E-COMMERCE STYLES

The companies that conduct their transactions on the Internet may exhibit quite different implementation structures. Depending on their lineage, companies that embrace e-commerce may be classified as:

- **A pure e-commerce company**. Such a company has only one transaction objective: to provide products and/or services through the Internet. Typically, such a company is created specifically for the purpose of doing business online. Therefore, it has a “virtual store-front” on the Internet, rather than a physical retail location. For such a company, the entire business and transaction architecture is planned around the Internet in order to deliver products and/or services.

- **A traditional brick and mortar company that decides to expand to the online market**. In this case, the company already has an established market and a customer base. The Internet is simply a new sales channel. Such a company almost certainly already has an information systems architecture that must be expanded to be integrated with the new e-commerce initiative.

Regardless of the company’s lineage, e-commerce transactions can be grouped according to who the sellers and the buyers are. Using this distinction, we can classify the principal e-commerce styles as:

- **Business to Business (B2B)**: electronic commerce between businesses.
- **Business to Consumer (B2C)**: electronic commerce between business and consumers.
- **Intra-Business**: internal electronic commerce activities, most of which involve interactions between employers and their employees.

Although some may argue that we should include government to business (G2B) and government to consumer (G2C) as additional e-commerce styles, we consider them to be special cases of B2B and B2C. Figure 14.6 identifies the primary e-commerce players and their interactions.
Business to Business (B2B)

Business-to-Business (B2B) is a type of e-commerce in which an organization conducts electronic transactions with other organizations. Although transactions include intangibles such as contract transmissions and account movements, most transactions involve sellers and buyers of products and/or services. Generally, the seller is any company that sells a product and/or service using electronic exchanges such as the Internet or EDI. The buyer may be a not-for-profit organization such as the Red Cross, the Cato Institute, or the Easter Seal Society, a for-profit company such as Dell, Toyota, or General Electric, or a government organization such as a municipality, a county, a state, or the federal government. Examples of B2B transactions are:

- A Nissan Corporation manufacturing plant issues an electronic order for a number of tires of a given model and size. That order is received by one of the approved tire providers and the order is fulfilled. When the tires are received, Nissan issues a payment electronically through a bank funds transfer.
- Using the web, the University of Tennessee makes hotel reservations for a group of researchers who will conduct a seminar.
- The Red Cross uses the web to compare hardware and software prices and subsequently orders hardware and software via the web.

Regardless of which estimates are used, it is already clear that the Internet is a dominant player in the new market economy. To an ever-increasing extent, businesses use technology to interact with each other in order to streamline their procedures. And they provide new or expanded services to their customers in a more efficient way than the traditional economy permitted. In this new economy, the main focus is on the use of technology to automate the value chain of a business. The value chain refers to all activities required to design, plan, manufacture, market, sell, and support a product or service. By examining the value chain components with reference to Internet technologies, businesses can automate and enhance their operations. For example, many companies now use Enterprise Resource Planning (ERP) to manage and enhance all aspects of the company’s value chain from raw material procurement to promoting customer satisfaction. Figure 14.7 illustrates the use of the value chain to automate B2B transactions.

Figure 14.7 E-Commerce Automation of Supply Chain

B2B transactions are subject to different types of implementation. The two most important versions are:
• **B2B Integration.** In this scenario, companies establish partnerships to reduce costs and time and to increase business and competitiveness. For example, a company that manufactures computers will partner with its suppliers for hard disks, memory and other components. Such a partnership allows the company to automate its purchasing system, integrating it with its suppliers’ ordering systems -- which then will link their respective inventory systems. In this case, when a component in company “C” gets below the minimum quantity on hand requirement, it will automatically generate an order to supplier “S”. Both systems would be integrated and would exchange business data, generally using XML through the Internet. (We will examine XML in Section 14.8). In addition, the company may integrate its distribution system with that of its distributors. Finally, the distributors may integrate their activities with those of their retailers. And the retailers may, in turn, integrate their operations with those of their customers. Given such integration, sellers align their operations with those of buyers, thereby achieving levels of efficiency that make it difficult to switch to other buyers and/or sellers.

• **B2B Marketplace.** In this scenario, the objective is to provide a way in which businesses can easily search, compare, and purchase products and services from other businesses. The web-based system will basically work as an online broker that will service both buyers and sellers. Within this system, the focus shifts to attracting new members, either sellers or buyers. The “broker” offers sellers a way to market their product or service to other businesses, while buyers are attracted by the fact that they can compare products from different buyers and get access to special deals only offered to the members. In this scenario, the broker obtains revenue through membership and transaction fees. Figure 14.8 shows an example of B2B web market places for the automotive industry.
Given the large number of transaction components and players, building a B2B solution requires a lot of work. This work ranges from establishing a set of partnerships with suppliers and distributors to programming sophisticated “business logic” to represent the business data exchanges. In short, there is a requirement for the integration of multiple -- and often seemingly incompatible -- systems. One important aspect involved in implementing B2B solutions is the integration of the databases to support information (data) exchanges with other database systems. In the following sections, you will learn about the use of a technology that facilitates such data exchange.
14.4.2 Business to Consumers (B2C)

A **business to consumer (B2C)** operation is one that uses the Internet to sell products and/or services directly to consumers or end-users. In B2C e-commerce, the Internet – and in particular the web – is the marketing, sales, and post-sales support channel. B2C is oriented to attracting customers to the web sites and offering products and services in new and innovative ways. B2C comes in two primary flavors:

- **Online Retailing.** This is the typical e-commerce web site and the one most Internet end-users are likely to be familiar with. In this scenario, a company markets and sells products and services through its web site. Examples of B2C are:
  - Delta Airlines selling tickets on its website
  - Dell Computers selling computers on its website
  - Fidelity offering online trading and account information on its website.
  - Wal-Mart and K-Mart selling products through the web.
  - Government offices providing web-based services, such as those provided by the Small Business Administration at [http://www.sba.gov](http://www.sba.gov).

- **B2C Marketplace.** In this B2C version, a company will work as broker by compiling information from many different sources and making such information available to customers. As a general rule, B2C web-based marketplace or broker sites will be industry oriented. For example broker sites might target computer hardware and software (pricewatch.com), airline tickets (travelevocity.com), or job search (monster.com). Two primary variations of the B2C marketplace exist:
  - **Consumer to Business to Consumer (C2B2C).** A consumer offers items for sale to other consumers through a third party web site. The web’s many auction sites are good examples. The most familiar C2B2C site is eBay ([http://www.ebay.com/](http://www.ebay.com/)), which allows the consumer to buy a wide range of items -- an autographed copy of a baseball, a model airplane, a designer chair, an old comic book, and so on -- from other consumers. And any consumer can offer products and/or services for sale. (See Figure 14.9).
Business to Business to Consumer (B2B2C). A business offers products or services to consumers through a third party web site. A typical example of B2B2C is a reverse auction such as LendingTree.com (http://www.lendingtree.com). Using LendingTree.com, a consumer request bids for a mortgage loan; banks receive the request, and submit offers to LendingTree.com that the consumer can compare from his/her home. In effect, the financial institutions compete for the loan business of the consumer. (See Figure 14.10.)
If a B2C e-commerce company expects to stay in business, it must provide services that make it easier for customers to find and purchase the information, products, and/or services they are looking for. Therefore, B2C websites are in constant change, as they need to provide features and services that attract and keep visitors coming back to their web sites. The constant advancement of Internet, data communications, and database technologies cause a continuing and accelerating flux of innovation. The following table lists a sample of B2C E-commerce web sites.
Table 14.1 Sample B2C Web Sites

<table>
<thead>
<tr>
<th>Industry</th>
<th>B2C Web sites</th>
<th>Industry</th>
<th>B2C Web sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel</td>
<td>Travelocity.com</td>
<td>Computer</td>
<td>Dell.com</td>
</tr>
<tr>
<td></td>
<td>Expedia.com</td>
<td></td>
<td>IBM.com</td>
</tr>
<tr>
<td></td>
<td>CheapTickets.com</td>
<td></td>
<td>Pricewatch.com</td>
</tr>
<tr>
<td>Retailing</td>
<td>Landsend.com</td>
<td>Health Services</td>
<td>HealthNet.com</td>
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<tr>
<td></td>
<td>Spiegel.com</td>
<td></td>
<td>WebMD.com</td>
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<tr>
<td></td>
<td>JCPenny.com</td>
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<tr>
<td>Financial:</td>
<td>Fidelity.com</td>
<td>Auctions</td>
<td>Ebay.com</td>
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<tr>
<td></td>
<td>Etrade.com</td>
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<tr>
<td>Banking</td>
<td>Netbank.com</td>
<td>Reverse Auctions</td>
<td>Priceline.com</td>
</tr>
<tr>
<td></td>
<td>1st-online-banking.com</td>
<td></td>
<td>LendingTree.com</td>
</tr>
<tr>
<td>Music</td>
<td>CDMow.com</td>
<td>Insurance</td>
<td>Quotesmith.com</td>
</tr>
<tr>
<td>Government</td>
<td>Internal Revenue Service</td>
<td>Education</td>
<td>University of Phoenix</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Cardean University</td>
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</tbody>
</table>

Intra-Business

Companies use Internet technology to support the internal business activities of their many departments such as procurement, manufacturing, marketing, sales, distribution, and customer support. The focus in this case is the automation and enhancement of the company’s internal business processes and on increasing the communications among the employees. For example, a company can use Internet technology for its Human Resources website to enable employees to sign up for company benefits such as dental coverage and automatic payroll deposit.

The use of relatively simple Internet tools, such as a web browser and HTML-formatted documents; facilitate information creation and distribution, as well as interdepartmental business transactions. In fact, the same Internet tools and architecture can be used both internally and externally with relatively minor changes. For example, the automation of inventory control using a web-based front-end tied to a central database repository can serve both internal business processes -- such as price updates and stock queries -- as well as external e-commerce transactions such as online sales. In the following sections we will examine the basic Internet architectural components that are required to support e-commerce.

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1 HTML stands for HyperText Markup Language. HTML is the standard document-formatting language for Web pages. You will learn in Chapter 15 (“Web Database Development”) how to create database-driven dynamic web pages.