ECONOMICS AND IMPACTS OF E-COMMERCE

Content
A.1  Competition in the Digital Economy and Its Impact on Industries
A.2  Impacts of EC on Business Processes and Organizations
Managerial Issues

Learning Objectives
Upon completion of this appendix, you will be able to:
1. Discuss competition in the digital economy.
2. Describe the impact of e-marketplaces on organizations and industries.
A.1 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 interrelationships 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 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 almost 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 Chapter 2).

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

- **Barriers to entry are reduced.** Setting up a Web site is relatively easy, fast, and inexpensive, and doing 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.

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. 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) to 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).

Consider the example of 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 case 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 or customized 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 (geographic distance from the consumer) plays a less significant role in EC, and language is becoming less important as translation programs remove some language barriers (see Chapter 2). 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 Google) 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 Chapter 12, 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 described in Chapter 12 and Porter (2001). The Internet can 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.
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 Chapter 3). The health-care industry also is 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.

These changes are facilitated or enabled by EC and IT.

Section A.1 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.

A.2 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.g., see Zimmerman 2007), 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 A.1, divides the impact of e-marketplaces into three 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 increased to about $960 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.

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Appendix A: Economics and Impacts of E-Commerce

- **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, autoresponders (see Chapter 11) 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. Case A.1 demonstrates how one company uses personalization to bolster its image.

- **Customization.** EC enables customization of products via the build-to-order process (see Appendix 2A). 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. 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.

- **Personalization.** Personalization refers to “get-it-your-way” in services and digital information (e.g., news, stock prices, weather in your city, and so forth).

- **Advertising.** With direct marketing and customization and personalization 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 shown in Chapter 4, the entire concept of advertising is going through a fundamental change due to EC.

- **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-marketspace, 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.
CASE A.1

EC Application

BOMBAY SAPPHIRE IN VIRTUAL GLASSES

Bacardi USA, marketer and distributor of Bombay Sapphire gin in the United States, was looking for a new way to market the product in a competitive market. In its print advertisements, the company had used one-of-a-kind martini glasses designed by big-name designers such as Karim Rashid and Dakota Jackson to symbolize the “classiness” of the drink. Likewise, the company’s Web site was stunningly executed. However, it was a one-way communication effort—from the company to the consumer.

Bacardi decided to team up with MFP Interact (MFPI) and Mass Transmit to plan an interactive campaign for the product. They developed a “make-your-own-martini-glass” campaign, which was launched in October 2001 at asexpressedbyyou.com. Visitors to the site can design their own martini glasses by manipulating properties such as transparency, scale, and color. Bacardi provided detailed specifications on how things could visually appear (e.g., only bright blues are available to match the brand).

Site visitors create their own virtual martini glasses and then e-mail them to friends.

The campaign showed early signs of success. Within the first month online, 8,921 glasses were designed; and two-thirds of the users agreed to receive advertisements for future Bacardi promotions. The average visit to this site is 5 to 20 minutes. Considering that the usual visit to a similar site is measured in seconds, this is a solid accomplishment. Consumer feedback is very positive, and the company plans to go global with the campaign.

Questions

1. How is personalization done in this case?
2. Why do you think the glasses are virtual, and not manufactured by the company?
3. What lessons for online branding can be learned from this case?

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 A.2.

EXHIBIT A.2 The Changing Face of Marketing

<table>
<thead>
<tr>
<th></th>
<th>Old Model—Mass and Segmented Marketing</th>
<th>New Model—One-to-One and Customization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationships with customers</td>
<td>Customer is a passive participant in the exchange. Articulated. Mass market and target segments.</td>
<td>Customer is an active coproducer. Target marketing is to individuals. Articulated and unarticulated. Segments looking for customized solutions and segmented targets. One-to-one targets.</td>
</tr>
<tr>
<td>Customer needs</td>
<td></td>
<td></td>
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<tr>
<td>Segmentation</td>
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(continued)
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 Rosenbluth [now part of American Express] in Case A.2).

Thus, new technologies will require new organizational structures and approaches. For instance, the structure of the organizational unit dealing with e-marketspaces might be

### EXHIBIT A.2 (continued)

<table>
<thead>
<tr>
<th>Product and service offerings</th>
<th>Line extensions and modification.</th>
<th>Customized products, services, and marketing.</th>
</tr>
</thead>
<tbody>
<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>Discounts 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).*
ROSENBLUTH INTERNATIONAL MOVES TO AN E-BUSINESS

The Problem
Rosenbluth International, now part of American Express (americanexpress.com), is a major international player in the competitive travel agency industry. The digital revolution introduced the following threats to Rosenbluth and the travel agent industry in general:

- Airlines, hotels, and other service providers are attempting to bypass travel agents by moving aggressively to direct electronic distribution systems.
- Commissions caps have been reduced (from $50 to $10), and most major airlines have decreased travel agents’ commission percentages from 10 to 5 percent.
- Large numbers of new online companies (e.g., expedia.com) provide diversified travel services at bargain prices in an effort to attract individual travelers. However, these online services are now penetrating the corporate travel market as well.
- Competition among the major players is based on rebates. The travel agencies basically give part of their commission back to their customers by using the commission to subsidize lower prices.
- Innovative business models that were introduced by e-commerce, such as name-your-own-price auctions and reverse auctions, have been embraced by many companies in the travel industry adding competitive pressures.

The Solution
Rosenbluth International responded to these new pressures with two strategies. First, the company decided to get out of the leisure travel business, becoming a pure corporate travel agency. Second, it decided to rebate customers with their entire commission. Instead of generating revenues by commission, Rosenbluth now bills customers according to the service provided. For example, fees are assessed for consultations on how to lower corporate travel costs, for the development of in-house travel policies for corporate clients, for negotiating for their clients with travel providers, and for travel-related calls answered by Rosenbluth’s staff.

To implement the second strategy, which completely changed the company’s business model, Rosenbluth now uses several innovative e-commerce applications. The company uses a comprehensive Web-based business travel management solution that integrates travel planning technology, policy and profile management tools, proprietary travel management applications, and seamless frontline service/support. This browser-based service allows corporate travelers to book reservations any time, anywhere, within minutes. The specific tools in this system are:

- DACODA (Discount Analysis Containing Optimal Decision Algorithms) is a patented yield-management system that optimizes a corporation’s travel savings, enabling travel managers to decipher complex airline pricing and identify the most favorable airline contracts.
- Electronic messaging services allow clients to manage their travel requests via e-mail. These services use a Web-based template that permits clients to submit reservation requests without picking up the phone. Additionally, a structured itinerary is returned to the traveler via e-mail.
- E-Ticket tracks, monitors, reports on, and collects the appropriate refund or exchange for unused e-tickets. As the amount of e-tickets usage grows, so does the amount of unused e-tickets that need to be refunded or exchanged.
- Res-Monitor, a patented low-fare search system, tracks a reservation up until departure time and finds additional savings for one out of every four reservations.
- A global distribution network electronically links the corporate locations and enables instant access to any traveler’s itinerary, personal travel preferences, or corporate travel policy.
- Custom-Res is a global electronic reservation system that ensures policy compliance, consistent service, and accurate reservations.
- IntelliCenters are advanced reservations centers that use innovative telecommunications technology to manage calls from multiple accounts, resulting in cost savings and personal service for corporate clients.
- The Network Operations Center (NOC) monitors the many factors impacting travel, including weather, current events, and air traffic. This information is disseminated to the company’s frontline associates so they can inform their clients of potential changes to their travel plans. The NOC also tracks call volume at all offices and enables the swift rerouting of calls as needed.

In late 2002, Rosenbluth International opened a Web-based exchange where SMEs can post their travel needs. Airlines, hotel chains, and other suppliers can bid on the

(continued)
Appendix A: Economics and Impacts of E-Commerce

CASE A.2  (continued)

<table>
<thead>
<tr>
<th>business. SMEs were, until then, shut out of the negotiated discount process; now, companies provide their needs, including travel policy and data on employees' historical travel patterns. They also post desired discounts. The negotiation can be completed online. First introduced in North America, the exchange moved to include Asia and Europe in 2003.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The Results</strong></td>
</tr>
<tr>
<td>In 1979, the company had $40 million in sales, primarily from leisure-oriented travelers in the Philadelphia area, by 1997 that figure had grown to over $3 billion, mainly due to several EC and IT innovations. Today, the company operates in 24 countries and has about 4,500 employees. Since the introduction of the Web-based solutions in 1997, sales increased to about $5 billion in 3 years</td>
</tr>
<tr>
<td>(a 60 percent increase). The company not only survived the threats of elimination but also increased its market share and profitability.</td>
</tr>
</tbody>
</table>

**Questions**

1. Describe the strategy the company uses to counter disintermediation.
2. Explain how EC facilitated the strategy.
3. Analyze the competitive solution using Porter's five-forces model.
4. Visit carlson.com to examine its EC initiatives. Compare them with Rosenbluth's.

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). 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 A.3 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 A.4 (in comparison with a traditional supply chain—upper part of the exhibit) and in Chapter 6.

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 data online. Shifting activities to others in the supply chain saves money and increases data accuracy and accountability.

**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.** A 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 order is received. For more on build-to-order production, see Appendix 2A. 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 Exhibit A.5.

<table>
<thead>
<tr>
<th>EXHIBIT A.5</th>
<th>Real-Time Demand-Driven Manufacturing (DDM) Activities</th>
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<tbody>
<tr>
<td>Connect</td>
<td>With the advantage of a robust supplier relationship management (SRM) system, manufacturers can communicate with certified suppliers to arrange the flow of supplies right into production lines based on demand. Inventory is reduced and unnecessary transactions are eliminated, increasing profitability and efficiency.</td>
</tr>
<tr>
<td>Adapt</td>
<td>Employees and production lines are much more flexible in a DDM environment. Proactive machine maintenance prevents line disruptions, and response time can be improved by as much as 70 percent. Factories carry less inventory, and productivity is increased.</td>
</tr>
<tr>
<td>Respond</td>
<td>It is necessary to know the customers and respond to their demographic and other changes with CRM.</td>
</tr>
<tr>
<td>Suppliers</td>
<td>Certified suppliers can deliver parts straight to the point of need on the plant floor, resulting in fewer transactions, smaller inventory levels, and greater efficiency. Procurement and supply chain management are simplified.</td>
</tr>
<tr>
<td>Human resources</td>
<td>In addition to payroll, benefits, and safety, HR manages employee improvement and training. Factories pay for training so that workers who are skilled are better compensated. The factory is also more flexible when staffed with multiskilled workers.</td>
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(continued)
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 (2006), 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 11). 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 Case A.3. 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 7).

CASE A.3
EC Application
CISCO’S VIRTUAL CLOSE

Cisco Systems, the company that supplies the vast networks that connect computers to the Internet, is using technology to develop a product, Virtual Close, with which a company can close its accounting records (its “books”) more quickly. This will be done by connecting the accounting and financial records of an entire company, even one with operations in dozens of countries, via an intranet. Cisco’s infrastructure will permit information sharing almost instantly.

Cisco is implementing such a system for itself. Closing the quarterly accounts used to take up to 10 days. Within 4 years, the chief financial officer worked the close down to 2 days (and significantly cut its cost). Cisco achieved its goal within 5 years: It now closes its books at the end of the quarter, the month, and the year by noon the next day.

The advantages for Cisco and any other company that uses Virtual Close are as follows:

- It provides strategic advantage to corporations, enabling them to make better decisions.
- Companies can become proactive, spotting problems at any time, instead of just once a quarter. Problems that would otherwise have remained unseen for months can be quickly addressed and their damage minimized.
- New opportunities can be detected early, allowing companies to exploit them quickly.
- Virtual Close will enable quick “drill-down” analysis, which locates the causes of either poor or excellent performance.
- It will bring huge productivity gains related to corporate financial reporting.

Implementing Virtual Close in a large company is a lengthy process that may end in failure due to the project’s complexity. However, not implementing it might result in a competitive disadvantage.

Questions
1. What are the advantages of a virtual close?
2. How can Cisco benefit, as a vendor, from marketing this concept?
3. Is this EC? Why or why not?
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 over 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 changing 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.

Section A.2 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 Case A.3).

MANAGERIAL ISSUES

1. 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. Competition involves both old-economy and new-economy companies. The speed of changes in competitive forces can be rapid, and the impact of new business models can be devastating. As Bill Gates once said, “Competition is not among companies, but among business models” (Financial Analysts Meeting 1998).

2. 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.

SUMMARY

1. 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.
2. 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.
Appendix A: Economics and Impacts of E-Commerce

**KEY TERMS**

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<td>Competitive forces model</td>
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<td>Differentiation</td>
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<td>Internet ecosystem</td>
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</tr>
<tr>
<td>Personalization</td>
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