

3.1 INTRODUCTION TO E-COMMERCE

E-commerce is buying and selling goods and services over the Internet. E-commerce is part of e-business as specified in Chapter 1. E-business is a structure that includes not only those transactions that center on buying and selling goods and services to generate revenue, but also those transactions that support revenue generation. These activities include generating demand for goods and services, offering sales support and customer service, or facilitating communications between business partners.

By the help of the flexibility offered by computer networks and the availability of the Internet, E-commerce develops on traditional commerce. E-commerce creates new opportunities for performing profitable activities online. It promotes easier cooperation between different groups: businesses sharing information to improve customer relations; companies working together to design and build new products/services; or multinational company sharing information for a major marketing campaign.



The followings are the business uses of the Internet. These services and capabilities are a core part of a successful e-commerce program. They are either parts of a value chain or are included as supporting activities:

- Buying and selling products and services
- Providing customer service
- Communicating within organizations
- Collaborating with others
- Gathering information (on competitors, and so forth)
- Providing seller support
- Publishing and distributing information
- Providing software update and patches

Airline and travel tickets, banking services, books, clothing, computer hardware, software, and other electronics, flowers and gifts are some popular products and services that can be purchased online. Several successful e-businesses have established their business models around selling these products and services. E-commerce has the potential to generate revenue and reduce costs for businesses and entities. Marketing, retailers, banks, insurance, government, training, online publishing, travel industries are some of the main recipients of e-commerce. For instance, banks use the Web for diverse business practices and customer service. [Appendix I](#) lists companies using e-commerce, stressing the products and services that are most suitable for web transactions.

3.2 Comparing Traditional Commerce and E-Commerce

In e-commerce there may be no physical store, and in most cases the buyer and seller do not see each other. The Web and telecommunications technologies

play a major role, in e-commerce. Although the goals and objectives of both e-commerce and traditional commerce are the same—selling products and services to generate profits—they do it quite differently. Traditional commerce presents product information by using magazines, flyers. On the other hand, e-commerce presents by using web sites and online catalogs. Traditional commerce communicates by regular mail, phone yet e-commerce by e-mail. Traditional commerce checks product availability by phone, fax and letter. However, e-commerce checks by e-mail, web sites, and internal networks. Traditional commerce generates orders and invoices by printed forms but e-commerce by e-mail, and web sites. Traditional commerce gets product acknowledgments by phone and fax. On the other hand, e-commerce gets by e-mail, web sites, and EDI.


It is important to notice that currently many companies operate with a mix of traditional and e-commerce. Just about all medium and large organizations have some kind of e-commerce presence. The followings are some examples, Toys-R-Us, Wal-Mart Stores, GoldPC, and Vatan Computer.

E-Commerce and Value Chain

Typical business organizations (or parts within a business organization) **design** , **produce** , **market** , **deliver** , and **support** its product(s)/service(s). Each of these activities adds cost and value to the product/service that is eventually distributed to the customer. The value-chain consists of a series of activities designed to satisfy a business need by adding value (or cost) in each phase of the process. In addition to these primary activities that result in a final product/service, supporting activities in this process also should be included:

- Managing company infrastructure
- Managing human resources
- Obtaining various inputs for each primary activity
- Developing technology to keep the business competitive

For instance, in a furniture manufacturing company, the company buys wood (raw materials) from a logging company and then converts the wood into chair (finished product); chairs are shipped to retailers, distributors, or customers. The company markets and services these chairs products. Those are the primary activities (value-chain) that adds value and result in a final product/service for the company. Value-chain analysis may highlight the opportunity for the company to manufacture products directly . This means, for furniture manufacturer, it may enter in the logging business directly or through partnership with others. The value chain may continue after delivering chairs to the furniture store. The store, by offering other products/services and mixing and matching

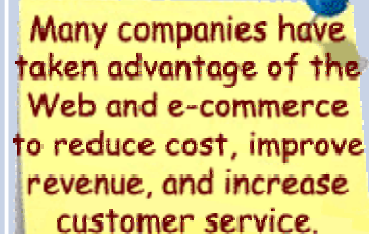


An enterprise is located in a value chain when it buys goods and services from suppliers, adds value, and sells them to customers.

this product with other products, may add additional value to the chair.

The **Internet** can increase the speed and accuracy of communications between suppliers , distributors , and customers . Furthermore, the Internet's low cost allows companies of any size to be able to take advantage of value-chain integration. E-commerce may improve value chain by identifying new opportunities for cost reduction . For instance, using e-mail to notify customers instead of using regular mail helps for *reducing cost* . Selling to distant customers using the company web site may allow *revenue improvement or generation* . These sales may not have been materialized otherwise or selling digital products such as songs or computer software or distributing software through the Web. Offering online customer service or new sales channel identification helps for *product/service improvement*.

Dell Computer generates a large portion of its revenue through the Web by eliminating the middleman. Cisco Systems sells much of its networking hardware and software over the Web, improving revenue and reducing cost. United Parcel Service (UPS) and Federal Express use the Internet to track packages that result in enhanced customer service

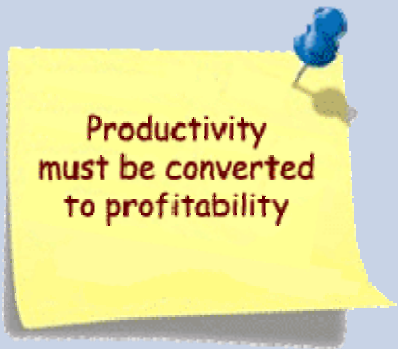


Many companies have taken advantage of the Web and e-commerce to reduce cost, improve revenue, and increase customer service.

3.4 E-COMMERCE BUSINESS MODELS

As it is mentioned in Chapter1, the ultimate goal of an e-business is to generate revenue and make a profit, similar to traditional businesses. It is factual that the Internet has improved productivity for almost all the organizations that are using it. Nevertheless, the bottom line is that productivity must be converted to profitability. To achieve profitability as the final goal, different e-businesses or e-commerce sites position themselves in different parts of the value-chain. To generate revenue, an e-business either sells products/services or shortens the link between the suppliers and consumers. Many business-to-business models try to eliminate the middleman by using the Web to deliver products/services directly to their customers. By doing this they may be able to offer cheaper products and better customer service to their customers. The end result would be a differentiation between them and their competitors, increased market share, and increased customer loyalty. Products sold by e-businesses could be either traditional products, such as books and clothing, or digital products, such as songs, computer software, or electronic books.

E-commerce models are either an extension or revision of traditional business models, such as advertising model, or a new type of business model that is suitable for the Web implementation, such as info-mediary. Merchant, brokerage, advertising, mixed, info-mediary, subscription are the most popular e-commerce models: [2]



Productivity
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- **Merchant model:** This model basically *transfers the old retail model to the e-commerce world* by using the Internet. There are different types of merchant models. The most common type of merchant model is similar to a traditional business model that sells goods and services over the Web. Amazon.com is a good example of this type. An e-business similar to Amazon.com utilizes the services and technologies offered by the Web to sell products and services directly to the consumers. By offering good customer service and reasonable prices, these companies establish a brand on the Web. The merchant model is also used by many traditional businesses to sell goods and services over the Internet. Dell, Cisco Systems, and Compaq are popular examples. These companies eliminate the middleman by generating a portion of their total sale over the Web and by accessing difficult-to-reach customers. An example that uses this model is Amazon.com Corporation. [[Appendix II](#)]
- **Brokerage model:** The e-business *brings the sellers and buyers together* on the Web and collects a commission on the transactions by using this model. The best example of this type is an online auction site such as eBay, gittigidiyor.com which can generate additional revenue by selling banner advertisement on their sites.
- **Advertising model:** This model is an extension of traditional advertising media, such as television and radio. Search engines and directories such as Google and Yahoo provide contents (similar to radio and TV) and allow the users to access this content for free. By creating significant traffic, these e-businesses are able to charge advertisers for putting banner ads or leasing spots on their sites.
- **Mixed model:** This model generates revenue both from advertising and subscriptions. Internet service providers (ISPs) such as America On-line (AOL), and SuperOnline generate revenue from advertising and their customers' subscription fees for Internet access.
- **Info-mediary model:** E-businesses that use this model collect information on consumers and businesses and then sell this information to interested parties for marketing purposes. For instance, bizrate.com collect information related to the performance of other sites and sells this information to advertisers. Netzero.com provides free Internet access; in

behavior of customers. This information is later sold to advertisers for direct marketing. eMachines.com offers free PCs to its customers for the same purpose.

- **Subscription model:** An e-business might sell digital products to its customers, by using this model. *The Wall Street Journal* and *Consumer Reports* are two examples. Sreet.com, AjansPress.com is another example of this model that sells business news and analysis based on subscription.

3.4 MAJOR TYPES OF E-COMMERCE

The several types of e-commerce in use today are classified based on the nature of the transactions: business-to-consumer (B2C), business-to-business (B2B), consumer-to-consumer (C2C), consumer-to-business (C2B), and non-business and government, and organizational (intra-business).

3.4.1 BUSINESS-TO-CONSUMER E-COMMERCE

In B2C e-commerce, businesses sell directly a diverse group of products and services to customers. In addition to pure B2C e-commerce players such as Amazon.com, and hepsiburada.com other traditional businesses have entered the virtual marketplace by establishing comprehensive web sites and virtual storefronts. In these cases, e-commerce supplements the traditional commerce by offering products and services through electronic channels. Wal-Mart Stores, and the Gap are examples of companies that are very active in B2C e-commerce. Some of the advantages of these e-commerce sites and companies include availability of physical space (customers can physically visit the store), availability of returns (customers can return a purchased item to the physical store), and availability of customer service in these physical stores. Figure 3.1 illustrates a B2C relationship. In the figure ISP, means Internet service provider.

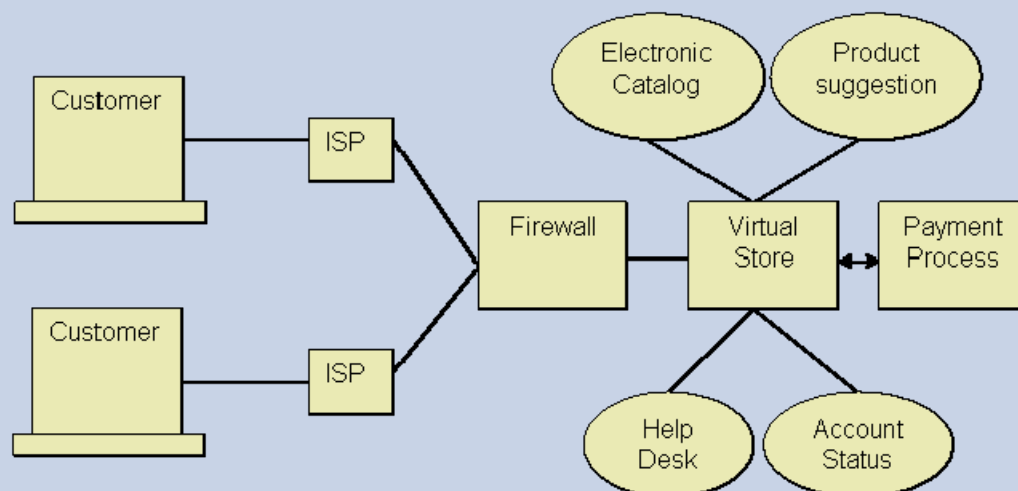


Figure 3.1 A business-to-consumer (B2C) e-commerce relationship

A Business-to-Consumer e-Commerce Cycle

There are five major activities involved in conducting B2C e-commerce. The B2B e-commerce model uses a similar cycle, as shown in Figure 3.2.

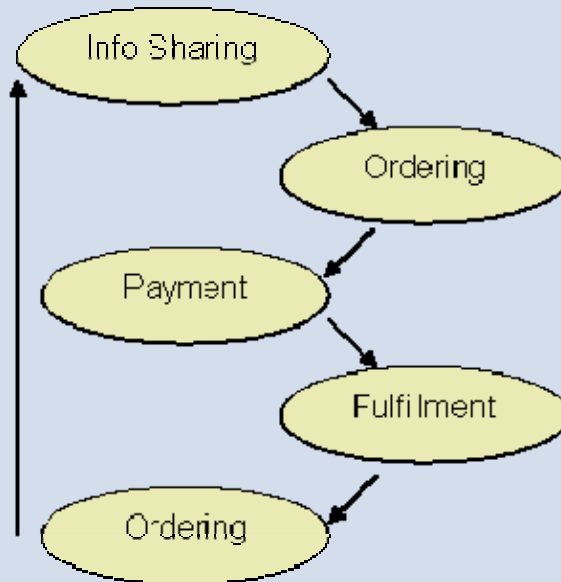


Figure 3.2 Major activities for B2C e-commerce.

1. **Info sharing:** A B2C e-commerce may use some or all of the following applications and technologies to share information with customers: Online advertisements, e-mail, newsgroups/discussion groups, company web site, online catalogs, message board systems, bulletin board systems, multiparty conferencing.
2. **Ordering:** A customer may use electronic e-mail or forms available on the company's web site to order a product from a B2C site. A mouse click sends the essential information relating to the requested piece(s) to the B2C site.
3. **Payment:** Credit cards, electronic checks, and digital cash are among the popular options that the customer has as options for paying for the goods or services.
4. **Fulfillment.** Fulfillment that is responsible for physically delivering the product or service from the merchant to the customer. In case of physical products (books, videos, CDs), the filled order can be sent to the customer using regular mail, MNG, Yurtiçi Cargo, FedEx, or UPS. As expected for faster delivery, the customer has to pay additional money. In case of digital products (software, music, electronic documents), the e-business uses digital documentations to assure security, integrity, and privacy of the product. It may also include delivery address verification and digital warehousing that stores digital products on a computer until they are delivered. The e-business can handle its own fulfillment operations or out-source this function to third parties with moderate costs.
5. **Service and support:** It is much cheaper to maintain current customers than to attract new customers. For this reason, e-businesses should do

whatever that they can in order to provide timely, high-quality service and support to their customers. As e-commerce companies lack a traditional physical presence and need other ways to maintain current customers, service and support are even more important in e-commerce than traditional businesses. The following are some examples of technologies and applications used for providing service and support: (E-mail confirmation, periodic news flash, and online surveys may also be used as marketing tools.)

- *E-mail confirmation:* In most cases, the e-mail confirmation provides the customer with a confirmation number that the customer can use to trace the product or service. E-mail confirmation promises the customer that a particular order has been processed and that the customer should receive the product/ service by a certain date.
- *Periodic news flash:* They used to give customers with the latest information on the company or on a particular product or offering.
- *Online Surveys:* Their results can assist the e-commerce site to provide better services and support to its customers based on what has been collected in the survey, even though online surveys are mostly used as a marketing tool.
- *Help desks:* They provide answers to common problems or provide advice for using products or services. They are used for the same purpose as in traditional businesses.
- *Assured secure transactions & assured online auctions:* They guarantee customers that the e-commerce site covers all the security and privacy issues. As many customers still do not feel comfortable conducting online business, the security and privacy services are especially important.

Business-to-Business e-Commerce

Business-to-Business e-commerce holds electronic transactions among and between businesses. The Internet and reliance of all businesses upon other companies for supplies, utilities, and services has enhanced the popularity of B2B e-commerce and made B2B the fastest growing segment within the e-commerce environment. In recent years extranets (more than one intranet) have been effectively used for B2B operations. B2B e-commerce creates dynamic interaction among the business partners; this represents a fundamental shift in how business will be conducted in the 21st century.

Oracle, PeopleSoft, SAP, Broadvision, Commerce One, Heatheon/Webmd, 12 Technologies, Inc., Ariba, Aspect Development, Baan, BEA Systems, Internet Capital Group, VerticalNet, Vignette are some of the major vendors of e-commerce and B2B solutions [1].

Companies using B2B e-commerce relationship observe cost savings by increasing the speed, reducing errors, and eliminating many manual activities. Wal-Mart Stores is an example for B2B e-commerce. Wal-Mart's major suppliers (e.g., Proctor & Gamble, Johnson and Johnson, and others) sell to Wal-Mart Stores electronically;

all the paperwork is handled electronically. These suppliers can access online the inventory status in each store and refill needed products in a timely manner. In a B2B environment, purchase orders, invoices, inventory status, shipping logistics, and business contracts handled directly through the network result in increased speed, reduced errors, and cost savings.[4] B2B e-commerce reduces cycle time, inventory, and prices and enables business partners to share relevant, accurate, and timely information. The end result is improved supply-chain management among business partners [5]. The following figure illustrates a generic B2B relationship. (Figure 3.2)

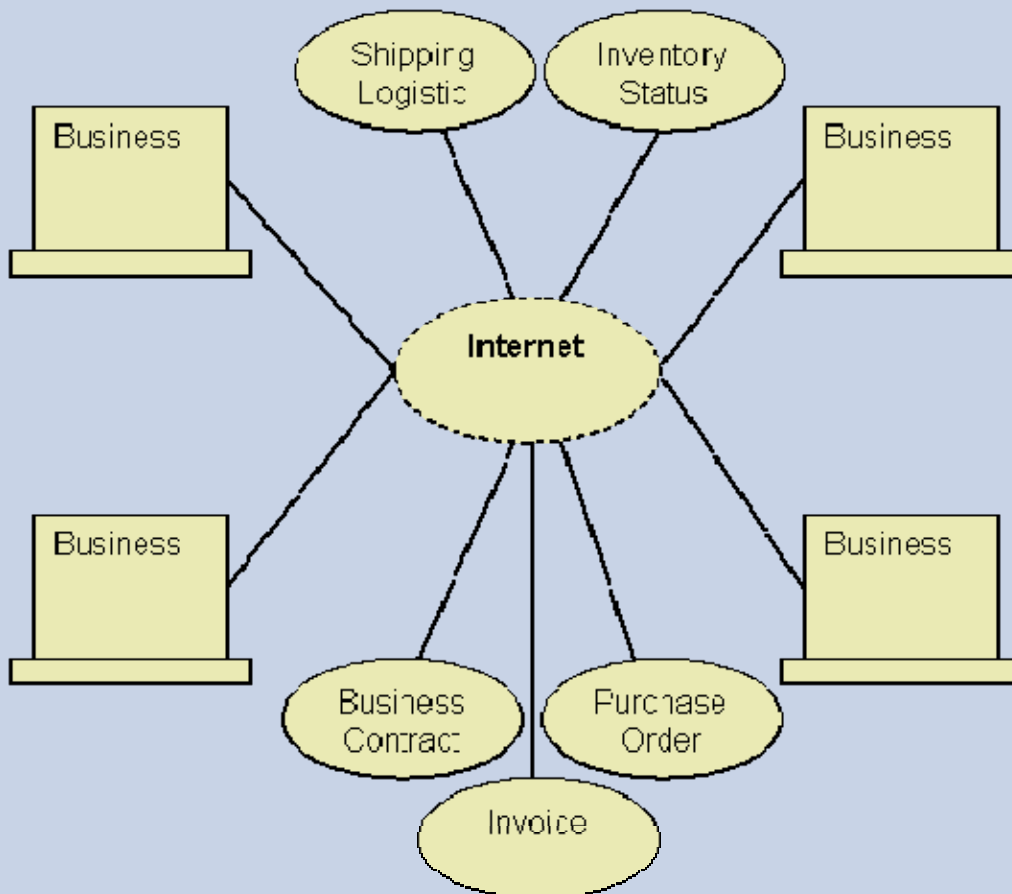


Figure 3.3 A business-to-business (B2B) e-commerce relationship

The following paragraphs provide brief descriptions of the advantages of B2B e-commerce:

- A B2B e-commerce lowers production cost by eliminating many labor-intensive tasks.
- More timely information is achieved by the formation of a direct online connection in the supply chain.
- Accuracy is increased because fewer manual steps are involved.
- Cycle time improves because flow of information and products between business partners is made simpler. Since, raw materials are received faster and information related to customer demands is more quickly transferred.

- Naturally this close communication between the business partners improves overall communication .
- Increased communications results in improved inventory management and control.

Major Models of Business-to-Business e-Commerce

The three major B2B e-commerce models are determined by seller, buyer, or intermediary (third party) who controls the marketplace. Consequently, the following four marketplaces have been created. Each model has specific characteristics and is suitable for a specific business:

- **Seller-controlled marketplace:** This is the most popular type of B2B model for both consumers and businesses. In this model the sellers who provide to fragmented markets such as chemicals, electronics, and auto components come together to generate a common trading place for the buyers. While the sellers aggregate their market power, it simplifies the buyers search for alternative sources. Businesses and some time consumers use the seller's product catalog to order products and services online.

One popular application of this model is e-procurement , which significantly streamlines the traditional procurement process by using the Internet and web technologies. E-procurement is radically changing the buying process by allowing employees throughout the organization to order and receive supplies/services from their desktop with just a few mouse clicks. This results in major cost savings and improves the timeliness of procurement processes and the strategic alliances between suppliers and participating organizations. E-procurement may qualify customers for volume discounts or special offers. E-procurement software may make it possible to automate some buying and selling, resulting in reduced costs and improved processing speeds. The participating companies expect to be able to control inventories more effectively, reduce purchasing-agent overhead, and improve manufacturing cycles. E-procurement is expected to be integrated into standard business systems with the trend toward computerized supply-chain management.

- **Buyer-controlled marketplace:** This model is used by large companies with significant buying power or a consortium of several large companies. The consortium among Ford, General Motors and Daimler Chrysler is a good example of this model. In this model a buyer or a group of buyers opens an electronic marketplace and invites sellers to bid on the announced products or RFQs (request for quotation). Using this model the buyers are looking to efficiently manage the procurement process, lower administrative cost, and exercise uniform pricing. Companies are making investments in a buyer-controlled marketplace with the goal of establishing new sales channels that increase market presence and lower the cost of each sale. By participating in a buyer-controlled marketplace a seller could perform the following:
 - Get better understanding of buying behaviors
 - Carry out pre-sales marketing

- Carry out sales transactions
- Carry out post-sales analysis
- Reduce order placement and delivery cycle time
- Offer an alternative sales channel
- Automate the order management process
- Automate the fulfillment process
- **Third-party exchanges marketplace:** A third-party-controlled marketplace model is controlled by a third party not by sellers or buyers. A third-party-controlled marketplace model offers suppliers a direct channel of communication to buyers through online storefronts. The interactive procedures within the marketplace contain features like product catalogs, request for information (RFI), rebates and promotions, broker contacts, and product sample requests. The marketplace makes revenue from the fees generated by matching buyers and sellers. These marketplaces are usually active either in a **vertical** or **horizontal** market .

A vertical market focuses on a specific industry or market. The following are some examples of this type: PaperExchange.com (supplies for publishers), PlasticsNet.com (raw materials and equipment), SciQuest.com (laboratory products), VerticalNet.com (Provide end-to-end e-commerce solutions that are targeted at distinct business segments)

A horizontal market concentrates on a specific function or business process. They provide the same function or automate the same business process across different industries. The following are some examples: Employee.com (employee benefits administration), CtSpace.com (web-based collaboration, business process management and document management solutions)

- **Trading partner agreements:** The main objectives of the trading partner agreements B2B e-commerce model are to automate the processes for negotiating and enforcing contracts between participating businesses. This relatively new model is gaining popularity. This model is expected to become more common as extensible markup language (XML) and the e-business XML initiative (ebXML) become more accepted. This worldwide project is attempting to standardize the exchange of e-business data via XML, including electronic contracts and trading partner agreements. Using this model enables customers to submit electronic documents that previously required hard-copy signatures via the Internet. As soon as act passed by the Turkish Government that gives digital signatures the same legal validity as handwritten signatures, this model will also be very popular in Turkey too.

The main advantage of XML (extensible markup language) over hypertext markup language (HTML) is that it can assign data type definitions to all the data included in a page. This allows the Internet browser to select only the data requested in any given search, leading to ease of data transfer and readability because only the suitable data are transferred. This may be particularly useful in m-commerce (mobile commerce); XML loads only needed data to the browser, resulting in more efficient and effective searches. This would significantly lower traffic on the

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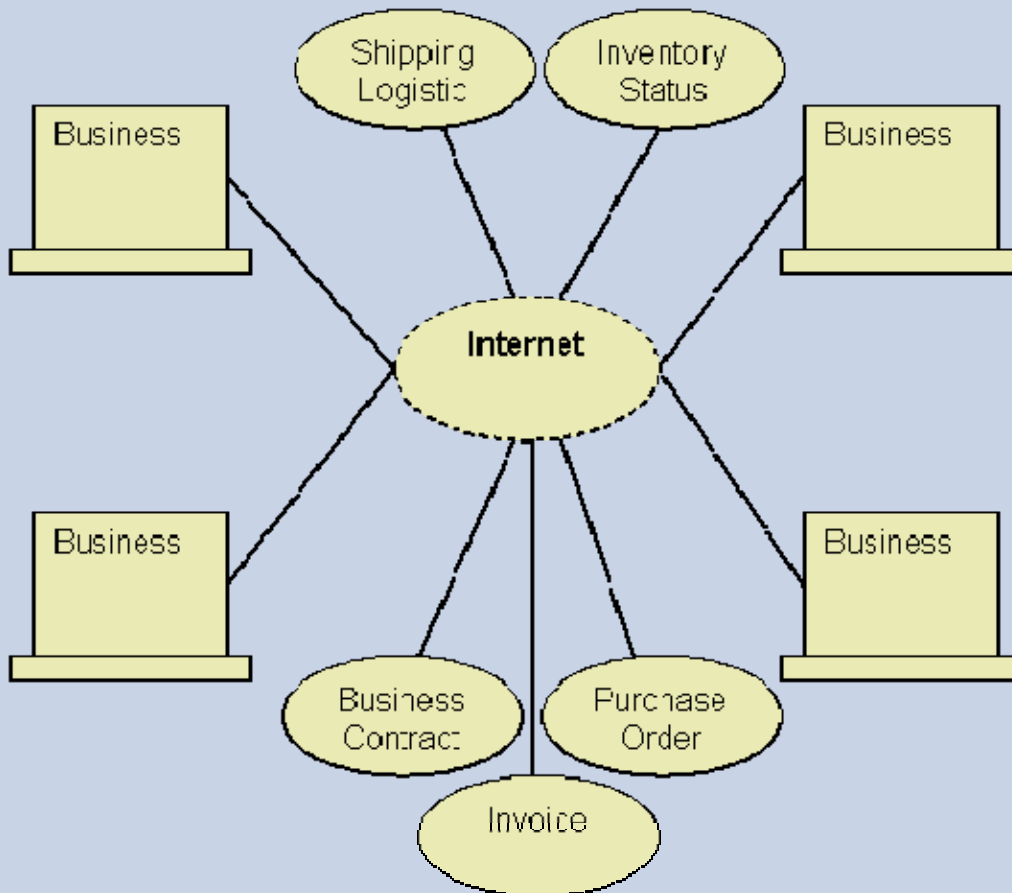


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3.4.3 CONSUMER-TO-CONSUMER E-COMMERCE

Using C2C e-commerce, consumers sell directly to other consumers using the Internet and web technologies. Individuals sell a wide variety of services/products on the Web or through auction sites such as eBay.com, and gittigidiyor.com through classified ads or by advertising. Figure 3.3 illustrates a general C2C e-commerce relationship. Consumers are also able to advertise their products and services in organizational intranets and sell them to other employees.

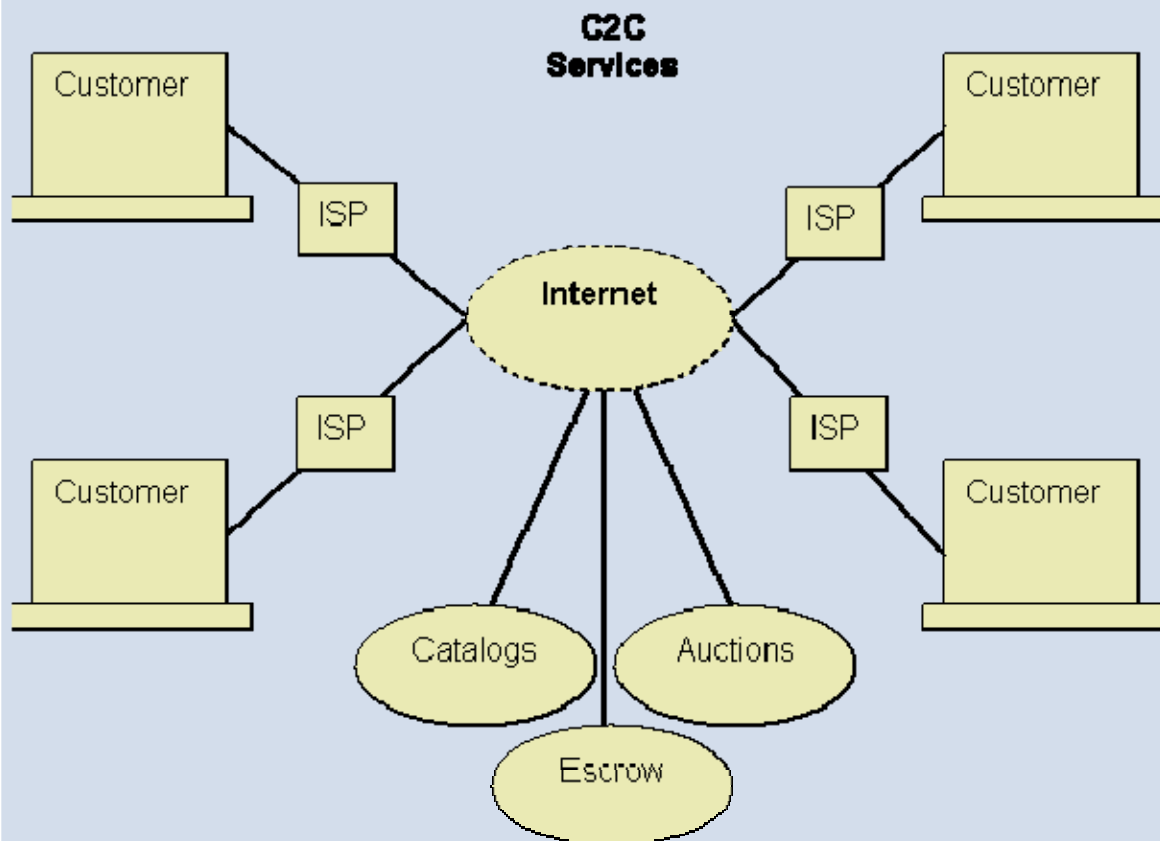
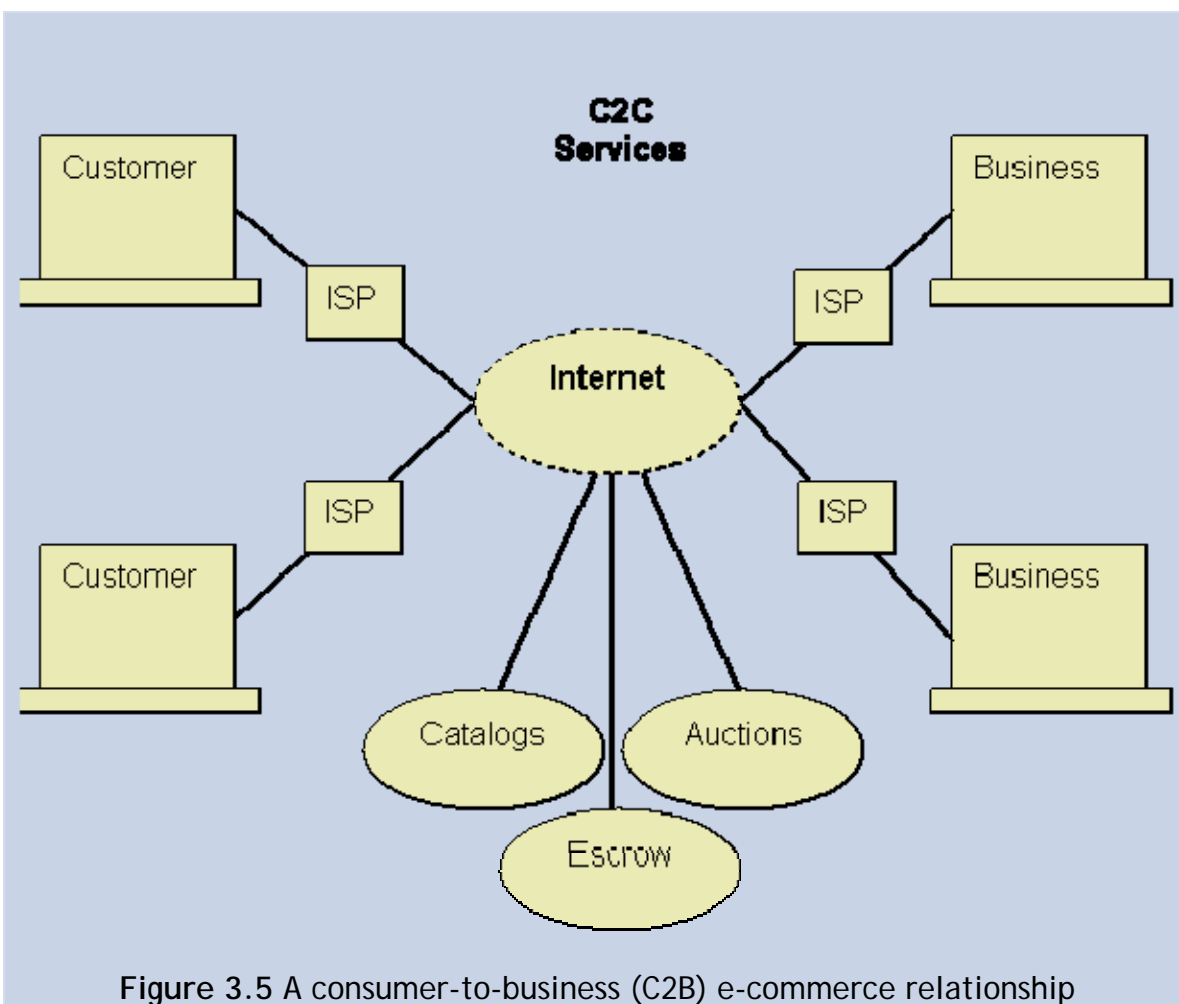


Figure 3.4 A consumer-to-consumer (C2C) e-commerce relationship

3.4.4 CONSUMER-TO-BUSINESS E-COMMERCE

Consumer-to-business (C2B) e-commerce that involves individuals selling to businesses may include a service/product that a consumer is willing to sell. Individuals offer certain prices for specific products/services. Companies such as pazaryerim.com and mobshop.com are examples of C2B. Figure 2-4 shows a C2B e-commerce relationship.



3.4.5 NON-BUSINESS AND GOVERNMENT E-COMMERCE

Political, social and not-for-profit organizations also use e-commerce applications for various activities, such as fundraising and political forums. These organizations also use e-commerce for customer service and for purchasing to decrease cost and get better speed. Universities are using e-commerce applications extensively for delivering their educational products and services on a global scale. The e-commerce applications in government and many non-business organizations are on the rise.

3.4.6 INTRA-BUSINESS E-COMMERCE

The organization intranets provide the right platform for intra-business e-commerce. Intra-business e-commerce involves all the e-commerce-related activities that take place within the organization. These activities may include exchange of information, goods, or services among the employees of an organization. This may include selling organization products/services to the employees, offering human resources services, conducting training programs, and much more.

3.7 VOICE-BASED E-COMMERCE

Now days, just picking up a phone and accessing a web site you can order a product. At the core of these new services are voice recognition and text-to-speech technologies that have improved significantly during the past decades. Customers will be able to speak the name of the web site or service they want to access and the system will recognize the command and respond with spoken words. By using voice commands, consumers soon will be able to search a database by product name and locate the merchant with the most competitive prices.

One method to conduct voice-based e-commerce is to use digital wallets (e-wallets) online. In addition to financial information these wallets include other related information, such as the customer's address, billing information, driver's license, and so forth. This information can be conveniently transferred online. Digital wallets are created through the customers' PCs and used for voice-based e-commerce transactions. Security features for voice-based e-commerce are expected to include the following: Voice recognition, so that authorizations have to match a specific voice, call recognition, so that calls have to be placed from specific mobile devices. Voice-based e-commerce will be suitable for applications such as the following: Receiving sports scores, finding directions to a new restaurant, reserving tickets for local movies, buying a book.

There are already several voice portals on the market. The following are among the popular ones: InternetSpeech.com (Figure 3.5), BeVocal.com, Tellme.com.



Figure 3.5 The initial screen of InternetSpeech.com

Appendix I

Some Companies Using e-Commerce [1]

Amazon.com provides access to books music CDs, electronics, software, toys, video games, prescription drugs, and much more electronically. www.amazon.com

American Express successfully uses e-commerce for credit card transactions. www.americanexpress.com

Apple Computer sells computers online. www.apple.com

Auto-by-Tel sells cars over the Web. www.autobytel.com

Cisco Systems sells data communications components over the Web. www.cisco.com

Dell Computer and **Gateway** sell computers through their web sites and allow customers to configure their systems on the Web and then purchase them. www.dell.com, www.gateway.com

Drugstore.com and **CVS.com** refill and sell new drugs and vitamins and other health and beauty products online. www.drugstore.com, www.cvs.com

Epicurious sells exotic foods over the Web. www.epicurious.com

Peapod sells groceries over the Web. www.peapod.com

Proctor & Gamble and **IBM** conduct order placements electronically. www.pg.com, www.ibm.com

Appendix II

Industry Connection: Amazon.Com Corporation [1]

Amazon.com is one of the leaders in B2C e-commerce. Amazon.com opened its virtual stores in July 1995 with a mission to use the Internet to transform book buying into the fastest and easiest shopping experience possible. Amazon.com offers numerous products and services including books, CDs, videos, DVDs, toys, games, electronics, free electronic greeting cards, online auctions, and much more. In addition to an extensive catalog of products, Amazon.com offers a wide variety of other shopping services and partnership opportunities.

Amazon.com's business model is based on the merchant model . By creating customer accounts, using shopping carts, and using the 1-click technology, Amazon.com makes the shopping experience fast and convenient. E-mail is used for order confirmation and customer

notification when new products that suit a particular customer become available. Allowing customers to post their own book reviews, creates an open forum between the storefront and its customers. Using Amazon.com a prospective shopper can do the following:

- Search for books, music, and many other products and services
- Browse virtual aisles in hundreds of product categories from audio books, jazz, and video documentaries to coins and stamps available for auction.
- Get instant personalized recommendations based on the shopper's prior purchases as soon as the shopper logs on.
- Sign up for the Amazon.com e-mail subscription service to receive the latest reviews of new titles in categories that interest the customer.
- Amazon.com offers a safe and secure shopping experience by guaranteeing its shopping and auction services. It also offers 24-hour-a-day, 7-days-a-week help desk services to assist shoppers who experience difficulties.