (marketplace)?

2. List the components of a marketplace.

3. Define a digital product and provide five examples.
2.2 TYPES OF E-MARKETPLACES: FROM STOREFRONTS TO PORTALS

There are several types of e-marketplaces. The major B2C e-marketplaces are storefronts and Internet malls. B2B e-marketplaces include private sell-side e-marketplaces, buy-side e-marketplaces, and exchanges. Let’s elaborate on these, as well as on the gateways to e-marketplaces—portals.

ELECTRONIC STOREFRONTS

An electronic or Web storefront refers to a single company’s Web site where products and services are sold. It is an electronic store. The storefront may belong to a manufacturer (e.g., geappliances.com and dell.com), to a retailer (e.g., walmart.com and wishlist.com.au), to individuals selling from home, or to another type of business. Note that companies that sell services (such as insurance) may refer to their storefronts as portals. An example of a service-related portal is a hotel reservation system, as shown in Online File W2.2.

A storefront includes several mechanisms that are necessary for conducting the sale (see also Chapter 16). The most common mechanisms are an electronic catalog; a search engine that helps the consumer find products in the catalog; an electronic cart for holding items until checkout; e-auction facilities; a payment gateway where payment arrangements can be made; a shipment court where shipping arrangements are made; and customer services, including product and warranty information. The first three mechanisms are described in Section 2.4; e-auctions are described in Section 2.5 and in Chapter 10; payment mechanisms are described in Chapter 12; and shipments are discussed in Chapter 13. Customer services, which can be fairly elaborate, are covered throughout the book and especially in Chapter 13 (see CRM).

ELECTRONIC MALLS

In addition to shopping at individual storefronts, consumers can shop in electronic malls (e-malls). Similar to malls in the physical world, an e-mail (online mall) is an online shopping location where many stores are located. For example, Hawaii.com (hawaii.com) is an e-mail that aggregates Hawaiian products and stores. It contains a directory of product categories and the stores in each category. When a consumer indicates the category he or she is interested in, the consumer is transferred to the appropriate independent storefront. This kind of a mall does not provide any shared services. It is merely a directory. Other malls do provide shared services (e.g., choicemall.com). Some malls are actually large click-and-mortar retailers; others are virtual retailers (e.g., buy.com).

Visualization and Virtual Realty in Shopping Malls

To attract users to shopping malls, vendors use rich media, including virtual reality (VR). Lepouras and Vassilakis (2006) proposed an architecture for a VR Mall (see Exhibit 2.2). The major task of VR is to relate the content via digital representation to the potential buyers.

TYPES OF STORES AND MALLS

Stores and malls are of several different types:

- General stores/malls. These are large marketspaces that sell all types of products. Examples are amazon.com, choicemall.com, shop4.vcomshop.com, spree.com, and the major public portals (yahoo.com, aol.com, and msn.com). All major department and discount stores also fall into this category.

- Specialized stores/malls. These sell only one or a few types of products, such as books, flowers, wine, cars, or pet toys. Amazon.com started as a specialized e-bookstore but today is a generalized store. 1800flowers.com sells flowers and related gifts; fashionmall.com/beautyjungle specializes in beauty products, tips, and trends; and cattos.com sells cat toys.

- Regional versus global stores. Some stores, such as e-grocers or sellers of heavy furniture, serve customers that live nearby. For example, parknshop.com serves the Hong
private e-marketplaces
Online markets owned by a single company; may be either sell-side and/or buy-side e-marketplaces.

sell-side e-marketplace
A private e-marketplace in which one company sells either standard and/or customized products to qualified companies.

buy-side e-marketplace
A private e-marketplace in which one company makes purchases from invited suppliers.

EXHIBIT 2.2 Virtual Reality Shopping

Kong community; it will not deliver groceries to New York. However, some local stores will sell to customers in other countries if the customer will pay the shipping, insurance, and other costs (e.g., see hothothot.com).

› Pure-play online organizations versus click-and-mortar stores. Stores may be pure online (i.e., virtual or pure-play) organizations, such as Blue Nile, Amazon.com, Buy.com, or Cattoys.com. They do not have physical stores. Others are physical (i.e., brick-and-mortar) stores that also sell online (e.g., Wal-Mart with walmart.com, 1–800-Flowers.com with 1800flowers.com, and Woolworths with woolworths.com.au). This second category is called click-and-mortar. Both categories will be described further in Chapter 3.

TYPES OF E-MARKETPLACES
In general conversation, the distinction between a mall and a marketplace is not always clear. In the physical world, malls are often viewed as collections of stores (i.e., shopping centers) where the stores are isolated from each other and prices are generally fixed. In contrast, marketplaces, some of which are located outdoors, are often viewed as places where many vendors compete and shoppers look for bargains and are expected to negotiate prices.

On the Web, the term marketplace has a different and distinct meaning. If individual customers want to negotiate prices, they may be able to do so in some storefronts or malls. However, the term e-marketplace usually implies B2B, not B2C. We distinguish two types of e-marketplaces: private and public.

Private E-Marketplaces
Private e-marketplaces are those owned and operated by a single company (see Chapter 5). As can be seen in the Raffles Hotel case (Online File W2.2), private markets are either sell-side or buy-side. In a sell-side e-marketplace, a company, for example, Cisco, will sell either standard or customized products to qualified companies; this type of selling is considered to be one-to-many. It is similar to a B2C storefront. In a buy-side e-marketplace, a company purchases from many suppliers; this type of purchasing is considered to be many-to-one. For
example, Raffles Hotel buys its supplies from approved vendors that come to its market. Private marketplaces are frequently open only to selected members and are not publicly regulated. We will return to the topic of private e-marketplaces in Chapter 5.

Public E-Marketplaces

Public e-marketplaces are B2B markets. They often are owned by a third party (not a seller or a buyer) or by a group of buying or selling companies (a consortium), and they serve many sellers and many buyers. These markets also are known as exchanges (e.g., a stock exchange). They are open to the public and are regulated by the government or the exchange’s owners. An example of a public marketplace, NTE.net, is provided in Online File W2.3. Public e-marketplaces are presented in detail in Chapter 6.

INFORMATION PORTALS

A portal is a mechanism that is used in e-marketplaces, e-stores, and other types of EC (e.g., in intrabusiness, e-learning, etc.). With the growing use of intranets and the Internet, many organizations encounter information overload at a number of different levels. Information is scattered across numerous documents, e-mail messages, and databases at different locations and in disparate systems. Finding relevant and accurate information is often time-consuming and requires access to multiple systems.

As a consequence, organizations lose a lot of productive employee time. One solution to this problem is the use of portals. A portal is an information gateway. It attempts to address information overload by enabling people to search and access relevant information from disparate IT systems and the Internet, using advanced search and indexing techniques (such as Google’s desktop), in an intranet-based environment. An information portal is a single point of access through a Web browser to critical business information located inside and outside of an organization. Many information portals can be personalized for the users.

Types of Portals

Portals appear under many descriptions and shapes. One way to distinguish among them is to look at their content, which can vary from narrow to broad, and their community or audience, which also can vary. The following are the major types of portals:

- **Commercial (public) portals.** These portals offer content for diverse communities and are the most popular portals on the Internet. Although they can be customized by the user, they are still intended for broad audiences and offer fairly routine content, some in real time (e.g., a stock ticker and news about a few preselected items). Examples of such sites are [yahoo.com](http://www.yahoo.com), [aol.com](http://www.aol.com), and [msn.com](http://www.msn.com).

- **Corporate portals.** Corporate portals provide organized access to rich content within relatively narrow corporate and partners' communities. They also are known as enterprise portals or enterprise information portals. Corporate portals appear in different forms and are described in detail in Chapter 7.

- **Publishing portals.** These portals are intended for communities with specific interests. These portals involve relatively little customization of content, but they provide extensive online search features and some interactive capabilities. Examples of such sites are [techweb.com](http://www.techweb.com) and [zdnet.com](http://www.zdnet.com).

- **Personal portals.** These target specific filtered information for individuals. They offer relatively narrow content and are typically very personalized, effectively having an audience of one.

- **Mobile portals.** Mobile portals are portals that are accessible from mobile devices (see Chapter 9 for details). Although most of the other portals mentioned here are PC based, increasing numbers of portals are accessible via mobile devices. One example of such a mobile portal is i-mode, which is described in Section 2.7.

- **Voice portals.** Voice portals are Web sites, usually portals, with audio interfaces. This means that they can be accessed by a standard telephone or a cell phone.
Agent-Based E-Marketplaces

E-marketplaces, especially for B2B and mega B2C (such as Amazon.com) may be plagued by information overload. To overcome the problem, Guan (2006) suggests using intelligent (or software) agents. As we will see in Chapter 3, software agents already provide comparisons (e.g., froogle.com, comparefare.com). Various search engines can help explore catalogs, and monitoring agents watch auctions. But today’s state of the art is still limited (see Appendix C). Guan (2006) explores a more autonomous system called a virtual marketplace that is composed of a control center, a business center, and a financial center. Each center has its own database and agent (e.g., negotiating agents). The seller and buyer agents can interact in the fully automated market (see Exhibit 2.3).

EXHIBIT 2.3 Agent-Based E-Marketplace

Section 2.2 REVIEW QUESTIONS
1. Describe electronic storefronts and e-malls.
2. List the various types of stores and e-malls.
3. Differentiate between private and public e-marketplaces.
4. What are information portals? List the major types.
5. Describe agent-based e-marketplaces.

2.3 TRANSACTIONS, INTERMEDIATION, AND PROCESSES IN E-COMMERCE

Now that we are familiar with marketplaces, their types, components, and participants, let’s look at what is going on in these markets.

SELLERS, BUYERS, AND TRANSACTIONS

The major EC activity is electronic trading. Typically, a seller (retailer, wholesaler, or manufacturer) sells to customers. The seller itself buys from suppliers: either raw material (as a manufacturer) or finished goods (as a retailer). This process is illustrated in Exhibit 2.4.

The selling company is shown in the center of the figure, marked as “our company.” Internally, processes in the different functional areas are supported by enterprise software, such as ERP and B2E activities. The customers can be individuals (B2C), businesses (B2B), or government agencies (B2G). The customers place orders, and the seller fulfills them.

Our company buys materials, products, and so on from suppliers, distributors (B2B), or from the government (G2B) in a process called e-procurement. Sometimes intermediaries are involved in this process.

THE ROLES AND VALUE OF INTERMEDIARIES IN E-MARKETPLACES

Intermediaries (brokers) play an important role in commerce by providing value-added activities and services to buyers and sellers. There are many types of intermediaries. The most well-known intermediaries in the physical world are wholesalers and retailers. In cyberspace, there are, in addition, intermediaries that provide and/or control information flow. These electronic intermediaries are known as infomediaries. The information flows to and from buyers and sellers via infomediaries, as shown in Online File W2.4. Frequently, intermediaries aggregate information and sell it to others (see “syndication” in Chapter 16).

According to Wikipedia (2006a), online intermediaries are companies that facilitate transactions between buyers and sellers and receive a percentage of the transaction’s value.
Part 1: Introduction to E-Commerce and E-Marketplaces

These firms make up the largest group of B2C companies today. The two types of online intermediaries are brokers and infomediaries.

Brokers

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

- **Buy/sell fulfillment.** A corporation that helps consumers place buy and sell orders (e.g., eTrade).
- **Virtual mall.** A company that helps consumers buy from a variety of stores (e.g., Yahoo! Stores).
- **Metamediary.** A firm that offers customers access to a variety of stores and provides them with transaction services, such as financial services (e.g., Amazon zShops).
- **Bounty.** An intermediary that will locate a person, place, or idea for a fee (e.g., BountyQuest (now defunct)).
- **Search agent.** A company that helps consumers compare different stores (e.g., Shopping.com).
- **Shopping facilitator.** A company that helps consumers use online shops by providing currency conversion, language translation, payment features, and delivery solutions, and potentially a user-customized interface, (e.g., MyOrbital.com).

Infomediaries

Web sites that gather and organize large amounts of data and act as intermediaries between those who want the information and those who supply the information are called infomediaries (Webopedia 2006). There are two types of infomediaries:

- The first type offers consumers a place to gather information about specific products and companies before they make purchasing decisions. It is a third-party provider of unbiased information; it does not promote or try to sell specific products in preference over other products or act on behalf of any vendors (e.g., Autobytel.com and BizRate.com).
- The second type is not necessarily Web-based. It provides vendors with consumer information that will help the vendor develop and market products. The infomediary collects the personal information from the buyers and markets that data to businesses. The advantage of this approach is that consumer privacy is protected and some infomediaries offer consumers a percentage of the brokerage deals.

Producers and consumers may interact directly in an e-marketplace: Producers provide information to customers, who then select from among the available products. In general, producers set prices; sometimes prices are negotiated. However, direct interactions are sometimes undesirable or unfeasible. In that case, intermediation is needed. Intermediaries, whether human or electronic, can address the following five important limitations of direct interaction:

1. **Search costs.** It may be expensive for providers and consumers to find each other. In electronic marketplaces, thousands of products are exchanged among thousands of vendors and millions of consumers. Producers may have trouble accurately gauging consumer demand for new products; many desirable items may never be produced simply because no one recognizes the demand for them. Some intermediaries maintain databases of customer preferences, and they can predict demand and reduce search costs by selectively routing information from providers to consumers and by matching customers with products and/or services.

2. **Lack of privacy.** Either the buyer or seller may wish to remain anonymous or at least protect some information relevant to a trade. Intermediaries can relay messages and make pricing and allocation decisions without revealing the identity of one or both parties.
3. **Incomplete information.** The buyer may need more information than the seller is able or willing to provide, such as information about product quality, competing products, or customer satisfaction. An intermediary can gather product information from sources other than the product provider, including independent evaluators and other customers. Many third-party Web sites provide such information (e.g., bizrate.com, mysimon.com, and consumerguide.com).

4. **Contract risk.** A consumer may refuse to pay after receiving a product, or a producer may provide inferior products or give inadequate postpurchase service. Intermediaries have a number of tools to reduce such risks. First, the broker can disseminate information about the past behavior of providers and consumers. The threat of publicizing bad behavior or removing a seal of approval may encourage both producers and consumers to meet the broker's standard for fair dealing. Or the broker may accept responsibility for the behavior of parties in transactions it arranges and act as a “policeman” on its own. Third, the broker can provide insurance against bad behavior. The credit card industry uses all three approaches to reduce providers' and consumers' exposure to risk.

In the online auction arena or when you buy expensive items or buy from an unknown seller, some companies act as escrow agencies, accepting and holding payment from the buyer while the seller completes delivery of the product or service to the escrow agency. Then, if the product is satisfactory, the agency releases payment to the seller and the product to the buyer.

5. **Pricing inefficiencies.** By jockeying to secure a desirable price for a product, providers and consumers may miss opportunities for mutually desirable trades. This is particularly likely in negotiations over unique or custom products, such as houses, and in markets for information products and other public goods where freeloading is a problem. Intermediaries can use pricing mechanisms that induce just the appropriate trades; for example, dealing with an imbalance of buy and sell orders in stock markets.

For a study on how different strategies of intermediation affect the efficiency of electronic markets, see Yarom et al. (2003).

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**E-Distributors in B2B**

A special type of intermediary in e-commerce is the B2B e-distributor. These intermediaries connect manufacturers with business buyers (customers), such as retailers (or resellers in the computer industry). E-distributors basically aggregate the catalogs or the product information from many manufacturers, sometimes thousands of them, in one place—the intermediary's Web site. An example is W. W. Grainger (see Chapter 5 for details).

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**DISINTERMEDIATION AND REINTERMEDIATION**

Intermediaries are agents that mediate between sellers and buyers. Usually, they provide two types of services: (1) They provide relevant information about demand, supply, prices, and requirements and, in doing so, help match sellers and buyers. (2) They offer value-added services such as transfer of products, escrow, payment arrangements, consulting, or assistance in finding a business partner. In general, the first type of service can be fully automated and thus is likely to be assumed by e-marketplaces, infomediaries, and portals that provide free or low-commission services. The second type requires expertise, such as knowledge of the industry, the products, and technological trends, and it can only be partially automated.

Intermediaries that provide only (or mainly) the first type of service may be eliminated; a phenomena called disintermediation. An example is the airline industry and its push for buying electronic tickets directly from the airlines. As of 2004, most airlines require customers to pay $5 per ticket or more if they buy a ticket from an agent, which is equivalent to the agent’s commission. This is resulting in the disintermediation of travel agents from the

---

**e-distributor**

An e-commerce intermediary that connects manufacturers with business buyers (customers) by aggregating the catalogs of many manufacturers in one place—the intermediary's Web site.

**disintermediation**

Elimination of intermediaries between sellers and buyers.
purchasing process. In another example, discount stockbrokers that only execute trades manually are disappearing. However, brokers who manage electronic intermediation are not only surviving but may actually be prospering (e.g., E-Trade). This phenomenon, in which disintermediated entities or newcomers take on new intermediary roles, is called **reintermediation** (see Chapters 3, 6, and 14).

Disintermediation is more likely to occur in supply chains involving several intermediaries, as illustrated in the opening case. Online File W2.5 illustrates an intermediary that does both B2C and B2B.

**THE PURCHASING PROCESS**

Customers buy goods online in different modes. The most common mode is purchasing from catalogs at fixed prices. Sometimes prices may be negotiated or discounted. Another mode is **dynamic pricing**, which refers to nonfixed prices, such as those in auctions or stock (commodity) markets. The buyer uses the process illustrated in Exhibit 2.5.

The process starts with logging into a seller’s site, registering (if needed), and entering into an online catalog or the buyer’s “my account.” E-catalogs can be very large, so a search...
mechanism may be needed. Also, the buyer needs to compare prices. Some sellers (e.g., American Airlines) will provide comparisons with competing vendors. Otherwise, the buyer may need to leave the site or do the comparison before entering into the specific seller’s store. If not satisfied, the buyer will abandon the site. If satisfied, the buyer will select the item and place it in a shopping cart. The buyer may return to the catalog to choose more items. Each selected item is placed in the shopping cart. When shopping is completed, the buyer goes to a checkout page where a shipment option is selected from a menu. Also, a payment option may be available. For example, newegg.com lets you pay by credit card, PayPal, after billing, in installments, and so on. After checking all details for accuracy, the buyer submits the order.

In the remainder of this chapter, we will describe the major mechanisms that support this process.

Section 2.3 REVIEW QUESTIONS
1. Describe the transaction process between a seller and its customers and suppliers.
2. List the roles of intermediaries in e-markets.
3. Describe e-distributors.
4. What are disintermediation and reintermediation?
5. Describe the purchasing process.

2.4 ELECTRONIC CATALOGS AND OTHER MARKET MECHANISMS

To enable selling online, a Web site usually needs EC merchant server software (see Chapter 16 and Online Chapter 19). The basic functionality offered by such software includes electronic catalogs, search engines, and shopping carts.

ELECTRONIC CATALOGS

Catalogs have been printed on paper for generations. Recently, electronic catalogs on CD-ROM and the Internet have gained popularity. **Electronic catalogs** consist of a product database, directory and search capabilities, and a presentation function. They are the backbone of most e-commerce sales sites. For merchants, the objective of electronic catalogs is to advertise and promote products and services. For the customer, the purpose of such catalogs is to locate information on products and services. Electronic catalogs can be searched quickly with the help of search engines, and they can be interactive (Cox and Koelzer 2006). For example, Change My Image from Infinisys (infinisys.co.jp) allows you to insert your photo and then change the hairstyle and color. Electronic catalogs can be very large; for example, the Library of Congress Web catalog (catalog.loc.gov) contains millions of records.

The majority of early online catalogs were replications of text and pictures from printed catalogs. However, online catalogs have evolved to become more dynamic, customized, and integrated with selling and buying procedures. As online catalogs have become more integrated with shopping carts, order taking, and payment, the tools for building them are being integrated with merchant suites and Web hosting (e.g., see smallbusiness.yahoo.com/merchant).

Electronic catalogs can be classified according to three dimensions:

1. **The dynamics of the information presentation.** Catalogs may be static or dynamic. In *static catalogs*, information is presented in text and static pictures. In *dynamic catalogs*, information is presented in motion pictures or animation, possibly with supplemental sound. Dynamic catalogs can be real time, changing frequently, such as with prices of stocks (and commodities) on stock exchange tickers.

2. **The degree of customization.** Catalogs may be standard or customized. In *standard catalogs*, merchants offer the same catalog to any customer. In *customized catalogs*, content, pricing, and display are tailored to the characteristics of specific customers.
### Part 1: Introduction to E-Commerce and E-Marketplaces

3. **Integration with business processes.** Catalogs can be classified according to the degree of integration with the following business processes or features: order taking and fulfillment; electronic payment systems; intranet workflow software and systems; inventory and accounting systems; suppliers’ or customers’ extranets; and paper catalogs. For example, when a customer places an order at amazon.com, the order is transferred automatically to a computerized inventory-availability check. Many sellers advise you on the availability of items and delivery dates.

Although used occasionally in B2C commerce, *customized catalogs* are especially useful in B2B e-commerce. For example, e-catalogs can show only the items that the employees in a specific organization are allowed to purchase and can exclude items the buying company’s managers do not want their employees to see or to buy. E-catalogs can be customized to show the same item to different customers at different prices, reflecting discounts or purchase-contract agreements. They can even show the buyer’s ID number for the item, model, or *stock-keeping unit* (SKU) number, rather than the seller’s ID numbers. Extranets, in particular, can deliver customized catalogs to different business customers.

For a comprehensive discussion of online catalogs, see Bauknecht et al. (2002), jcmax.com/advantages.html, and purchasing.about.com.

### Online Catalogs Versus Paper Catalogs

The advantages and disadvantages of online catalogs are contrasted with those of paper catalogs in Exhibit 2.6. Although online catalogs have significant advantages, such as ease of updating; the ability to be integrated with the purchasing process; coverage of a wide spectrum of products, interactivity; customization; and strong search capabilities, they do have disadvantages and limitations. To begin with, customers need computers and Internet access to view online catalogs. However, as computers and Internet access are spreading

<table>
<thead>
<tr>
<th>Type</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
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<tbody>
<tr>
<td>Paper catalogs</td>
<td>• Easy to create without high technology</td>
<td>• Difficult to update changed product information promptly</td>
</tr>
<tr>
<td></td>
<td>• Reader is able to look at the catalog without computer system</td>
<td>• Only a limited number of products can be catalog displayed</td>
</tr>
<tr>
<td></td>
<td>• More portable than electronic</td>
<td>• Limited information through photographs and textual description is available</td>
</tr>
<tr>
<td>Online catalogs</td>
<td>• Easy to update product information</td>
<td>• No possibility for advanced multimedia such as animation and voice</td>
</tr>
<tr>
<td></td>
<td>• Able to integrate with the purchasing process</td>
<td>• Difficult to develop catalogs, large fixed cost</td>
</tr>
<tr>
<td></td>
<td>• Good search and comparison capabilities</td>
<td>• There is a need for customer skill to deal with computers and browsers</td>
</tr>
<tr>
<td></td>
<td>• Able to provide timely, up-to-date product information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Provision for globally broad range of product information</td>
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</tr>
<tr>
<td></td>
<td>• Possibility of adding on voice and animated pictures</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Long-term cost savings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Easy to customize</td>
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</tr>
<tr>
<td></td>
<td>• More comparative shopping</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ease of connecting order processing, inventory processing, and payment</td>
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<td></td>
<td>processing to the system</td>
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</tbody>
</table>

**EXHIBIT 2.6 Comparison of Online Catalogs with Paper Catalogs**

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search engine
A computer program that can access databases of Internet resources, search for specific information or keywords, and report the results.

Chapter Two: E-Marketplaces: Structures, Mechanisms, Economics, and Impacts

rapidly, a large number of paper catalogs will be supplemented by, if not actually replaced by, electronic ones. However, considering the fact that printed newspapers and magazines have not diminished due to online ones, paper catalogs probably will not disappear soon. There seems to be room for both media, at least in the near future. However, in B2B paper catalogs may disappear more quickly.

A representative tool for building online catalogs is Microsoft’s Commerce Server 2006—a .NET tool for creating Web sites. RadioShack (Radioshack.com) builds and maintains electronic catalogs based on its customers’ paper catalogs. The service includes search capabilities, the ability to feature large numbers of products, enhanced viewing capabilities, and ongoing support.

**Customized Catalogs**

A *customized catalog* is a catalog assembled specifically for a company, usually a customer of the catalog owner. It also can be tailored to loyal individual shoppers or to a segment of shoppers (e.g., frequent buyers). There are two approaches to creating customized catalogs.

The first approach is to let the customers identify the parts of interest to them from the total catalog, as is done by software products such as QuickSilver from Broadvision (broadvision.com). Then customers do not have to deal with items that are irrelevant to them. Such software allows the creation of catalogs with branded value-added capabilities that make it easy for customers to find the products they want to purchase, locate the information they need, and quickly configure their order.

The second approach is to let the system automatically identify customer characteristics based on the customer's transaction records. However, to generalize the relationship between the customer and items of interest, data-mining technology (Chapter 4) may be needed. This second approach can be combined with the first one.

As an example of the second approach, consider the following scenario, which uses Oracle's 9i server: Joe Smith logs on to the Acme Shopping site, where he has the option to register as an account customer and record his preferences in terms of address details, interest areas, and preferred method of payment. Acme Shopping offers a wide range of products, including electronics, clothing, books, and sporting goods. Joe is interested only in clothing and electronics. He is neither a sportsman nor a great book lover. Joe also has some very distinct hobby areas—one is photography.

After Joe has recorded his preferences, each time he returns to Acme’s electronic store the first page will show him only the clothing and electronics departments. Furthermore, when Joe goes into the electronics department, he sees only products related to photography—cameras and accessories. Some of the products are out of Joe's price range, so Joe can refine his preferences further to indicate that he is interested only in electronics that relate to photography and cost $300 or less. Such personalization gives consumers a value-added experience and adds to their reasons for revisiting the site, thus building brand loyalty to that Internet store.

Against the backdrop of intense competition for Web time, personalization provides a valuable way to match consumers with the products and information in which they are most interested as quickly and painlessly as possible. An example of how corporations customize their catalogs for corporate clients is provided in Online File W2.6.

**Implementing E-Catalogs**

Implementing e-catalogs on a small scale is fairly simple (see Chapter 16). However, transforming a large-scale catalog to an e-catalog is not an easy task because it is necessary to create a matching customer support system. See Schmitz et al. (2005) for a discussion of the topic, examples of successes and failures, and suggestions for implementation. Large online catalogs need a search engine.

**SEARCH ENGINES AND INTELLIGENT AGENTS**

A *search engine* is a computer program that can access databases of Internet resources, search for specific information or keywords, and report the results. For example, customers tend to ask for product information (e.g., requests for product information or pricing) in the
same general manner. This type of request is repetitive, and answering such requests is costly when done by a human. Search engines deliver answers economically and efficiently by matching, for example, questions with FAQ (frequently asked question) templates, which respond with “canned” answers.

Google, AltaVista, and Lycos are popular search engines. Portals such as AOL, Yahoo!, and MSN have their own search engines. Special search engines organized to answer certain questions or search in specified areas, include Ask.com, Northern Light, Mama, and Looksmart. Thousands of different public search engines are available (see searchenginewatch.com). In addition, hundreds of companies have search engines on their portals or storefronts. A search engine for online catalogs is Endeca InFront (from endeca.com).

Unlike a search engine, a software (intelligent) agent can do more than just “search and match.” It has capabilities that can be used to perform routine tasks that require intelligence. For example, it can monitor movements on a Web site to check whether a customer seems lost or ventures into areas that may not fit the customer’s profile. If it detects such confusion, the agent can notify the customer and provide assistance. Software agents can be used in e-commerce to support tasks such as comparing prices, interpreting information, monitoring activities, and working as an assistant. Users can even chat or collaborate with agents.

Users use both search engines and intelligent agents in e-commerce. If customers are inside a storefront or an e-mall, they can use the search engine to find a product or a service. They can also use Web search engines, such as Google, to find general information about a product or service. Finally, they can use software agents that make comparisons (e.g., mysimon.com or froogle.com) and conduct other tasks. The essentials of software agents are provided in Online Technical Appendix C. Applications of software agents are described in several chapters, especially in Chapters 3 through 7. For more on search engines see Chapter 18.

SHOPPING CARTS

An electronic shopping cart is an order-processing technology that allows customers to accumulate items they wish to buy while they continue to shop. In this respect, it is similar to a shopping cart in the physical world. The software program of an electronic shopping cart allows customers to select items, review what has been selected, make changes, and then finalize the list. Clicking on “buy” will trigger the actual purchase.

Shopping carts for B2C are fairly simple (visit amazon.com to see an example), but for B2B a shopping cart may be more complex. A B2B shopping cart could enable a business customer to shop at several sites while keeping the cart on the buyer’s Web site to integrate it with the buyer’s e-procurement system. A special B2B cart was proposed for this purpose by Lim and Lee (2003) where, in addition to the cart offered at the seller’s site, there is a buyers’ cart (“b-cart”) that resides on the buyers’ sites and is sponsored by the participating sellers.

Shopping-cart software is sold or provided for free as an independent component (e.g., monstercommerce.com and easycart.com). It also is embedded in merchants’ servers, such as smallbusiness.yahoo.com/merchant. Free online shopping carts (trials and demos) are available at volusion.com and gomerchant.com.

For more on shopping carts, see Chapter 16 and Online Chapter 19.

Product Configuration

A key characteristic of EC is the self-customization of products and services, as done by Dell. Manufacturers need to produce the customized products in an economic way so that the price of the products will be competitive. Product configuration systems support the acquisition of the customer requirements while automating the order-taking process, and they allow customers to configure their products by specifying their technical requirements.

Sophisticated product configuration systems use artificial intelligence (AI) tools because they need to support the interaction with the customers and understand their needs. For an overview, see Blecker (2006a).
Section 2.4 REVIEW QUESTIONS
1. List the dimensions by which electronic catalogs can be classified.
2. List the benefits of electronic catalogs.
3. Explain how customized catalogs are created and used.
4. Compare search engines with software agents.
5. Describe an electronic shopping cart.

2.5 AUCTIONS AS EC MARKET MECHANISMS

One of the most interesting market mechanisms in e-commerce is electronic auctions (Nissanoff 2006). They are used in B2C, B2B, C2C, G2B, G2C, and more.

DEFINITION AND CHARACTERISTICS

An <auction> is a market mechanism that uses a competitive process by which a seller solicits consecutive bids from buyers (forward auctions) or a buyer solicits bids from sellers (reverse auctions). Prices are determined dynamically by the bids. A wide variety of online markets qualify as auctions using this definition. Auctions, an established method of commerce for generations, deal with products and services for which conventional marketing channels are ineffective or inefficient, and they ensure prudent execution of sales. For example, auctions expedite the disposal of items that need to be liquidated or sold quickly. Rare coins and other collectibles are frequently sold in auctions.

There are several types of auctions, each with its own motives and procedures. (For details, see Chapter 10.) Auctions can be done online or offline. They can be conducted in public auction sites, such as at eBay. They also can be done by invitation to private auctions.

This section presents the essential information about auctions that is necessary for understanding related material in Chapters 3 through 6. See also Saarinen et al. (2006) and Bajari and Hortacsu (2004) for e-auction information.

TRADITIONAL AUCTIONS VERSUS E-AUCTIONS

Traditional, physical auctions are still very popular. However, the volume traded on e-auctions is significantly larger and continues to increase.

Limitations of Traditional Offline Auctions

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

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

Electronic Auctions

The Internet provides an infrastructure for executing auctions electronically at lower cost, with a wide array of support services and with many more sellers and buyers. Individual consumers and corporations both can participate in this rapidly growing and very convenient form of e-commerce. Forrester Research projects that the Internet auction industry will reach $65.2 billion in sales by 2010 (123jump.com 2006).

Electronic auctions (e-auctions) are similar to offline auctions except that they are done online. E-auctions have been in existence since the 1980s over LANs (e.g., flowers; see auction A competitive process in which a seller solicits consecutive bids from buyers (forward auctions) or a buyer solicits bids from sellers (reverse auctions). Prices are determined dynamically by the bids. Auctions conducted online.
DYNAMIC PRICING AND TYPES OF AUCTIONS

A major characteristic of auctions is that they are based on dynamic pricing. **Dynamic pricing** refers to prices that are not fixed but that are allowed to fluctuate as supply and demand in a market change. In contrast, catalog prices are fixed, as are prices in department stores, supermarkets, and many electronic storefronts.

Dynamic pricing appears in several forms. Perhaps the oldest forms are negotiation and bargaining, which have been practiced for many generations in open-air markets. It is customary to classify dynamic pricing into four major categories based on how many buyers and sellers are involved. These four categories are outlined in the following text and are discussed more fully in Chapter 10.

**Questions**

1. Why is Warren Buffett so successful with his auctions?
2. You can place your item for sale on eBay without a trading assistant and save on the commission. Why do people use Dan’s services?
3. What are the advantages of fundraising via auctions?
One Buyer, One Seller
In this configuration, one can use negotiation, bargaining, or bartering. The resulting price will be determined by each party’s bargaining power, supply and demand in the item’s market, and (possibly) business environment factors.

One Seller, Many Potential Buyers
In this configuration, the seller uses a forward auction, an auction in which a seller entertains bids from multiple buyers. (Because forward auctions are the most common and traditional, they are often simply called auctions.) The four major types of forward auctions are English and Yankee auctions, in which bidding prices increase as the auction progresses, and Dutch and free-fall auctions, in which bidding prices decline as the auction progresses. Each of these can be used for either liquidation or for market efficiency (see Chapter 10 and Gallaugher 2002).

One Buyer, Many Potential Sellers
Two popular types of auctions in which there is one buyer and many potential sellers are reverse auctions (tendering) and “name-your-own-price” auctions.

Reverse Auctions. When there is one buyer and many potential sellers, a reverse auction (also called a bidding or tendering system) is in place. In a reverse auction, the buyer places an item he or she wants to buy for bid (or tender) on a request for quote (RFQ) system. Potential suppliers bid on the item, reducing the price sequentially (see Exhibit 2.7). In electronic bidding in a reverse auction, several rounds of bidding may take place until the bidders do not reduce the price further. The winner is the one with the lowest bid (assuming that only price is considered). Reverse auctions are primarily a B2B or G2B mechanism. (For further discussion and examples, see Chapter 5.)

The Name-Your-Own-Price Model. Priceline.com pioneered the “name-your-own-price” model. In this model, a would-be buyer specifies the price (and other terms) that he or she is willing to pay to any willing and able seller. For example, Priceline.com presents consumers’ requests to sellers, who fill as much of the guaranteed demand as they wish at prices and terms requested by buyers. Alternately, Priceline.com searches its own database that contains vendors’ lowest prices and tries to match supply against requests. Priceline.com asks customers to guarantee acceptance of the offer if it is at or below the requested price by giving a credit card number. This is basically a C2B model, although some businesses use it too (see Chapter 10 for details.)

EXHIBIT 2.7 The Reverse Auction Process
Part 1: Introduction to E-Commerce and E-Marketplaces

**Many Sellers, Many Buyers**

When there are many sellers and many buyers, buyers and their bidding prices are matched with sellers and their asking prices based on the quantities on both sides. Stocks and commodities markets are typical examples of this configuration. Buyers and sellers may be individuals or businesses. Such an auction is called a **double auction** (see Chapter 10 for details).

**BENEFITS, LIMITATIONS, AND IMPACTS OF E-AUCTIONS**

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

**Benefits of E-Auctions**

According to Nissanoff (2006), the auction culture will revolutionize the way customers buy, sell, and obtain what they want. A listing of the benefits of e-auctions to sellers, buyers, and e-auctioneers is provided in Insights and Additions 2.1.

**Limitations of E-Auctions**

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

**Minimal Security.** Some of the C2C auctions conducted on the Internet are not secure because they are done in an unencrypted environment. This means that credit card numbers could be stolen during the payment process. Payment methods such as PayPal ([paypal.com](http://paypal.com))

**Insights and Additions 2.1**  **Benefits of E-Auctions**

<table>
<thead>
<tr>
<th>Benefits to Sellers</th>
<th>Benefits to Buyers</th>
<th>Benefits to E-Auctioneers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased revenues from broadening bidder base and shortening cycle time.</td>
<td>Opportunities to find unique items and collectibles.</td>
<td>Higher repeat purchases. Jupiter Research (<a href="http://jupitersearch.com">jupitersearch.com</a>) found that auction sites, such as eBay, tend to garner higher repeat-purchase rates than the top B2C sites, such as Amazon.com.</td>
</tr>
<tr>
<td>Opportunity to bargain instead of selling at a fixed price.</td>
<td>Entertainment. Participation in e-auctions can be entertaining and exciting.</td>
<td>High “stickiness” to the Web site (the tendency of customers to stay at sites longer and come back more often). Auction sites are frequently “stickier” than fixed-priced sites. Stickier sites generate more ad revenue for the e-auctioneer.</td>
</tr>
<tr>
<td>Optimal price setting determined by the market (more buyers, more information).</td>
<td>Convenience. Buyers can bid from anywhere, even with a cell phone; they do not have to travel to an auction place.</td>
<td>Easy expansion of the auction business.</td>
</tr>
<tr>
<td>Sellers can gain more customer dollars by offering items directly (saves on the commission to intermediaries; also, physical auctions are very expensive compared with e-auctions).</td>
<td>Anonymity. With the help of a third party, buyers can remain anonymous.</td>
<td></td>
</tr>
<tr>
<td>Can liquidate large quantities quickly.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved customer relationship and loyalty (in the case of specialized B2B auction sites and electronic exchanges).</td>
<td>Possibility of finding bargains, for both individuals and organizations.</td>
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</tr>
</tbody>
</table>
can be used to solve the payment problem (see Chapter 12). In addition, some B2B auctions are conducted over highly secure private lines.

Possibility of Fraud. Auction items are in many cases unique, used, or antique. Because the buyer cannot see the items, the buyer may get defective products. Also, buyers can commit fraud by receiving goods or services without paying for them. Thus, the fraud rate on e-auctions is relatively high. For a discussion of e-auction fraud and fraud prevention, see Chapter 10.

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

Impacts of Auctions

Because the trade objects and contexts for auctions are very diverse, the rationale behind auctions and the motives of the different participants for setting up auctions are quite different. The following are some representative impacts of e-auctions.

Auctions as a Coordination Mechanism. Auctions are used increasingly as an efficient coordination mechanism for establishing a price equilibrium. An example is auctions for the allocation of telecommunications bandwidth.

Auctions as a Social Mechanism to Determine a Price. For objects that are not traded in traditional markets, such as unique or rare items, or for items that may be offered randomly or at long intervals, an auction creates a marketplace that attracts potential buyers, and often experts. By offering many of these special items at a single place and time and by attracting considerable attention, auctions provide the requisite exposure of purchase and sale orders, and hence liquidity of the market in which an optimal price can be determined. Typical examples are auctions of fine arts or rare items, as well as auctions of communications frequencies, Web banners, and advertising space. For example, wine collectors can find a global wine auction at winebid.com.

Auctions as a Highly Visible Distribution Mechanism. Some auctions deal with special offers. In this case, a supplier typically auctions off a limited number of items, using the auction primarily as a mechanism to gain attention and to attract those customers who are bargain hunters or who have a preference for the gambling dimension of the auction process. The airline seat auctions by Cathay Pacific, American Airlines, and Lufthansa fall into this category (see Saarinen et al. 2006).

Auctions as an EC Component. Auctions can stand alone, or they may be combined with other e-commerce activities. An example of the latter is the combination of group purchasing with reverse auctions, as described in Online File W2.7.

Section 2.5 ➤ REVIEW QUESTIONS

1. Define auctions and describe how they work.
2. Describe the benefits of electronic auctions over traditional (offline) auctions.
3. List the four types of auctions.
4. Distinguish between forward and reverse auctions.
5. Describe the "name-your-own-price" auction model.
6. List the major benefits of auctions to buyers, sellers, and auctioneers.
7. What are the major limitations of auctions?
8. List the major impacts of auctions on markets.

2.6 BARTERING AND NEGOTIATING ONLINE

Two emerging mechanisms are gaining popularity (as can be seen in Chapter 10) in EC: e-bartering and e-negotiation.

ONLINE BARTERING

Bartering, the exchange of goods and services, is the oldest method of trade. Today, it is done primarily between organizations. The problem with bartering is that it is difficult to find trading partners. Businesses and individuals may use classified ads to advertise what they barter. The exchange of goods or services.
need and what they offer, but they still may not be able to find what they want. Intermediaries may be necessary to negotiate both prices and terms for online sales. E-markets allow such online negotiations to be conducted virtually for all products and services. Three factors may facilitate the matching process by attracting more partners to the barter. In addition, matching can be done faster, and as a result, better matches can be found. Items that are offered on barter sites include office space, storage, and factory space; idle facilities; and labor, products, and banner ads. (Note that e-bartering may have tax implications that need to be considered.)

E-bartering is usually done in a bartering exchange, a marketplace in which an intermediary arranges the transactions. These exchanges can be very effective. Representative sites include allbusiness.com, intagio.com, and barterdepot.com. The process works like this: First, the company tells the bartering exchange what it wants to offer. The exchange then assesses the value of the company’s products or services and offers it certain “points” or “bartering dollars.” The company can use the “points” to buy the things it needs from a participating member in the exchange.

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

### ONLINE NEGOTIATING

Dynamic prices also can be determined by negotiation. Negotiated pricing commonly is used for expensive or specialized products. Negotiated prices also are popular when large quantities are purchased. Much like auctions, negotiated prices result from interactions and bargaining among sellers and buyers. However, in contrast with auctions, negotiation also deals with nonpricing terms, such as the payment method and credit. Negotiation is a well-known process in the offline world (e.g., in real estate, automobile purchases, and contract work). In addition, in cases where there is no standard service or product to speak of, some digital products and services can be personalized and “bundled” at a standard price. Preferences for these bundled services differ among consumers, and thus they are frequently negotiated. More discussions on electronic negotiations can be found in Bichler et al. (2003). A simple P2P negotiation can be seen in ioffer.com (see Chapter 10). For more on negotiation in P2P money lending see the ZOPA and Prosper cases in Chapter 18.

According to Choi and Whinston (2000), online (electronic) negotiation is easier than offline negotiation. Due to customizability and bundling of products and services, it often is necessary to negotiate both prices and terms for online sales. E-markets allow such online negotiations to be conducted virtually for all products and services. Three factors may facilitate online negotiation: (1) the products and services that are bundled and customized, (2) the computer technology that facilitates the negotiation process, and (3) the software (intelligent) agents that perform searches and comparisons, thereby providing quality customer service and a base from which prices can be negotiated.

### Review Questions

1. Define bartering and describe the advantages of e-bartering.
2. Explain the role of online negotiation in EC.

### 2.7 E-COMMERCE IN THE WIRELESS ENVIRONMENT: M-COMMERCE AND L-COMMERCE

The widespread adoption of wireless and mobile networks, devices (smart cell phones, PDAs, etc.), and middleware (software that links application modules from different computer languages and platforms) is creating exciting new opportunities. These new technologies are making mobile computing possible. These technologies permit real-time access to information, applications, and tools that, until recently, were accessible only from a desktop computer. Mobile commerce (m-commerce) refers to the conduct of e-commerce via wireless devices or from portable devices (see the Maybelline case in Online File W1.2). It is also sometimes called m-business, when reference is made to its broadest definition, in which the e-business environment is wireless (Deans 2005; Sadeh 2002).
THE MOBILITY REVOLUTION

Around the world, enterprises are adopting mobilized computing technologies at a tremendous rate. They are using wireless hardware and applications for untethered computing. The productivity gains available with mobilized technology continue to expand as the price of the technology continues to drop. And in the case of mobility, the technology revolutionizes the way that people work.

Organizations are embracing mobilized computing technologies for several reasons:

- It improves the productivity of workers in the field.
- Wireless telecom support for mobility is growing quickly.
- More applications can run both online and offline.
- The prices of notebook computers, wireless handhelds, and smart phones continue to fall as their capabilities increase.

Although mobility makes employees in all types of jobs more productive, one of the biggest areas of opportunity lies with field service personnel. An estimated 350 million field service workers around the world are carrying clipboards and notepads. Only about 30 percent of these workers are computerized. Therefore, the potential for productivity gains is huge.

Example: BNSF Railway Co.

BNSF Railway Co., which operates one of the largest railroad networks in North America, gave key field maintenance workers notebooks with Intel Centrino mobile technology and equipped them with mobilized engineering applications to manage and track repairs, access electronic work orders and technical manuals, submit reports, and plan maintenance activities. In the past, engineers could only handle these tasks by driving back and forth to the regional office, which could be many miles away from the day’s work site.

With the new mobilized technology, field service workers can now access BNSF’s maintenance and engineering systems from anywhere in their field territory. They can file reports, monitor maintenance activities, and better identify and resolve problems. All of this results in smoother, more efficient railroad operations (Intel 2005).

There is a reason for the strong interest in the topic of mobile commerce. According to a study conducted by Telecom Trends International (2004), the number of m-commerce users was 94.9 million in 2003 and will grow to 1.67 billion in 2008. In addition, revenues from m-commerce will grow globally from $6.86 billion in 2003 to over $554.37 billion in 2008. Some facts and projections regarding m-commerce are provided in Online File W2.8.

Mobile devices can be connected to the Internet, allowing users to conduct transactions from anywhere. The Gartner Group estimated that at least 40 percent of all B2C transactions, totaling over $200 billion by 2005, will be initiated from smart wireless devices (Telus Mobility 2002). Others predict much higher figures, believing that mobile devices will soon overtake PCs as the predominant Internet access device, creating a global market of over 500 million subscribers. However, others predict a much slower adoption rate (see Chapter 9).

THE PROMISE OF M-COMMERCE

Since 1999, m-commerce has become one of the hottest topics in IT in general and in EC in particular. Mobility significantly changes the manner in which people and trading partners interact, communicate, and collaborate. Mobile applications are expected to change the way we live, play, are entertained, and do business. Much of the Internet culture, which is currently PC based, may change based on mobile devices. As a result, m-commerce creates new business models for EC, notably location-based applications.

Location-Based Commerce (LBC) and Pervasive Computing

Location-based commerce (LBC) is an m-commerce application targeted to a customer whose preferences and needs and location (e.g., using GPS) are known in real time. Given this information, a merchant could send an MSM message such as, “you are near our Italian restaurant, please enter (address) and get a 10 percent discount.” For more on LBC applications, see Chapter 9 and en.wikipedia.org/wiki/Mobile-Commerce.
An emerging area in m-commerce is pervasive computing (see Chapter 9). One of its promising applications is the use of RFID to improve the supply chain (see the Real-World Case on Wal-Mart at the end of this chapter).

**M-Commerce Adoption**

Although there are currently many hurdles to the widespread adoption of m-commerce, it is clear that many of these will be reduced or eliminated in the future. Many companies are already shifting their strategy to the mobile world. Many large corporations with huge marketing presence—Microsoft, IBM, Intel, Sony, Google, AT&T, TimeWarner, to name a few—are transforming their businesses to include m-commerce–based products and services. Nokia emerged as a world-class company not just because it sells more cell phones than anyone else but also because it has become the major player in the mobile economy. Similarly, major telecommunications companies, from Verizon to Vodafone, are shifting their strategies to wireless products and services. In the United States, General Motors produced 1.4 million vehicles equipped with in-vehicle safety and communications systems in 2004 and equipped 2.2 million 2005 models. The company plans to double production of OnStar-equipped vehicles for the model year 2006 (Onstar.com 2004). DoCoMo, the world’s largest mobile portal (nttdocomo.com; see Vision 2010), is investing billions of dollars to expand its services to other countries via its i-mode Global. Finally, in Europe alone over 200 companies offer mobile portal services.

**I-MODE: A SUCCESSFUL MOBILE PORTAL**

To illustrate the potential spread of m-commerce, let’s examine DoCoMo’s i-mode, the pioneering wireless service that took Japan by storm in 1999 and 2000. With a few clicks on a handset, i-mode users can conduct a large variety of m-commerce activities, ranging from online stock trading and banking to purchasing travel tickets and booking karaoke rooms. Users can also use i-mode to send and receive color images. Launched in February 1999, i-mode went international in 2000 and had over 15 million users by the end of that year and 51.8 million by June 2006, including 5 million outside Japan (Wikipedia.com 2006b). The following are some interesting i-mode applications:

- **Shopping guides.** The addresses and telephone numbers of shops in the major shopping malls in Tokyo and other Japanese cities are provided with a supporting search engine. Consumers can locate information about best-selling books and then buy them. Users can purchase music online to enjoy anywhere.
- **Maps and transportation.** Digital maps show detailed guides of local routes and stops of the major public transportation systems in all major Japanese cities. Users can access train and bus timetables, guides to shopping areas, and automatic notification of train delays.
- **Ticketing.** Airline tickets, events, and entertainment tickets can be purchased online.
- **News and reports.** Fast access to global news, local updated traffic conditions, the air pollution index, and weather reports are provided continuously.
- **Personalized movie service.** Updates on the latest movies with related information, such as casting and show times, are provided. Also, subscribers can search for their own favorite movies by entering the name of the movie or the name of the movie theater.
- **Entertainment.** Up-to-date personalized entertainment, such as favorite games, can be searched for and accessed easily. Online “chatting” also is provided, and users can send or receive photos. Also, users can subscribe to receive Tamagotchi’s characters each day for only $1 a month. These virtual pets (the translation of their Japanese name means “cute little eggs”) exhibit intelligent behavior; for example, a Tamagotchi cat will purr if you pet it but “bite” if it is hungry.
- **Dining and reservations.** The exact location of a selected participating restaurant is shown on a digital map. Subscribers also can find restaurants that offer meals in a particular price range. Reservations can be made online. Discount coupons also are available online.
- **Additional services.** Additional services, such as banking, stock trading, telephone directory searches, dictionary services, and horoscopes, are available.
Chapter Two: E-Marketplaces: Structures, Mechanisms, Economics, and Impacts

CASE 2.3
EC Application
WIRELESS PEPSI INCREASES PRODUCTIVITY

The Pepsi Bottling Group (PBG; pbg.com), the largest manufacturer, seller, and distributor of Pepsi-Cola, has the mountainous job of stocking and maintaining its Pepsi vending machines as well as completing huge amounts of paperwork and searching for parts and equipment to fix these machines. Any time drinks in one of the tens of thousands of machines is out of stock or a machine is not functioning the company loses revenue and profits.

In 2002, the company began to equip its service technicians with handheld devices hooked into a wireless wide area network (WWAN). The handheld is the Melard Sidearm (from Melard Technologies, melard.com), and it is designed to work with many wireless platforms. iAnywhere (from Sybase, Inc., sybase.com) provides the mobile database application that allows wireless communications around the United States in real time. The database includes the repair parts inventory available on each service truck, so dispatchers know whom to send for maintenance and where the trucks are at any given moment. It also has a back-office system that maintains the overall inventory. The company is also able to locate the whereabouts of each truck in real time, using global positioning systems (GPS). This makes scheduling and dispatching more effective.

In the summer of 2002, only about 700 technicians used the wireless system, but already the company was saving $7 million per year. Each of these technicians was able to handle one more call each day than previously. PBG had provided the wireless capability to thousands of technicians by 2006.

Sources: Compiled from Rhey (2002) and from pbg.com (accessed August 2006).

Questions
1. What are the capabilities of the handheld devices used by the PBG technicians?
2. How do the handhelds relate to databases and dispatching?
3. This case deals with vending machine maintenance. In what ways, if any, could wireless technologies help with stocking the machines?

These applications are for individual users and are provided via a mobile portal. An even greater number of applications are available in the B2B area and in the intrabusiness area, as illustrated in Case 2.3. For more complete coverage of m-business applications, see Chapter 9, Shi (2004), Deans (2005), and Dekleva (2004).

Section 2.7 REVIEW QUESTIONS
1. Define mobile computing and m-commerce.
2. How does m-commerce differ from EC?
3. Define location-based commerce.
4. What are some of the major services provided by i-mode?

2.8 COMPETITION IN THE DIGITAL ECONOMY AND ITS IMPACT ON INDUSTRIES

One of the major economic impacts of EC is its contribution to competitive advantage, as will be shown next.

THE INTERNET ECOSYSTEM

The prevailing model of competition in the Internet economy is more like a web of inter-relationships than the hierarchical command-and-control model of the industrial economy. Because of these interrelationships, the business model of the Internet economy has been called the Internet ecosystem. Just like an ecosystem in nature, the activities in the Internet economy are self-organizing: The process of natural selection takes place around company profits and value to customers.

Internet ecosystem
The business model of the Internet economy.
Part 1: Introduction to E-Commerce and E-Marketplaces

The Internet economy has low barriers to entry, and so it is expanding rapidly. As the Internet ecosystem evolves both technologically and in population, it will be even easier and likelier for countries, companies, and individuals to participate in the Internet economy. Already, a $1 trillion technical infrastructure is in place, ready and available for anyone to use at any time—free of charge. New ideas and ways of doing things can come from anywhere at any time in the Internet economy. Some of the old rules of competition no longer apply.

**Competitive Factors**

EC competition is very intense because online transactions enable the following:

- **Lower search costs for buyers.** E-markets reduce the cost of searching for product information (e.g., sellers, models, prices, etc.), frequently to zero. This can significantly impact competition, enabling customers to find cheaper (or better) products and forcing sellers, in turn, to reduce prices and/or improve customer service. Sellers that provide information to buyers can exploit the Internet to gain a considerably larger market share. For example, according to Tsai (2004) Wal-Mart and Walgreens are developing intelligent search tools that are expected to increase online sales on their sites by 25 to 50 percent.

- **Speedy comparisons.** Not only can customers find inexpensive products online, but they also can find them quickly. For example, a customer does not have to go to several bookstores to find the best price for a particular book. Using shopping search engines such as allbookstores.com, bestwebbuys.com/books, or shopping.com for consumer products, customers can find what they want and compare prices. Companies that sell online and provide information to search engines will gain a competitive advantage.

- **Lower prices.** Buy.com, Half.com, and other companies can offer low prices due to their low costs of operation (no physical facilities, minimum inventories, etc.). If volume is large enough, prices can be reduced by 40 percent or more (see the Blue Nile case at the beginning of the chapter).

- **Customer service.** Amazon.com and Dell, for example, provide superior customer service. As will be shown in Chapters 3 and 13, such service is an extremely important competitive factor.

- **Barriers to entry are reduced.** Setting up a Web site is relatively easy and inexpensive, and so reduces the need for a sales force and brick-and-mortar stores. Companies have to view this as both a threat (e.g., Where will our next competitor come from?) and as an opportunity (e.g., Can we use our core competencies in new areas of business?).

- **Virtual partnerships multiply.** With access to a World Wide Web of expertise and the ability to share production and sales information easily, the ability of a firm to create a virtual team to exploit an EC opportunity increases dramatically (recall the Boeing case, Chapter 1.) The Internet is especially good at reducing interaction costs, the time and money expended when people and companies exchange goods, services, and ideas (e.g., meetings, sales presentations, telephone calls).

- **Market niches abound.** The market-niche strategy is as old as the study of competitive advantage. What has changed is that without the limits imposed by physical storefronts, the number of business opportunities is as large as the Web. The challenge strategists face is to discover and reap the benefits from profitable niches before the competition does so.

- **Differentiation and personalization.** Differentiation involves providing a product or service that is not available elsewhere. For example, Amazon.com differentiates itself from other book retailers by providing customers with information that is not available in a physical bookstore, such as communication with authors, almost real-time book reviews, and book recommendations. An example of personalization is the Bombay Sapphire case (Online File W2.9).

In addition, EC provides for personalization or customization of products and services. Personalization refers to the ability to tailor a product, service, or Web content to specific user preferences (see Chapter 18). For example, Amazon.com notifies customers by e-mail when new books on their favorite subjects or by their favorite authors are published. Several sites will track news or stock prices based on the consumer’s preferences. For example, Google will e-mail all news regarding certain topics (e.g., Chinese stocks and companies)
a user. The aim of personalization is to increase the usability of complex information by customizing the presentation, making the user interface more intuitive and easier to understand, and reducing information overload by tailoring content and navigation. For personalization techniques, see Anke and Sundaram (2006).

**Example: Amazon.com**

Amazon.com's catalog includes several million items. Amazon.com provides easy navigation, but it provides personalization as well. For example, when a customer looks up a book on a certain topic, it recommends popular books on the same topic ("customers who bought this book also bought . . ."). In addition, it recommends five authors in the customer's area of interest. Recommendations appear several times. Amazon.com also bundles a similar book with the book the customer is interested in for a large discount. For details, see the opening in Chapter 3.

Consumers like differentiation and personalization and are frequently willing to pay more for them. Differentiation reduces the substitutability between products, benefiting sellers who use this strategy. Also, price cutting in differentiated markets does not impact market share very much: Many customers are willing to pay a bit more for personalized products or services.

Certain other competitive factors have become less important as a result of EC. For example, the size of a company may no longer be a significant competitive advantage (as will be shown later). Similarly, location (geographical distance from the consumer) now plays a less significant role, and language is becoming less important as translation programs remove some language barriers (see Chapters 14 and 16). Finally, digital products are not subject to normal wear and tear, although some become obsolete.

All in all, EC supports efficient markets and could result in almost perfect competition. In such markets, a *commodity* (an undifferentiated product) is produced when the consumer's willingness to pay equals the marginal cost of producing the commodity and neither sellers nor buyers can influence supply or demand conditions individually. The following are necessary for *perfect competition*:

- Many buyers and sellers must be able to enter the market at little or no entry cost (no barriers to entry).
- Large buyers or sellers are not able to individually influence the market.
- The products must be homogeneous (commodities). (For customized products, therefore, there is no perfect competition.)
- Buyers and sellers must have comprehensive information about the products and about the market participants' demands, supplies, and conditions.

EC could provide, or come close to providing, these conditions. It is interesting to note that the ease of finding information benefits both buyers (finding information about products, vendors, prices, etc.) and sellers (finding information about customer demands, competitors, etc.).

It can be said that competition between companies is being replaced by competition between *networks*. The company with better communication networks, online advertising capabilities, and relationships with other Web companies (e.g., having an affiliation with Amazon.com) has a strategic advantage. It can also be said that competition is now mostly between *business models*. The company with the better business model will win.

**Porter's Competitive Analysis in an Industry**

Porter's (2001) competitive forces model identifies five major forces of competition that determine an industry's structural attractiveness. These forces, in combination, determine how the economic value created in an industry is divided among the players in the industry. Such an industry analysis helps companies develop their competitive strategy.

Because the five forces are affected by both the Internet and e-commerce, it is interesting to examine how the Internet influences the industry structure portrayed by Porter's model. Porter divided the impacts of the Internet into either positive or negative for the industry. As shown in Exhibit 2.8, most of the impacts are negative (marked by a minus sign). Of course, there are variations and exceptions to the impacts shown in the illustration, depending on the industry, its location, and its size. A negative impact means that competition will intensify in...
most industries as the Internet is introduced, causing difficulties to a competing company. Because the strength of each of the five forces varies considerably from industry to industry, it would be a mistake to draw general conclusions about the impact of the Internet on long-term industry profitability; each industry is affected in different ways. Nevertheless, an examination of a wide range of industries in which the Internet is playing a role reveals some clear trends, as summarized in Exhibit 2.8. The Internet can also boost an industry's efficiency in various ways, expanding the overall size of the market by improving its position relative to traditional substitutes. Thus, the Internet means stronger competition. This competition, which is especially strong for commodity-type products (e.g., toys, books, CDs), was a major contributor to the collapse of many dot-com companies in 2000 to 2001. To survive and prosper in such an environment, a company needs to use innovative strategies.

Examples of how e-commerce is changing entire industries are financial services, especially stock trading, cyberbanking, and e-mortgages. Zopa.com (Chapter 3) may change money lending by moving it from banks to a person-to-person level. Obviously, retailing is changing, and so are travel, entertainment, and more. An emerging change is in classified ads, as demonstrated in Case 2.4.

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**EXHIBIT 2.8 Porter's Competitive Forces Model: How the Internet Influences Industry Structure**

- **Threat of substitute products or services**
  - (+) By making the overall industry more efficient, the Internet can expand the size of the market
  - (-) The proliferation of Internet approaches creates new substitution threats

- **Bargaining power of suppliers**
  - (-) Procurement using the Internet tends to raise bargaining power over suppliers, though it can also give suppliers access to more customers
  - (-) The Internet provides a channel for suppliers to reach end users, reducing the leverage of intervening companies
  - (-) Internet procurement and digital markets tend to give all companies equal access to suppliers, and gravitate procurements to standardized products that reduce differentiation
  - (-) Reduced barriers to entry and the proliferation of competitors downstream shifts power to suppliers

- **Rivalry among existing competitors**
  - (-) Reduces differences among competitors as offerings are difficult to keep proprietary
  - (-) Migrates competition to price
  - (-) Widens the geographic market, increasing the number of competitors
  - (-) Lowers variable cost relative to fixed cost, increasing pressures for price discounting

- **Buyers**
  - (+) Eliminates powerful channels or improves bargaining power over traditional channels
  - (-) Reduces switching costs
  - (-) Shifts bargaining power to end consumers

- **Barriers to entry**
  - (-) Reduces barriers to entry such as the need for a sales force, access to channels, and physical assets; anything that Internet technology eliminates or makes easier to do reduces barriers to entry
  - (-) Internet applications are difficult to keep proprietary from new entrants
  - (-) A flood of new entrants has come into many industries

IMPACT ON WHOLE INDUSTRIES

In addition to its impact on functional areas and organizations, EC is reshaping entire industries. In addition to impacting internal competition, major changes are taking place in the way that business is done. For example, the travel and hospitality industry is going through a major transition (see Case 18.2 in Chapter 18). The health-care industry is also undergoing dramatic changes. Suomi (2006) identifies the following major emerging changes in the health-care industry:

- Patient self-care is growing rapidly.
- The amount of free medical information is exploding (e.g., WebMd.com).
- Patient empowerment is gaining importance (more information, more choices).
- Increasing electronic interaction among patients, hospitals, pharmacies, etc.
- Increasing digital hospital and other health-care facilities.
- Data collected about patients is growing in amount and quality.
- Easy and shared access to patient data.
- Elder care and special types of care are improving significantly due to wireless systems.
- Increasing need to protect patient privacy and contain cost.

Therefore, the industry will change. For example, home care may increase and more specialty hospitals may emerge.

CASE 2.4

EC Application

CRAIGSLIST: THE ULTIMATE ONLINE CLASSIFIED SITE

If you want to find (or offer) a job, housing, goods and services, social activities, and much more in over 300 cities in more than 50 countries worldwide for free, go to craigslist.org. The site has much more information than you will find in all the newspapers in the individual cities. For example, more than 500,000 new jobs are listed from the more than 10 million new classified ads received by Craigslist every month. Craig Newmark, the founder of Craigslist, has said that everything is for sale on the site except the site itself. Although many other sites offer free classifieds, no other site even comes close to Craigslist.

In addition, Craigslist features 80 topical discussion forums with more than 40 million user postings. No wonder that Craigslist has over 4 billion page views per month, making it the seventh most visited site in the English language. Craigslist is considered by many as one of the few Web sites that could change the world because it is simply a free noticeboard with more than four billion readers (Naughton 2006).

Users cite the following reasons for the popularity of Craigslist:

- It gives people a voice.
- It promotes a sense of trust, even intimacy.
- Its consistency and down-to-earth values.
- Its simplicity.
- Its social networking capabilities.

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

eBay owns 25 percent of Craigslist. Craigslist charges for “help wanted” ads and apartment broker listings in some larger cities. In addition, Craigslist may charge ad placers, especially when an ad has rich media features. Classified advertising is Craigslist’s real money-making feature. According to Copeland (2006), offline classifieds generate $27 billion in annual profits, and online classifieds could quadruple that amount in four years. Both Google and Microsoft are attempting to control this market. So, it is likely that Craigslist.org will be purchased soon.


Questions

1. Identify the business model used by Craigslist.
2. Visit craigslist.org and identify the social network and business network elements.
3. Why is Craigslist considered a site that “changes the world”?
4. What do you like about the site? What do you dislike about it?
Part 1: Introduction to E-Commerce and E-Marketplaces

Section 2.8 REVIEW QUESTIONS
1. Why is competition so intense online?
2. Describe Porter’s competitive forces model as it applies to the Internet and EC.
3. Describe the impact of competition on whole industries.

2.9 IMPACTS OF EC ON BUSINESS PROCESSES AND ORGANIZATIONS

Little statistical data or empirical research on the full impact of EC is available because of the relative newness of the field. Therefore, the discussion in this section is based primarily on experts’ opinions, logic, and some actual data.

Existing and emerging Web technologies are offering organizations unprecedented opportunities to rethink strategic business models, processes, and relationships. Feeny (2001) called these e-opportunities, dividing them into three categories: e-marketing (Web-based initiatives that improve the marketing of existing products), e-operations (Web-based initiatives that improve the creation of existing products), and e-services (Web-based initiatives that improve customer services). Zwass (2003) also addressed the opportunities of e-marketplaces: the creation of virtual marketplaces with desired rules, flexible pricing (including price discovery), multichannel marketplaces (including bricks-and-clicks), customization, and new business models.

The discussion here is also based in part on the work of Bloch et al. (1996), who approached the impact of e-marketplaces on organizations from a value-added point of view. Their model, which is shown in Exhibit 2.9, divides the impact of e-marketplaces into three

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### EXHIBIT 2.9 The Analysis-of-Impacts Framework

<table>
<thead>
<tr>
<th>Business Drivers</th>
<th>New Information and Communication Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Actors</td>
<td>New Configurations New Strategies</td>
</tr>
<tr>
<td></td>
<td>Industry Competitors</td>
</tr>
<tr>
<td>Feedback and Impact</td>
<td>Industry Level</td>
</tr>
</tbody>
</table>

**The Organization**
- Improve it!
  - Product promotion
  - New sales channel
  - Direct savings
  - Time to market
  - Customer service
  - Brand image
- Transform it!
  - Technological and organization learning
  - Customer relations
- Redeﬁne it!
  - New product capabilities
  - New business models

**Sources of Business Value**

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major categories: improving direct marketing, transforming organizations, and redefining organizations. This section examines each of these impacts.

**IMPROVING MARKETING AND SALES**

Traditional direct marketing is done by mail order (catalogs) and telephone (telemarketing). According to the Direct Marketing Association, actual sales generated by direct mail totaled $747.6 billion in 2004, and are expected to increase to $954.7 billion by 2007 (Radio Advertising Bureau 2005). This figure is small, but growing rapidly (about 15 percent in 2005).

Bloch et al. (1996), Kioses et al. (2006), and Singh (2006) describe the following impacts of e-marketplaces on B2C direct marketing:

- **Product promotion.** The existence of e-marketplaces has increased the promotion of products and services through direct marketing. Contact with customers has become more information rich and interactive.

- **New sales channel.** Because of the direct reach to customers and the bidirectional nature of communications in EC, a new distribution channel for existing products has been created.

- **Direct savings.** The cost of delivering information to customers over the Internet results in substantial savings to senders of messages. Major savings are realized in delivering digitized products (such as music and software) rather than physical ones.

- **Reduced cycle time.** The delivery time of digitized products and services can be reduced to seconds. Also, the administrative work related to physical delivery, especially across international borders, can be reduced significantly, cutting the cycle time by more than 90 percent. One example of this is TradeNet in Singapore, which reduced the administrative time of port-related transactions from days to minutes. Cycle time can be reduced through improvements along the supply chain (e.g., by using RFID).

- **Improved customer service.** Customer service can be greatly enhanced by enabling customers to find detailed information online. For example, FedEx and other shippers allow customers to trace the status of their packages. Also, auto-responders (see Chapter 13) can answer standard e-mail questions in seconds. Finally, human experts’ services can be expedited using help-desk software.

- **Brand or corporate image.** On the Web, newcomers can establish corporate images very quickly. What Amazon.com did in just 3 years took traditional companies generations to achieve. A good corporate image facilitates trust, which is necessary for direct sales. Traditional companies such as Intel, Disney, and Wal-Mart use their Web activities to affirm their corporate identity and brand image. Online File W2.9 demonstrates how one company uses personalization to bolster its image.

- **Customization.** EC enables customization of products and services. Buying in a store or ordering from a television advertisement usually limits customers to a supply of standard products. Dell is the classic example of customization success. Today, customers can configure not only computers but also cars, jewelry, shoes, clothes, gifts, and hundreds of other products and services. If done properly, a company can achieve mass customization that provides a competitive advantage and increases the overall demand for certain products and services. Customization is changing marketing and sales activities both in B2C and in B2B.

- **Advertising.** With direct marketing and customization comes one-to-one, or direct, advertising, which can be much more effective than mass advertising. Direct advertising creates a fundamental change in the manner in which advertising is conducted, not only for online transactions but also for products and services that are ordered and shipped in traditional ways. As will be shown in Chapter 4, the entire concept of advertising is going through a fundamental change due to EC.
Part 1: Introduction to E-Commerce and E-Marketplaces

- **Ordering systems.** Taking orders from customers can be drastically improved if it is done online, reducing both processing time and mistakes. Electronic orders can be quickly routed to the appropriate order-processing site. This process reduces expenses and also saves time, freeing salespeople to develop marketing plans.
- **Market operations.** Direct e-marketing is changing traditional markets. Some physical markets may disappear, as will the need to make deliveries of goods to intermediaries in the marketplace. In an e-marketplace, goods are delivered directly to buyers upon completion of the purchase, making markets much more efficient and saving the cost of the shipment into and from the brick-and-mortar store.
- **Accessibility.** The ability to access a market anytime from any place (especially with wireless devices) enhances direct e-marketing.

For digital products—software, music, and information—the changes brought by e-markets will be dramatic. Already, small but powerful software packages are delivered over the Internet. The ability to deliver digitized products electronically affects (eliminates) packaging and greatly reduces the need for specialized distribution models.

New sales models such as shareware, freeware, and pay-as-you-use are emerging. Although these models currently exist only within particular sectors, such as the software and publishing industries, they will eventually pervade other sectors.

Another way to view the impact of e-marketplaces on marketing is provided by Wind (2001). Kioses et al. (2006) summarize the changes in marketing. These changes are listed in Exhibit 2.10.

### EXHIBIT 2.10 The Changing Face of Marketing

<table>
<thead>
<tr>
<th>Relationships with customers</th>
<th>Old Model—Mass and Segmented Marketing</th>
<th>New Model—One-to-One and Customization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer needs</td>
<td>Articulated</td>
<td>Articulated and unarticulated</td>
</tr>
<tr>
<td>Segmentation</td>
<td>Mass market and target segments</td>
<td>Segments looking for customized solutions and segmented targets. One-to-one targets</td>
</tr>
<tr>
<td>Product and service offerings</td>
<td>Line extensions and modification</td>
<td>Customized products, services, and marketing</td>
</tr>
<tr>
<td>New product development</td>
<td>Marketing and R&amp;D drive new product development</td>
<td>R&amp;D focuses on developing the platforms that allow consumers to customize based on customer inputs</td>
</tr>
<tr>
<td>Pricing</td>
<td>Fixed prices and discounting</td>
<td>Customer influencing pricing (e.g., Priceline.com; auctions); value-based pricing models, e-auctions, e-negotiations (i-offer)</td>
</tr>
<tr>
<td>Communication</td>
<td>Advertising and PR</td>
<td>Integrated, interactive, and customized marketing communication, education, and entertainment</td>
</tr>
<tr>
<td>Distribution</td>
<td>Traditional retailing and direct marketing</td>
<td>Direct (online) distribution and rise of third-party logistics services</td>
</tr>
<tr>
<td>Branding</td>
<td>Traditional branding and cobranding</td>
<td>The customer’s name as the brand (e.g., My Brand or Brand 4 ME)</td>
</tr>
<tr>
<td>Basis of competitive advantage</td>
<td>Marketing power</td>
<td>Marketing finesse and “capturing” the customer as “partner” while integrating marketing, operations, R&amp;D, and information</td>
</tr>
<tr>
<td>Communities</td>
<td>Discount to members in physical communities</td>
<td>Discounts to members of e-communities</td>
</tr>
</tbody>
</table>

**Sources:** Compiled from Wind (2001), Kioses et al. (2006), and Singh (2006).
All of these impacts of e-markets on direct marketing provide companies, in some cases, with a competitive advantage over those that use only traditional direct-sales methods, as vividly illustrated in the Blue Nile case. Furthermore, because the competitive advantage is so large, e-markets are likely to replace many nondirect marketing channels. Some people predict the “fall of the shopping mall,” and many retail stores and brokers of services (e.g., stocks, real estate, and insurance) are labeled by some as soon-to-be-endangered species.

### TRANSFORMING ORGANIZATIONS

A second impact of e-marketplaces is the transformation of organizations. Here, we look at two key topics: organizational learning and the nature of work.

#### Technology and Organizational Learning

Rapid progress in EC will force a Darwinian struggle: To survive, companies will have to learn and adapt quickly to the new technologies. This struggle will offer them an opportunity to experiment with new products, services, and business models, which may lead to strategic and structural changes. These changes may transform the way in which business is done. We believe that as EC progresses, it will have a large and durable impact on the strategies of many organizations (see the Rosenbluth [now part of American Express] case, Online File W2.10).

Thus, new technologies will require new organizational structures and approaches. For instance, the structure of the organizational unit dealing with e-marketplaces might be different from the conventional sales and marketing departments. Specifically, a company’s e-commerce unit might report directly to the chief information officer (CIO) rather than to the sales and marketing vice president. To be more flexible and responsive to the market, new processes must be put in place. For a while, new measurements of success may be needed. For example, the measures—called metrics—used to gauge success of an EC project in its early stages might need to be different from the traditional revenue–expenses framework (see Chapters 14 and 15). However, in the long run, as many dot-coms have found out, no business can escape the traditional revenue–expenses framework.

In summary, corporate change must be planned and managed. Before getting it right, organizations may have to struggle with different experiments and learn from their mistakes.

#### The Changing Nature of Work

The nature of some work and employment will be restructured in the Digital Age; it is already happening before our eyes. For example, driven by increased competition in the global marketplace, firms are reducing the number of employees down to a core of essential staff and outsourcing whatever work they can to countries where wages are significantly lower. The upheaval brought on by these changes is creating new opportunities and new risks and is forcing people to think in new ways about jobs, careers, and salaries.

Digital Age workers will have to be very flexible. Few will have truly secure jobs in the traditional sense, and many will have to be willing and able to constantly learn, adapt, make decisions, and stand by them. Many will work from home.

The Digital Age company will have to view its core of essential workers as its most valuable asset. It will have to constantly nurture and empower them and provide them with every means possible to expand their knowledge and skill base (see Drucker 2002).

### REDEFINING ORGANIZATIONS

The following are some of the ways in which e-markets redefine organizations.

#### New and Improved Product Capabilities

E-markets allow for new products to be created and for existing products to be customized in innovative ways. Such changes may redefine organizations’ missions and the manner in which they operate. Customer profiles, as well as data on customer preferences, can be used as a source of information for improving products or designing new ones.

Mass customization, as described earlier, enables manufacturers to create specific products for each customer, based on the customer’s exact needs (see Appendix 2A on build-to-order
EXHIBIT 2.11 *How Customization Is Done Online: The Case of Nike Shoes*

Log on to Nike.com
Go to “USA”
Go to “Nike iD”
View 32 items

Start Here

Click on an item
You are in “configuration”
Nike iD: Create your own
Configure your choice
(see it in a 3D picture)

Select: size, color,
personalized
logo, etc.
Submit and review

Order flows to
production floor
Your personalized
logo is programmed
into the machine

Get shipping
information (2 to 4
weeks to deliver)
Arrange payment
(credit card)

Place order in
shopping cart
Use express service
if you are a member

Shoes are
inspected, packed
and transferred
to shipper

Shoes arrive, enjoy them

at the end of this chapter). For example, Motorola gathers customer needs for a pager or a
 cellular phone, transmits the customer’s specifications electronically to the manufacturing
 plant where the device is manufactured, and then sends the finished product to the customer
 within a day. Dell and General Motors use the same approach in building their products.
 Customers can use the Web to design or configure products for themselves. For example,
 customers can use the Web to design T-shirts, furniture, cars, jewelry, Nike shoes, and even a
 Swatch watch. With the use of mass-customization methods, the cost of customized products
 is at or slightly above the comparable retail price of standard products. Exhibit 2.11 shows
 how customers can order customized Nike shoes.

**New Industry Order and Business Models**

E-markets affect not only individual companies and their products, but also entire
 industries (e.g., airlines are moving to electronic ticketing and stocks are moving to online
 trading). The wide availability of information and its direct distribution to consumers
 will lead to the use of new business models (e.g., the name-your-own-price model of
 Priceline.com).

**Improving the Supply Chain**

One of the major benefits of e-markets is the potential improvement in supply chains.
 A major change is the creation of a hub-based chain, as shown in Exhibit 2.12 (in compari-
 son with a traditional supply chain—upper part of the exhibit), and in Chapter 7.

**Self-Service.** One of the major changes in the supply chain is to transfer some activities
to customers and/or employees through self-service. This strategy is used extensively in call
 centers (e.g., track your package at UPS or FedEx), with self-configuration of products (e.g.,
 Dell, Nike), by having customers use FAQs, and by allowing employees to update personal
Chapter Two: E-Marketplaces: Structures, Mechanisms, Economics, and Impacts

EXHIBIT 2.12 Changes in the Supply Chain

a. Traditional Intermediaries

<table>
<thead>
<tr>
<th>Supplier</th>
<th>Manufacturer</th>
<th>Wholesaler</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Delivery</td>
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<td></td>
<td>Subsupplier</td>
<td></td>
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<tr>
<td>Service</td>
<td>Retailer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Buyer</td>
<td></td>
</tr>
</tbody>
</table>

b. Hub-Based Chain

Electronic Hub

- Technology
- Logistics, delivery
- Consultant
- Other services
- Supply
- Sub-supplier
- Support
- Manufacturers
- Bank payment
- Buyer
- Sub-supplier

Impacts on Manufacturing

EC is changing manufacturing systems from mass production lines to demand-driven, just-in-time manufacturing (see Blecker et al. 2005). These new production systems are integrated with finance, marketing, and other functional systems, as well as with business partners and customers. Using Web-based ERP systems (supported by software such as SAP R/3), companies can direct customer orders to designers and/or to the production floor within seconds (Norris 2005). Production cycle time can be cut by 50 percent or more in many cases, even if production is done in a different country from where the designers and engineers are located. (Recall the Boeing Case, Chapter 1.)

Build-to-Order Manufacturing. Build-to-order (pull system) is a manufacturing process that starts with an order (usually customized). Once the order is paid for, the vendor starts to fulfill it. This changes not only production planning and control but also the entire supply chain and payment cycle. For example, manufacturing or assembly starts only after an...
Part 1: Introduction to E-Commerce and E-Marketplaces

order is received. For more on build-to-order production, see Appendix 2A at the end of this chapter. One implementation of build-to-order is presented next.

**Real-Time Demand-Driven Manufacturing.** Successful manufacturing organizations must respond quickly and efficiently to demand. Strategies and techniques of the past no longer work, and it is a challenge to transform from the traditional, inventory-centric model to a more profitable and flexible demand-driven enterprise. Demand-driven manufacturing (DDM) provides customers with exactly what they want, when and where they want it. Effective communication between the supply chain and the factory floor is needed to make it happen. Partnerships must be focused on reducing costs through shared quality goals, shared design responsibility, on-time deliveries, and continuous performance reviews. An explanation of the DDM process is provided in Online File W2.11.

**Virtual Manufacturing.** An interesting organizational concept is that of virtual manufacturing—the ability to run multiple manufacturing plants as though they were at one location. A single company controls the entire manufacturing process, from the supply of components to shipment, while making it completely transparent to customers and employees. For example, Cisco works with 34 plants globally, 32 of which are owned by other companies. Each of Cisco's products will look exactly alike, regardless of where it was manufactured. Up-to-the-minute information sharing is critical for the success of this mass-customization approach (Blecker et al. 2005).

**Assembly Lines.** Companies such as IBM, General Motors, General Electric, and Boeing assemble products from components that are manufactured in many different locations, even different countries. Subassemblers gather materials and parts from their vendors, and they may use one or more tiers of manufacturers. Communication, collaboration, and coordination are critical in such multitier systems. Using electronic bidding, assemblers acquire subassemblies 15 to 20 percent cheaper than before and 80 percent faster. Furthermore, such systems are flexible and adaptable, allowing for fast changes with minimum cost. Also, costly inventories that are part of mass-production systems can be minimized. Finally, as seen in the Boeing case (Chapter 1), the system encourages suppliers to contribute innovative ideas.

According to Blecker (2006b), Internet technologies in the future will impact the shop floors in isolated islands of factories in real time. Internal communication and collaboration systems will interconnect automation, such as a single machine, or an assembly line, increasing productivity, speed, and quality.

**Impacts on Finance and Accounting**

E-markets require special finance and accounting systems. Most notable of these are electronic payment systems (Chapter 12). Traditional payment systems may be ineffective or inefficient for electronic trade. The use of new payment systems such as electronic cash is complicated because legal issues and agreements on international standards are involved. Nevertheless, electronic cash is certain to come soon, and it will change how payments are made. It could also change consumers’ financial lives and shake the foundations of financial systems.

Executing an electronic order triggers an action in what is called the back office. Back-office transactions include buyers’ credit checks, product availability checks, order confirmations, changes in accounts payable, receivables, billing, and much more. These activities must be efficient, synchronized, and fast so that the electronic trade will not be slowed down. An example of this is online stock trading. In most cases, orders are executed in less than 1 second, and the trader can find an online confirmation of the trade immediately.

One of the most innovative concepts in accounting and finance is the "virtual close," which would allow companies to close their accounting records, or "books," within a day. This Cisco Systems project is described in Online File W2.12. For more on impacts of EC on the financial services industry, see Malhotra and Malhotra (2006).

**Impact on Human Resources Management and Training**

EC is changing how people are recruited (see Chapter 3), evaluated, promoted, and developed. EC also is changing the way training and education are offered to employees. Online distance learning is exploding, providing opportunities that never existed in the past. Companies
are cutting training costs by 50 percent or more, and virtual courses and programs are
mushrooming (see Chapter 8).

New e-learning systems offer two-way video, on-the-fly interaction, and application
sharing. Such systems provide for interactive remote instruction systems, which link sites
ever a high-speed intranet. At the same time, corporations are finding that e-learning may be
their ticket to survival as changing environments, new technologies, and continuously chang-
ing procedures make it necessary for employees to be trained and retrained constantly, a
process known as e-Human Resources (Ensher et al. 2002). EC systems are revolutionizing
human resources (HR) operations (see Online File W2.13).

Section 2.9 • REVIEW QUESTIONS
1. List the major parts of Bloch et al.’s model.
2. Describe how EC improves direct marketing.
3. Describe how EC transforms organizations.
4. Describe how EC redefines organizations.
5. Describe the concept of build-to-order (customization).
6. Describe the concept of the virtual close (described in Online File W2.12)

MANAGERIAL ISSUES

Some managerial issues related to this chapter are as follows.

1. What about intermediaries? Many EC applications
will change the role of intermediaries. This may create a
conflict between a company and its distributors. It may
also create opportunities. In many cases, distributors
will need to change their roles. This is a sensitive issue
that needs to be planned for during the transformation
to the e-business plan.

2. Should we auction? A major strategic issue is whether
to use auctions as a sales channel. Auctions do have some
limitations, and forward auctions may create conflicts
with other distribution channels. If a company decides to
use auctions, it needs to select auction mechanisms and
determine a pricing strategy. These decisions determine
the success of the auction and the ability to attract and
retain visitors on the site. Auctions also require support
services. Decisions about how to provide these services
and to what extent to use business partners are critical to
the success of high-volume auctions.

3. Should we barter? Bartering can be an interesting
strategy, especially for companies that lack cash, need
special material or machinery, and have surplus
resources. However, the valuation of what is bought or
sold may be hard to determine, and the tax implica-
tions in some countries are not clear.

4. What m-commerce opportunities are available? A
company should develop an m-commerce strategy if it
is likely to be impacted by m-commerce. The opportu-
nities presented by m-commerce are enormous, but so
are the risks. However, doing nothing may be even
riskier. For further discussion, see Lei (2006) and
Sadegh (2002).

5. How do we compete in the digital economy?
Although the basic theories of competition are
unchanged, the rules are different. Of special interest
are digital products and services, whose variable costs
are very low. Competiti

6. What organizational changes will be needed?
Companies should expect organizational changes in all
functional areas once e-commerce reaches momentum.
At a minimum, purchasing will be done differently in
many organizations. Introducing models such as
forward auctions and affiliate programs may also have a
major impact on business operations. Finally, the
trends toward build-to-order and demand-driven
manufacturing will continue to expand.
RESEARCH TOPICS

Some EC research issues related to this chapter follow. For details, references, and additional topics, refer to the Online Appendix A “Current EC Research.”

1. Benefits and Issues of E-Marketplaces
   - Analyze the benefits of e-marketplaces by industry, product, and e-market type.
   - What is the role of e-marketplaces in facilitating coordination with partners and intermediaries?
   - Summarize and compare typical empirical EC studies and outline potential new EC studies.
   - Research privacy considerations in e-marketplaces.

2. The Roles of Intermediaries in E-Marketplaces
   - Examine the traditional roles of intermediaries and their roles in e-marketplaces (reintermediation).
   - Investigate how intermediation affects competition and customer service.
   - Analyze disintermediation and reintermediation in e-marketplaces.

3. Electronic Catalogs
   - What are the benefits of intelligent catalog-search tools to buyers? What methods are used for search?
   - From the buyer’s point of view, what are the benefits of customized, aggregated catalogs?
   - How accurate is dynamic customer profiling?
   - Research search agents for electronic catalogs.

4. Auctions and Negotiation as B2B EC Mechanisms
   - Investigate the reasons for the success of online auctions (success factors).
   - Examine how businesses use auctions, especially reverse ones, as a business strategy.
   - Research different aspects of online negotiation (e.g., the role of intelligent agents).

5. The Impact of EC
   - Research the impact of EC on organizations, functional departments, competition, market structures, and business processes.
   - Use surveys and statistics to compare the impact of EC on different countries and industries.

6. Mobile Computing and Commerce
   - Use theoretical models, frameworks, and surveys to compare and contrast m-commerce and e-commerce.
   - Examine how wireline and wireless technologies are related (complementation, substitution, facilitation).
   - Investigate the adaptation of new m-commerce technologies, such as RFID.

7. Build-to-Order Manufacturing and Assembly
   - Investigate the implementation strategy of EC and its relationship to mass customization from different angles (e.g., by industry, by product type).
   - Examine the design of information systems used to facilitate build-to-order.
   - Examine the adaptation of DDM in different industries.

8. Agent-Based E-Marketplaces
   - Discuss creation of protocols for agent-based EC.
   - Will people use EC intelligent agents? Is there a limit to what autonomous agents can do in EC?
   - Research the integration of Agent Communication Language (ACL), EDI, and B2B protocols.
   - How are agents incorporated into Web Services?
   - How do agents extract knowledge from Web pages?
   - Describe the Semantic Web with eXtensible Rule Markup Language (XRML) framework.
   - Describe design of market mechanisms and experimental simulation of their performances.
   - Examine agents in context-aware ubiquitous environments: architectures and applications.

9. The Effect of EC on Organizational Structures
   - How has EC changed the organizational structure of firms?
   - How has EC affected procurement and sales departments?
   - What kinds of internal processes can be outsourced?
   - Examine the transformation process and issues involved in changing to a digital enterprise.
Chapter Two: E-Marketplaces: Structures, Mechanisms, Economics, and Impacts

SUMMARY

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

1. **E-marketplaces and their components.** A market-space, or e-marketplace, is a virtual market that does not suffer from limitations of space, time, or borders. As such, it can be very effective. Its major components include customers, sellers, products (some digital), infrastructure, front-end processes, back-end activities, electronic intermediaries, other business partners, and support services.

2. **The role of intermediaries.** The role of intermediaries will change as e-markets develop; some will be eliminated (disintermediation), others will change their roles and prosper (reintermediation). In the B2B area, for example, e-distributors connect manufacturers with buyers by aggregating electronic catalogs of many suppliers. New value-added services that range from content creation to syndication are mushrooming.

3. **The major types of e-marketplaces.** In the B2C area, there are storefronts and e-malls. In the B2B area, there are private and public e-marketplaces, which may be vertical (within one industry) or horizontal (across different industries). Different types of portals provide access to e-marketplaces.

4. **Electronic catalogs, search engines, and shopping carts.** The major mechanisms in e-markets are electronic catalogs, search engines, software (intelligent) agents, and electronic shopping carts. These mechanisms facilitate EC by providing a user-friendly shopping environment.

5. **Types of auctions and their characteristics.** In forward auctions, bids from buyers are placed sequentially, either in increasing (English and Yankee) mode or in decreasing (Dutch and free-fall) mode. In reverse auctions, buyers place an RFQ and suppliers submit offers in one or several rounds. In “name-your-own-price” auctions, buyers specify how much they are willing to pay for a product or service and an intermediary tries to find a supplier to fulfill the request.

6. **The benefits and limitations of auctions.** The major benefits for sellers are the ability to reach many buyers, to sell quickly, and to save on commissions to intermediaries. Buyers have a chance to obtain bargains and collectibles while shopping from their homes. The major limitation is the possibility of fraud.

7. **Bartering and negotiating.** Electronic bartering can greatly facilitate the swapping of goods and services among organizations, thanks to improved search and matching capabilities, which is done in bartering exchanges. Software agents can facilitate online negotiation.

8. **The role of m-commerce.** Mobile commerce is emerging as a phenomenon that can provide Internet access to millions of people. It also creates new location-related applications.

9. **Competition in the digital economy.** Competition in online markets is very intense due to the increased power of buyers, the ability to find the lowest price, and the ease of switching to another vendor. Global competition has increased as well.

10. **The impact of e-markets on organizations.** All functional areas of an organization are affected by e-markets. Broadly, e-markets improve direct marketing and transform and redefine organizations. Direct marketing (manufacturers to customers) and one-to-one marketing and advertising are becoming the norm, and mass customization and personalization are taking off. Production is moving to a build-to-order model, changing supply chain relationships and reducing cycle time. Virtual manufacturing is also on the rise. Financial systems are becoming more efficient as they become networked with other business functions, and the human resources activities of recruiting, evaluation, and training are being managed more efficiently due to employees’ interactions with machines.

**KEY TERMS**

<table>
<thead>
<tr>
<th>Term</th>
<th>Page</th>
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</thead>
<tbody>
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<td>Auction</td>
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</tr>
<tr>
<td>Back end</td>
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<tr>
<td>Bartering</td>
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<td>Bartering exchange</td>
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<td>Location-based commerce (LBC)</td>
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<thead>
<tr>
<th>Marketspace</th>
<th>Mobile commerce (m-commerce)</th>
<th>Mobile computing</th>
<th>Mobile portal</th>
<th>“Name-your-own-price” model</th>
<th>Personalization</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>64</td>
<td>64</td>
<td>49</td>
<td>61</td>
<td>68</td>
</tr>
</tbody>
</table>

PRIVATE E-MARKETPLACE

PRIVATE E-MARKETPLACE

48

SELL-SIDE E-MARKETPLACE

SOFTWARE (INTELLIGENT) AGENT

58

54

STOREFRONT

VOICE PORTAL

47

49

INTERNET EXERCISES


2. Go to cisco.com, google.com, and cio.com and locate information about the status of the “virtual close.” Write a report based on your findings.

3. Visit ticketmaster.com, ticketonline.com, and other sites that sell event tickets online. Assess the competition in online ticket sales. What services do the different sites provide?

4. Examine how bartering is conducted online at tradeaway.com, buyersbag.com, u-exchange.com, and intagio.com. Compare the functionalities and ease of use of these sites.

5. Enter pages.ebay.com/wireless/ and investigate the use of “anywhere wireless.” Review the wireless devices and find out how they work.

6. Enter mfgquote.com and review the process by which buyers can send RFQs to merchants of their choice. Evaluate all of the online services provided by the company. Write a report based on your findings.

7. Enter bloomsburgcarpet.com. Explain how the site solves the problem of sending carpet sample books to representatives all over the country. What are the special features of the electronic catalogs here? (Hint: It might be useful to read Kapp 2001.)

8. Enter respond.com and send a request for a product or a service. Once you receive replies, select the best deal. You have no obligation to buy. Write a short report based on your experience.

9. Enter onstar.com and review its services. Comment on the usability of each service.

10. Enter yahoo.com and find what personalization methods it uses.

11. Enter Timberland Boot Studio (timberland.com) and design a pair of boots. Compare it to building your own sneakers at nike.com.
TEAM ASSIGNMENTS AND ROLE PLAYING

1. Have several teams each review Porter’s (2001) and Bako’s (1998) articles. Each team member will research one of the issues raised in the papers (e.g., competition, disintermediation, and Internet impacts) in light of recent developments in the economy and the e-commerce field.

2. Reread the opening case and discuss the following:
   a. Discuss the key success factors for Blue Nile.
   b. Amazon.com makes only a 15 percent margin on the products it sells. This enables Amazon.com to sell diamond earrings for $1,000 (traditional jewelers charge $1,700 for the same). Do you think that Amazon.com will succeed in selling this type of jewelry as Blue Nile did in selling expensive engagement rings?
   c. Competition between Blue Nile and Amazon.com will continue to increase. In your opinion, which one will win (visit their Web sites and see how they sell jewelry).
   d. Why is “commoditization” so important in the diamond business?
   e. Compare the following three sites: diamond.com, ice.com, and bluenile.com.
   f. Follow the performance of Blue Nile’s stock since 2003 (symbol: NILE).

Real-World Case
WAL-MART LEADS RFID ADOPTION

In the first week of April 2004, Wal-Mart (walmart.com) launched its first live test of RFID tracing technology. Using one distribution center and seven stores, 21 products from participating vendors were used in the pilot test.

In the pilot application, passive RFID chips with small antennae were attached to cases and pallets. When passed near an RFID “reader,” the chip activated, and its unique product identifier code was transmitted back to an inventory control system. Cases and pallets containing the 21 products featuring RFID tags were delivered to the distribution center in Sanger, Texas, where RFID readers installed at the dock doors notified both shippers and Wal-Mart what products had entered the Wal-Mart distribution center and where the products were stored. RFID readers were also installed in other places, such as conveyor belts, so that each marked case could be tracked. The readers used by Wal-Mart have an average range of 15 feet. (See Chapter 7 for more on how RFID works.)

Wal-Mart set a January 2005 target for its top 100 suppliers to place RFID tags on cases and pallets destined for Wal-Mart stores. Wal-Mart believed that the implementation of the pilot scheme will pave the way for achieving this goal. According to Linda Dillman, CIO at Walmart, the company’s RFID strategy was a success in that by the end of January the required RFID systems were in place and many of Wal-Mart’s suppliers were collecting data on the delivery of their products (IDTechEX 2005). The system is expected to improve flows along the supply chain, reduce theft, increase sales, reduce inventory costs (by eliminating both overstocking and understocking), and provide visibility and accuracy throughout Wal-Mart’s supply chain. By January 2007, Wal-Mart expects 630 suppliers to be on the system (nearly doubling the 330 in January 2006).

Although some of Wal-Mart’s suppliers have been late in implementing the system, it is clear that if the pilot is successful (and so far it is) RFID will become an industry standard. After all, nearly $70 billion is lost in the retail sector in the United States every year due to products getting lost in the supply chain or being stored in wrong places.

In addition to requiring RFID from its suppliers, Wal-Mart is installing the technology internally. According to Scherago (2006), more than 2,000 Wal-Mart stores were RFID-enabled with gate readers and handhelds at loading docs, the entrance, stockrooms, and the sales floor by the end of 2006.

The next step in Wal-Mart’s pilot is to mark each individual item with a tag. This plan raises a possible privacy issue: What if the tags are not removed from the products? People fear that they will be tracked after leaving the store. Wal-Mart also can use RFIDs for many other applications. For example, it could attach tags to shoppers’ children, so if they are lost in the megastore they could be tracked in seconds.

Retailers such as Wal-Mart believe that the widespread implementation of RFID technology marks a revolutionary change in supply chain management, much
as the introduction of bar codes was seen as revolutionary two decades ago.

The RFID initiative is an integral part of improving the company’s supply chain (Scherago 2006). The RFID along with a new EDI will improve the collaboration with the suppliers and help reduce inventories. According to Ferguson (2006), Wal-Mart’s new CIO has said that he will stand behind the RFID technology.


Questions
1. Assuming that the cost of RFID is low (less than $0.05 per item), what advantages can you see for tagging individual items in each store? Is it necessary to do so?
2. Find some information regarding the advantages of RFIDs over regular bar codes.
3. Is this an e-business application? Why or why not? If it is, what business model is being used?
4. What are some of the business pressures driving the use of RFID in retailing?

REFERENCES
Chapter Two: E-Marketplaces: Structures, Mechanisms, Economics, and Impacts


BUILD-TO-ORDER PRODUCTION

The concept of build-to-order means that a firm starts to make a product or service only after an order for it is placed. It is also known as demand-driven manufacturing (DDM), customization, personalization, and pull technology. This concept is as old as commerce itself and was the only method of production until the Industrial Revolution. According to this concept, if a person needs a pair of shoes, he or she goes to a shoemaker, who takes the person’s measurements. The person negotiates quality, style, and price and pays a down payment. The shoemaker buys the materials and makes a customized product for the customer. Customized products are expensive, and it takes a long time to finish them. The Industrial Revolution introduced a new way of thinking about production.

The Industrial Revolution started with the concept of dividing work into small parts. Such division of labor makes the work simpler, requiring less training for employees. It also allows for specialization. Different employees become experts in executing certain tasks. Because the work segments are simpler, it is easier to automate them. As machines were invented to make products, the concept of build-to-market developed. To implement build-to-market, it was necessary to design standard products, produce them, store them, and then sell them.

The creation of standard products by automation drove prices down, and demand accelerated. The solution to the problem of increased demand was mass production. In mass production, a company produces large amounts of standard products at a very low cost and then “pushes” them to consumers. Thus began the need for sales and marketing organizations. Specialized sales forces resulted in increased competition and the desire to sell in wider, and more remote, markets. This model also required the creation of large factories and specialized departments such as accounting and personnel to manage the activities in the factories. With mass production, factory workers personally did not know the customers and frequently did not care about customers’ needs or product quality. However, the products were inexpensive and good enough to fuel demand, and thus the concept became a dominant one. Mass production also required inventory systems at various places in the supply chain, which were based on forecasted demand. If the forecasted demand was wrong, the inventories were incorrect. Thus, companies were always trying to achieve the right balance between not having enough inventory to meet demand and having too much inventory on hand.

As society became more affluent, the demand for customized products increased. Manufacturers had to meet the demand for customized products to satisfy customers. As long as the demand for customized product was small, it could be met. Cars, for example, have long been produced using this model. Customers were asked to pay a premium for customization and wait a long time to receive the customized product, and they were willing to do so. Note that the process starts with product configuration (Blecker 2006); namely, the customer decides what the product is going to look like, what operations it will perform, and what capabilities it will have (e.g., the functionalities in Dell).

Slowly, the demand for customized products and services increased. Burger King introduced the concept of “having it your way,” and manufacturers sought ways to provide customized products in large quantities, which is the essence of mass customization, as pioneered by Dell. Such solutions were usually enhanced by some kind of information technology. The introduction of customized personal computers (PCs) by Dell was so successful that many other industries wanted to try mass customization.

EC can facilitate customization, even mass customization. In many cases, EC is doing it via personalization (Anke and Sundaram 2006). To understand how companies can use EC for customization, let’s first compare mass production, also known as a push system, and mass customization, also known as a pull system, as shown in Exhibit 2A.1.

Notice that one important area in the supply chain is order taking. Using EC, a customer can self-configure the desired product online. The order is received in seconds. Once the order is verified and payment arranged, the order is sent electronically to the production floor. This saves time and money. For complex products, customers may collaborate in real time with the manufacturer’s designers, as is done at Cisco Systems. Again, time and money are saved and errors are reduced due to better communication and collaboration. Other contributions of EC are that the customers’ needs are visible to all partners in the order fulfillment chain (fewer delays, faster response time), inventories are reduced due to rapid communication, and digitizable products and services can be delivered electronically.

A key issue in mass customization is knowing what the customers want. In many cases, the seller can simply ask the customer to configure the product or service. In other cases, the seller tries to predict what the customer wants. EC is very helpful in this area due to the use of online market research methods such as collaborative filtering (see Chapter 4 and Holweg and Pil 2001). Using collaborative filtering,
Part 1: Introduction to E-Commerce and E-Marketplaces

### EXHIBIT 2A.1  Push Versus Pull Production Systems

<table>
<thead>
<tr>
<th>Conventional Push Systems</th>
<th>EC-Based Pull Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process</strong></td>
<td><strong>Characteristics</strong></td>
</tr>
<tr>
<td>Manufacturer/assembler</td>
<td>Goals</td>
</tr>
<tr>
<td>Product to market;</td>
<td>• Produce standard</td>
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<tr>
<td>quantity based on demand</td>
<td>products from long-</td>
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<tr>
<td>forecast.</td>
<td>term demand forecasts.</td>
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<td></td>
<td>• Manage stock</td>
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<td></td>
<td>reactively to allow</td>
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<td></td>
<td>for efficient</td>
</tr>
<tr>
<td></td>
<td>production.</td>
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<tr>
<td></td>
<td><strong>Benefits</strong></td>
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<tr>
<td></td>
<td>• Efficient production.</td>
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<tr>
<td></td>
<td>• Local optimization</td>
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<tr>
<td></td>
<td>of factory operations.</td>
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<td></td>
<td><strong>Weaknesses</strong></td>
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<tr>
<td></td>
<td>• High levels of</td>
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<td></td>
<td>finished stock in</td>
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<td></td>
<td>market.</td>
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<td></td>
<td>• Requires alternative</td>
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<td></td>
<td>product specifications</td>
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<td></td>
<td>and discounting to</td>
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<td></td>
<td>sell aging stock.</td>
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<td></td>
<td>• Customized orders</td>
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<td></td>
<td>compete with standard</td>
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<td></td>
<td>ones for capacity.</td>
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<td></td>
<td>• System loses sight</td>
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<td></td>
<td>of real customer</td>
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<tr>
<td></td>
<td>demand.</td>
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<td></td>
<td><strong>Characteristics</strong></td>
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<tr>
<td></td>
<td>• Build products</td>
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<td></td>
<td>only after the</td>
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<td></td>
<td>customer orders</td>
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<td></td>
<td>them.</td>
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<td></td>
<td>• Make customer needs</td>
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<td>visible to all parts</td>
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<td>of the value chain.</td>
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<td><strong>Benefits</strong></td>
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<td>• No stock other than</td>
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<td>that in showroom and</td>
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<td>demonstrators.</td>
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<td></td>
<td>• No discounting.</td>
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<td>• Customer pays before</td>
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<td>manufacturer has</td>
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<td>production expenses.</td>
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<tr>
<td></td>
<td><strong>Weaknesses</strong></td>
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<td>• System is sensitive</td>
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<td>to short-term demand</td>
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<td>fluctuations; method</td>
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<td>will not work without</td>
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<td>proactive demand</td>
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<td></td>
<td>management.</td>
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<td></td>
<td>• Active revenue</td>
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<td></td>
<td>management required</td>
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<td>to maximize profit.</td>
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</table>

From the production point of view, EC also can enable mass customization. In the factory, for example, IT in general and e-commerce in particular can help in expediting the production changeover from one item to another. Also, because most mass production is based on the assembly of standard components, EC can help a company create the production process for a product in minutes and identify needed components and their location. Furthermore, a production schedule can be generated automatically, and needed resources can be deployed, including money. This is why many industries, and particularly the auto manufacturers, are planning to move to build-to-order using EC. By doing so, they are expecting huge cost reductions, shorter order-to-delivery times, and lower inventory costs.

Mass customization on a large scale is not easy to attain (Zipkin 2001; Warschat et al. 2005), but if performed properly, it may become the dominant model in many industries.
## REFERENCES


