For decades, market researchers have tried to understand consumer behavior, and they have summarized their findings in various models. The purpose of a consumer behavior model is to help vendors understand how a consumer makes a purchasing decision. If a firm understands the decision process, it may be able to influence the buyer’s decision, for example, through advertising or special promotions.

Exhibit W4.1.1 shows the basics of a consumer behavior model in the EC environment. The model is composed of the following parts:

- **Independent (or uncontrollable) variables**, which are shown at the top of Exhibit W4.1.1, can be categorized as personal characteristics and environmental characteristics.
- **Intervening (or moderating) variables** are variables within the vendors’ control. They are divided into market stimuli and EC systems.
- **The decision-making process**, which is shown in the center of the exhibit, is influenced by the independent and intervening variables. This process ends with the buyers’ decisions (shown on the right) resulting from the decision-making process.
- **The dependent variables** describe types of decisions made by buyers.

Exhibit W4.1.1 identifies some of the variables in each category. This chapter examines the following model-related issues: the decision process, seller–customer-relationship building, and customer service. Discussions of other issues can be found in Bridges et al. (2006).
Before examining the variables of the consumer behavior model, let’s examine who the EC consumers are. Online consumers can be divided into two types: individual consumers, who get much of the media attention, and organizational buyers, who do most of the actual shopping in cyberspace in terms of dollar volume of sales. Organizational buyers include governments, private corporations, resellers, and public organizations. Purchases by organizational buyers are generally used to create other products (services) by adding value to the products. Also, organizational buyers might purchase products for resale without any further modifications. We will describe organizational purchasing in detail in Chapter 5 (e-procurement).

**The Independent Variables**

Two types of independent variables are distinguished: personal characteristics and environmental variables.

**Personal Characteristics.** Personal characteristics, which are shown in the top-left portion of Exhibit W4.1.1, refer to demographic factors, internal individual factors, and behavioral characteristics (Cheung and Lee 2005). Several Web sites provide information on customer buying habits online (e.g., emarketer.com, clickz.com, and comscore.com). The major demographics that such sites track are gender, age, marital status, educational level, ethnicity, occupation, and household income, which can be correlated with Internet usage and EC data. A survey on the trend of global Internet shopping (Crampton 2005) revealed that the gender of online shoppers is roughly balanced. However, when it comes to certain products and services, the differences are significant. In some countries (including China, Sweden, and Austria), more women than men are making their purchases online.

It is interesting to note that consumers often browse online stores even if they do not intend to buy. Sixty-eight percent reported that they browse online more than in the past. However, 67 percent of consumers abandoned their shopping carts because of the lack of satisfactory product information (Burns 2006). Internet statistics not only provide us with the information about what people buy, but also why they do not buy. The two most-cited reasons for not making purchases are shipping charges (51 percent) and the difficulty in judging the quality of the product (44 percent). About 32 percent of users do not make purchases because they cannot return items easily. Twenty-four percent are worried about credit card safety. An additional 23 percent of users do not purchase online because they cannot ask questions; 16 percent say they do not buy when it takes too long to download the screen; 15 percent are concerned about delivery time; and 10 percent enjoy shopping offline. However, only 1.9 percent of online consumers have actually had an unfavorable experience (the least-cited reason for not making more purchases on the Web). (Note: People were asked to cite the three most important reasons; thus, the answers total to more than 100 percent.) According to Forrester Research (Temkin 2002), psychological variables are another personal characteristic studied by marketers. Such variables include personality and lifestyle characteristics. These variables are briefly mentioned in several places throughout the text. The reader who is interested in the impact of lifestyles differences on online shopping should see Wang et al. (2006).

**Environmental Variables.** As shown in the box in the top-right portion of the exhibit, environmental variables can be grouped into the following categories:

- **Social variables.** These variables play an important role in EC purchasing. People are influenced by family members, friends, coworkers, and “what’s in fashion this year.” For more discussions on the role of social factors (e.g., informational social influence, customer endorsement strategies, word-of-mouth) in Internet shopping, see Lee et al. (2006) and Lim et al. (2006). Of special importance in EC are Internet communities and social networks (see Chapter 8) and discussion groups, in which people communicate via chat rooms, electronic bulletin boards, and newsgroups.

- **Cultural/community variables.** It makes a big difference in what people buy if a consumer lives near Silicon Valley in California or in the mountains in Nepal. Chinese shoppers differ from French shoppers, and rural shoppers differ from urban ones. For further discussion of the impact of cultural variables, see Witkowski (2005).

- **Other environmental variables.** These include things such as the available information, government regulations, legal constraints, and situational factors.

**The Intervening (Moderating) Variables**

The intervening (moderating) variables are those that can be controlled by vendors. As in the offline environment, these include pricing, advertising and promotions, and branding (the products themselves and their quality). The physical environment (e.g., display in stores), logistics support, technical support, and customer services also are important. Customer service is described in Chapter 4; the other intervening variables (e.g., logistics and technical support) will be described in various chapters of the book.
The Dependent Variables: The Buying Decisions

With the dependent variables, the customer is making several decisions, such as “To buy or not to buy?” “What to buy?” and “Where, when, and how much to buy?” These decisions depend on the independent and intervening variables. The objective of learning about customers and conducting market research is to know enough so that the vendors who provide some of the market stimuli and/or control the EC systems can make decisions on the intervening variables.

The structure of the consumer behavior model in Exhibit W4.1.1 is a simplified version of what actually goes on in the decision-making process. In reality, consumer decision making can be complicated, especially when new products or procedures need to be purchased.

A Process Model

Online consumer behavior also can be studied from a process point of view. Markellou et al. (2006) suggested such a model composed of 13 steps of what customers are doing (e.g., intention to buy, decision to buy, and so forth). This model can be useful in the design of storefronts and shopping aids.

Online File W4.1

REVIEW QUESTIONS

1. Describe the major components and structure of the online consumer purchasing behavior model.
2. List some major personal characteristics that influence consumer behavior.
3. List the major environmental variables of the purchasing environment.
4. List and describe the major vendor-controlled variables.
5. Define the process model of consumer behavior online.

REFERENCES FOR ONLINE FILE W4.1

Three basic approaches are used in marketing and advertising: mass marketing, market segmentation, and one-to-one marketing.

**Mass Marketing**

Marketing efforts traditionally were targeted to everyone (the “masses”). For example, using a newspaper or TV ad usually means one-way, interpersonal communication to whoever sees it. Such an effort may be effective for brand recognition or for introducing a new product or service. It can be conducted on the Internet as well.

Although mass marketing can be effective in many cases, it is not good in all cases. As a matter of fact, it can be a waste. Oftentimes targeted marketing—marketing and advertising efforts targeted to groups (market segmentation) or to individuals (one-to-one)—is a better approach.

**Market Segmentation**

As consumers began purchasing and using products online, more data became available about them. Data analysts began associating products with the customers who were buying them. And it was through these analysis activities that companies began to understand that their customer data could be valuable.

**Market segmentation** refers to the practice of promoting a product or service to a subset of customers or prospects.

Modern companies assign a variety of segments to their customers, often dynamically defining segments and temporarily regrouping customers for specific campaigns. By segmenting customers, companies could begin more specialized communications about their products. Much of this relies on the company’s understanding its business strategies to the extent that they know their most desirable segments. Segmenting customers based on their preferred line of business or desired product features can reveal interesting facts about their different preferences and behaviors.

A simple way to segment online is to go to a specialized site or portal and advertise to its visitors. For example, by going to ivillage.com, you reach mostly women. Advertising in Internet communities and social networks usually provides you with market segmentation. Large social networks are divided into specialized sections, usually by area of interest. Increasingly, advertising is being placed on social networking sites (e.g., myspace.com, facebook.com, and xanga.com). U.S. spending on social network advertising is expected to increase from $865 million in 2007 to $2.15 billion in 2010 (eMarketer.com 2006). Some Weblogs that focus on specific niches (e.g., paidcontent.org and fark.com) have received a generous amount of dollars from advertisers (Sloan and Kaihla 2006).

One advantage of market segmentation is that advertising and marketing efforts match the segments better than the “mass,” providing a better response rate. Also, the expense of reaching the segments is lower, and marketing efforts can be faster (e.g., e-mails are sent to fewer people or banner ads are placed on fewer Web sites). The Internet enables more effective market segmentation (see Section 4.2), but it enables an even better approach, that of true relationship marketing, or one-to-one.

**Relationship and One-to-One Marketing**

Instead of selling a single product to as many customers as possible, marketers are trying to sell as many products as possible to one customer—over a long period of time and across different product lines. To do this, marketers need to concentrate on building unique relationships with individual customers on a one-to-one basis. Relationship marketing is a way for marketing departments to get to know their customers more intimately by understanding their preferences and thus increasing the odds of retaining them.

One-to-one means not only communicating with customers as individuals, but possibly developing custom products and tailored messages based on the customer’s spoken and unspoken needs. The major characteristics of one-to-one marketing as compared to mass marketing and market segmentation are illustrated in Exhibit W4.2.1.

**How One-to-One Relationships Are Practiced**

Although some companies have had one-to-one marketing programs for years, it might be much more beneficial to institute a corporate-wide policy of building one-to-one relationships around the Web. This can be done in several ways. For example, Gartner Inc., an IT consulting company, proposed what it calls “the new marketing cycle of relationship building” (see Marcus 2001). This proposal, illustrated in Exhibit W4.2.2, views relationships as a two-way street: The process can start at
Chapter Four: Online Consumer Behavior, Market Research, and Advertisement

Online File W4.2 (continued)

EXHIBIT W4.2.1  From Mass Marketing to Segmentation to One-to-One

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mass Marketing</th>
<th>Market Segmentation</th>
<th>Relationship Marketing (One-to-One)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interactions</td>
<td>Usually none, or one-way</td>
<td>Usually none, or with a sample</td>
<td>Active, two-way</td>
</tr>
<tr>
<td>Focus</td>
<td>Product</td>
<td>Group (segment)</td>
<td>Customer-focused (one)</td>
</tr>
<tr>
<td>Recipient</td>
<td>Anonymous</td>
<td>Segment profiles</td>
<td>Individuals</td>
</tr>
<tr>
<td>Campaigns</td>
<td>Few</td>
<td>More</td>
<td>Many</td>
</tr>
<tr>
<td>Reach</td>
<td>Wide</td>
<td>Smaller</td>
<td>One at a time</td>
</tr>
<tr>
<td>Market Research</td>
<td>Macro in nature</td>
<td>Based on segment analysis or demographics</td>
<td>Based on detailed customer behaviors and profiles</td>
</tr>
</tbody>
</table>

EXHIBIT W4.2.2  The New Marketing Model


(continued)
Part 2: Internet Consumer Retailing

Online File W4.2 (continued)

any point in the cycle. Usually, though, it starts with “Customer receives marketing exposure” (at the top of the figure). The customer then decides how to respond to the marketing exposure (e.g., whether to buy the product online or offline; if online, whether to buy as individual or to use group purchasing). When a sale is made, customer information is collected (lower-right corner) and then placed in a database. Then, a customer’s profile is developed, and the so-called four P’s of marketing (product, place, price, and promotion) are generated on a one-to-one basis. Based on this individualized profile, appropriate advertisements are prepared that will hopefully lead to another purchase by the customer. Once a purchase is made, the detailed transaction is added to the database, and the cycle is repeated. All of this can, and should, be done in the Web environment.

One of the benefits of doing business over the Internet is that it enables companies to better communicate with customers and better understand customers’ needs and buying habits. These improvements, in turn, enable companies to enhance and frequently customize their future marketing efforts. For example, Amazon.com can e-mail customers announcements of the availability of books in their areas of interest as soon as they are published; Expedia.com will ask consumers where they like to fly and then e-mail them information about special discounts to their desired destination. Details on these key concepts are discussed in Section 4.2.

Online File W4.2 REVIEW QUESTIONS

1. Define mass marketing.
2. Define market segmentation.
3. Define one-to-one marketing.
4. Describe the marketing relationship process.

KEY TERM

Market segmentation 4

REFERENCES FOR ONLINE FILE W4.2


Marcus, C. “Loyal Customers Can’t Be Strangers.” Microsoft Executive Circle 1, no. 2 (May 2001).

Consumer trust is fundamental to successful online retailing. Urban et al. (2000) advocated that trust is the currency of the Internet. The following are several guidelines for building consumer trust in EC (Cheung and Lee 2006; Jeanson and Ingham 2006).

**Affiliate with an Objective Third Party**

This approach aims at building consumer trust by affiliating with trusted third parties. Internet stores can put hypertext links on their Web sites to other trusted targets, including reputable companies or well-known portals. These reputable companies are able to transfer brand equity to the Internet stores because companies with brand names induce trust. Internet stores can also use the third-party seals of approval such as TRUSTe (truste.com) and BBBOnLine (bbbonline.org) (the online version of the Better Business Bureau). Escrow providers and reputation finders (e.g., cyberalert.com and cymfony.com) also are useful. These agencies provide business-critical intelligence on how brands are being used on the Internet as well as research about spying on businesses.

Working against EC trust are stories of a considerable amount of fraud on the Internet, especially when unknown parties are involved. Chapter 10 presents measures to reduce fraud and increase trust.

**Establish Trustworthiness**

Trustworthiness can be achieved through three key elements: integrity, competence, and security. Integrity conveys an overall sense of the ability of the Internet store to build an image of strong justice and fulfill all of the promises that have been made to the customers (i.e., offering a money-back guarantee with the products and clearly stating the guarantee policy on the Web site). Another indicator of trustworthiness is an Internet store’s competence. Stores can promote the perception of competence by delivering a professional Web site. A professional appearance should include the basic features that facilitate navigation, including correct grammar and spelling, full and accurate information, and good use of graphic design. The Web site should include some advanced features that provide support to users, such as an internal search engine, quick order ability, order tracking, and an online chat room. Finally, EC security mechanisms can help solidify trust. Dell was the first PC manufacturer to launch an online secure shopping guarantee to online shoppers making purchases at its Web site.

In summary, the Internet offers a new way to conduct business. At this stage, rules and conventions are still evolving. Many of the things adapted from traditional business need further evaluation to fit the online environment. For example, security must be able to safeguard against increasingly malicious attacks. Trust-transfer programs through portal affiliation, seal of approval programs, online shopping communities, customer endorsements, and the like are needed. Finally, a global regulatory environment must be established to induce trust in the online environment.

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**REFERENCES FOR ONLINE FILE W4.3**


For years, companies used direct mail to contact customers. However, they frequently did so regardless of whether the products or services were appropriate for the specific individuals on the company’s mailing list. For example, ABC Company sends out four mailings of 1,000,000 pieces each year. The cost of the direct mailings is $1.25 per customer, and only 1 percent respond. This means the cost per responding customer is $125. Obviously, this type of direct marketing usually is not cost-effective.

Markets can be segmented to increase the percentage of responses and to formulate effective marketing strategies that appeal to specific consumer groups. Market segmentation is the process of dividing a consumer market into logical groups for conducting marketing research, advertising, and sales. A consumer market can be segmented in several ways, for example, by geography, demographics, psychographics, and benefits sought, as shown in Exhibit W4.4.1. For a description, see Chan (2005).

A company can separate even millions of customers into smaller segments and tailor its campaigns to each of those segments. Brengman et al. (2005) segmented Internet shoppers based on their Web–usage-related lifestyle, themes of Internet usage, Internet attitude, and psychographic and demographic characteristics. They identified four online shopping segments (tentative shoppers, suspicious learners, shopping lovers, and business users) and four online nonshopping segments (fearful browsers, positive technology muddlers, negative technology muddlers, and adventurous browsers).

By isolating and identifying combinations of attributes that make markets, prospects, and customers unique, marketers use strategies developed to appeal to targeted segments. One segment that is being targeted is the so-called Internet generation, or NetGen, the generation that has been raised with the power of the Internet. Internet marketing and advertising is more appropriate to the NetGen than traditional advertising (Mirror99.com 2006).

Market segmentation is done with the aid of tools such as data modeling (Oh et al. 2003) and data warehousing. Using data mining (Gregg and Walczak 2006) and Web mining (see Online File W4.6), businesses can look at consumer buying patterns to slice segments even finer. This is not an easy process, and it requires considerable resources and computer support. Most of the market segmentation success stories involve large companies. For example, Royal Bank of Canada segments its 10 million customers at least once a month to determine credit risk, profitability, and so on. This market segmentation has been very successful: The response to Royal Bank of Canada’s advertising campaigns has increased from 3 to 30 percent (Bennett Gold 2001). Market segmentation can be very effective in the Web environment, especially when used with appropriate statistical tools. For more on market segmentation surveys, see sric-bi.com/VALS/presurvey.shtml.
Online File W4.5 Spyware

Advertisers use spyware to spy on your movements on the Internet and send you e-mail ads or pop-ups based on what they learn about you. Authors of shareware and freeware often use spyware in order to make money on their products, which are often offered free to users. Shareware authors may insert banner ads of advertisers into their products in exchange for a portion of the revenues generated by the banners. This way, end users do not have to pay for the software, and the developers get paid for their efforts. End users who find the banners to be annoying can usually obtain a banner-free copy of the shareware by paying a regular licensing fee to the developer. Increasingly, however, spyware is being embedded in purchased software.

Spyware threats come in different flavors. One variety of spyware is malware. This type of spyware can modify the system settings on the user's computer (see Chapter 10) and perform other undesirable tasks. A hijacker is a piece of spyware that redirects the user's browser to a particular Web site. A dialer is spyware that dials a service, most likely porn sites, without the user's knowledge. In many cases, the user will be held responsible for the bill! A Trojan horse is spyware that is attached to a program and performs undesirable tasks on the user’s system. Collectware is spyware that collects information about the user. This information is then provided to a third party without the user's knowledge.

The following are types of spyware:

- **Adware networks.** Ad-serving networks such as DoubleClick, Web3000, Radiate, SaveNow, and GAIN pay publishers of games, utilities, and music/video players per download to include their ad-serving programs.

- **Stalking horses.** These programs collect information on the user and facilitate adware networks to function on desktops. These programs are bundled in many popular programs and are often presented in installation disclosure screens as desirable add-ons to Trojan horse hosts. Examples include TopText, Cydoor, OnFlow, Media loads, Delfin, WebHancer, and New.net.

- **Trojan horses.** These are popular Internet downloads that usually come with the ad-serving network basic software and at least one stalking horse. They are contained in KaZaa, Grokster, Morpheus, Limewire, AudioGalaxy, iMesh, and DivX.

- **Backdoor Santas.** These are stand-alone programs that incorporate similar approaches as those just discussed. However, they have no links to ad-serving networks, although their purpose is to collect information from users. They are located in Alexa, Hotbar, Comet Cursor, eWallet, CuteFTP, and BonziBuddy.

- **Cookies.** Netscape Navigator and Internet Explorer still send out cookies even after cookies have been disabled in the browser settings. Any and all cookie files must be manually deleted on your system in order to eliminate being tracked by third-party ad networks or spyware or adware providers.

For more information about spyware, see spywareguide.com and Chapter 10.
Part 2: Internet Consumer Retailing

Data for EC organizations can be viewed as either transactional or analytical. Transactional data are those pieces of information that are collected in traditional transactions processing systems (TPSs), are organized mainly in a hierarchical structure, and are centrally processed. Newer systems that contain transactional data are usually Web based; in medium to large organizations they may be part of an ERP system. These are known as operational systems, and the results of the processing are mainly summaries and reports (see Turban et al. 2008).

Today, the most successful companies are those that can respond quickly and flexibly to market changes and opportunities (i.e., they are agile). The key to this response is the effective and efficient use of data and information. EC transactions frequently must be done online in real time. This is done not only via transaction processing, but also through the supplementary activity of analytical processing, which involves analysis of accumulated data, mainly by end users. Analytical processing includes Web applications, market research, data mining, CRM activities, and decision-support systems. Placing strategic information in the hands of decision makers aids productivity, empowers better decision making, and improves customer service, leading to greater competitive advantage.

Collecting, Organizing, and Storing Data for Analytical Processing

Analytical processing basically can be done in two ways. One is to work directly with the operational systems (the “let’s use what we have” approach), using software tools and components known as front-end tools and middleware. This option can be optimal for companies that do not have a large number of end users running queries and conducting analyses against the operating systems. Since the mid-1990s, a wave of front-end tools that allow end users to conduct queries and report on data stored in operational databases have become available. The problem with this approach, however, is that the tools are effective only with end users who have a medium- to high-degree of knowledge about databases.

These limitations call for a second, improved, option of analytical processing, which involves three concepts:

1. A business representation of data for end users
2. A user-friendly, Web-based environment that gives the customers and corporate employees query and reporting capabilities
3. A single, server-based data repository—a data warehouse (DW)—that allows centralized analysis, security, and control over the data

Data Warehouses

The purpose of a data warehouse is to establish a repository that makes operational data accessible in a form readily acceptable for analytical processing activities, such as EC applications, decision support, and other end-user applications. As part of this accessibility, detail-level operational data must be transformed into a relational form, which makes them more amenable to analytical processing. Thus, data warehousing is not a concept by itself, but is interrelated with data access, retrieval, analysis, and visualization (see Gray and Watson 1998).

The process of building and using a data warehouse is shown in Exhibit W4.6.1. The organization’s data are stored in operational systems (left side of the figure). Not all data are transferred to the data warehouse; frequently, only a summary of the data is transferred in a process of extraction, transformation, and load (ETL). The data that are transferred are organized within the warehouse as a relational database so that it is easy for end users to access. Also, the data are organized by subject, such as by product, customer segment, or business partner. EC data also can be organized according to a business process, such as ordering, shipping, or available inventory. The data then can be optionally replicated in data marts (explained later). Data access is provided through Web browsers via middleware software. On the right side of the figure are various applications that may use the data.

The activities conducted during much of the process described in Exhibit W4.6.1 are generally referred to as business intelligence. The major reason for the name is that these activities not only collect and process data, they also enable analysis that results in useful—intelligent—solutions to business problems. The concept of business intelligence originated from executive
information system (EIS) activities, but today it is used to describe online analytical processing and data mining activities as well.

Data warehouses provide for the storage of metadata, which are data about data. Metadata include software programs about data, rules for organizing data, and data summaries that are easy to index and search, especially with Web tools.

Characteristics of Data Warehousing

The major characteristics of data warehousing include the following:

- **Organization.** Data are organized by detailed subject (e.g., by customer, vendor, product, price level, and region) and only contain information relevant for decision support.

- **Consistency.** Data in different operational databases might be encoded differently. For example, gender data might be encoded 0 and 1 in one operational system and “m” and “f” in another. They will be coded in a consistent manner within each warehouse.

- **Time variant.** The data are kept for 5 to 10 years so that they can be used for trends, forecasting, and comparisons over time.

- **Nonvolatile.** Once entered into the warehouse, data are not updated. However, new, related data may replace or supplement old data.

- **Relational.** The data warehouse typically uses a relational structure (organized into tables of rows and columns).
Benefits of Data Warehouses

The major benefits of data warehouses are (1) the ability of users to reach data quickly, because data are located in one place and organized properly, and (2) the ability to reach data easily, frequently by end users themselves, using Web browsers. Another benefit is that a data warehouse provides a consolidated view of corporate data, which is better than providing many smaller (and differently formatted) views. For example, separate production systems may track sales and coupon mailings. Combining data from these different systems may yield insights into the cost efficiency of coupon sales promotions that would not be immediately evident from the output data of either system alone. Integrated within a data warehouse, however, such information can be easily extracted.

Data warehouses allow information processing to be off-loaded from expensive operational systems onto low-cost servers (or processed by application service providers, ASPs). Once this is done, end-user tools can handle a significant number of end-user information requests. Furthermore, some operational system reporting requirements can be moved to Web-based decision-support systems, thus freeing up production processing.

In addition, accessibility to data warehouse content by decision makers is provided throughout the enterprise via an intranet. Users can view, query, and analyze the data and produce reports using Web browsers. This is an extremely economical and effective method of delivering data.

The various benefits offered by data warehouses can improve business knowledge, provide competitive advantage, enhance customer service and satisfaction, facilitate decision making, and help in streamlining business processes.

Suitability

Data warehousing is most appropriate for organizations in which some of the following apply:

- Large amounts of data need to be accessed by end users.
- The operational data are stored in different systems.
- An information-based approach to management is in use.
- The company has a large, diverse customer base (such as in a utility company or a bank).
- The same data are represented differently in different systems.
- Data are stored in highly technical formats that are difficult to decipher.
- Extensive end-user computing is performed (many end users performing many activities).

Hundreds of successful applications have been reported (e.g., see client success stories and case studies at Web sites of vendors such as MicroStrategy, Inc., Business Objects, Cognos Corp., Information Builders, NCR Corp., Platinum Technology, Software A&G, and Pilot Software). For further discussion, see Turban et al. (2008), Gray and Watson (1998), and Inmon et al. (2000). Also, visit The Data Warehouse Institute (tdwi.org).

Although data warehouses offer substantial benefits, the cost of a data warehouse can be very high, both to build and to maintain. Furthermore, it can be difficult and expensive to incorporate data from obsolete legacy systems. Finally, there may be a lack of incentive among departments within a company to share data. Therefore, a careful feasibility study must be undertaken before a commitment is made to data warehousing. Alternatively, one or more data marts can be used.

Data Marts

The high cost of data warehouses confines their use mostly to large companies. An alternative used by many other firms is the creation of a lower-cost, scaled-down version of a data warehouse called a data mart. A data mart is a small warehouse designed for a strategic business unit (SBU) or department. A data mart can be fully dedicated to EC.

The advantages of data marts over data warehouses include the following:

- The cost is low (prices under $100,000 versus $1 million or more for large data warehouses).
- The lead time for implementation is significantly shorter, often less than 90 days.
- They are controlled locally rather than centrally, conferring power on the using group.
They contain less information than the data warehouse. Hence, they have more rapid response and are more easily understood and navigated than an enterprise-wide data warehouse.

They allow an EC department to build its own decision-support systems without relying on a centralized IS department.

Data marts are either replicated (dependent) or stand-alone. Replicated data marts are those in which functional subsets of the data warehouse have been replicated (copied) into smaller data marts. The reason for using replicated data marts is that sometimes it is easier to work with a small subset of the data warehouse. Each of these replicated data marts is dedicated to a certain area. The replicated data mart is an addition to the data warehouse. (This is why it is also called dependent—it’s existence depends on the data warehouse.) Alternatively, a company can have one or more stand-alone data marts without having a data warehouse. Stand-alone data marts are typically used for marketing, finance, and engineering applications.

Operational Data Stores

An operational data store is a database for transaction processing systems that uses data warehouse concepts to provide clean data. That is, it brings the concepts and benefits of the data warehouse to the operational portions of the business, often at a lower cost. It is used for short-term decisions involving mission-critical applications rather than for the medium- and long-term decisions associated with the regular data warehouse. Short-term decisions often require current information. For example, when a customer sends an e-mail query to a bank, the bank will quickly need to access all of the customer’s current accounts. The operational data store can be viewed as situated between the operational data (legacy systems) and the data warehouse. A comparison of the two is provided by Gray and Watson (1998).

Successes and Failures of Data Warehousing

Since their early inception, data warehouses have produced many success stories. However, many failures have also occurred. Carbone (1999) identified several types of warehouse failures:

- Warehouse did not meet the expectations of those involved.
- Warehouse was completed, but went severely over budget in relation to time, money, or both.
- Warehouse failed one or more times, but eventually was completed.
- Warehouse failed and no effort was made to revive it.

Carbone identified a number of reasons for failures (which are typical for many other large information systems):

Data Problems

- Not enough summarization of data
- Failure to align data marts and data warehouses
- Poor data quality (e.g., omitted information)
- Incomplete user input
- Incorrectly using data marts instead of data warehouses (and vice versa)
- Insecure access to data manipulation (users should not have the ability to change any data)
- Poor upkeep of information (e.g., failure to keep information current)

Technology Problems

- Inappropriate architecture
- Using the warehouse only for operational, not informational, purposes
- Poor upkeep of technology
- Inappropriate format of information—a single, standard format was not used

(continued)
Online File W4.6 (continued)

Other Problems
- Training and management issues
- Vendors overselling capabilities of products
- Lack or inappropriate training and support for users
- Inexperienced/untrained/inadequate number of personnel
- Unrealistic expectations—overly optimistic time schedule or underestimation of cost
- Lack of coordination (or requiring too much coordination)
- Cultural issues were ignored
- Improperly managing multiple users with various needs
- Unclear business objectives; not knowing the information requirements
- Lack of effective project sponsorship
- Interfering corporate politics

Suggestions on how to avoid data warehouse failure are provided by Griffin (2001) at datawarehouse.com and by Ferranti (1998).

Data Analysis and Knowledge Discovery
Once the data are in the data warehouse and/or data marts, they can be accessed by end users. Users can then conduct several types of analytical activities with the data, ranging from decision support and executive support analyses to ad-hoc queries, online analytical processing (OLAP), and data mining.

AD-Hoc Query
Ad-hoc queries allow users to request real-time information from the computer that is not available in periodic reports. Such answers are needed to expedite decision making. The system must be intelligent enough to understand what the user wants. Simple ad-hoc query systems are based on menus. More intelligent systems use SQL (structured query language) and query-by-example approaches or Web-based applications.

Web-Based Ad-Hoc Query Tools
Web-based ad-hoc query tools allow users to access, navigate, and explore relational data to make key business decisions in real time. For instance, users can gauge the success of a Web marketing campaign according to the number of Web hits received last month, last week, or even yesterday, in relation to products or services purchased. This insight helps companies better target marketing efforts and forge closer, more responsive relationships with customers. Several vendors offer such tools. For example, Cognos Corp. (see cognos.com/products/series7/cognosquery/fs_cquery.pdf) offers Web users powerful ad-hoc exploration of corporate data assets, with little or no user training needed.

Advanced query tools can be connected to intranets and extranets for B2B and CRM querying. Also, a drill-down from multidimensional analysis to DSS and other tools are available. Answers to queries can be delivered to visualization tools.

Online Analytical Processing
Online analytical processing (OLAP) refers to such end-user activities as DSS modeling using spreadsheets and graphics, which are done online. OLAP is an information system that enables the user to query the system, conduct an analysis, and so on, while the user is at a PC. The result is generated in seconds. Unlike online transaction processing (OLTP) applications, OLAP involves many data items (frequently many thousands or even millions) in complex relationships. One objective of OLAP is to analyze these relationships and look for patterns, trends, and exceptions. Another objective is to answer user queries.

(continued)
A typical OLAP query might access a multigigabyte, multiyear sales database in order to find all product sales in each customer segment (female, male, young people, etc.). After reviewing the results, an analyst might further refine the query to find sales volume for each sales channel by hours of the day or by product type. As a last step, the analyst might want to perform year-to-year or quarter-to-quarter comparisons for each sales channel. This whole process must be carried out online with rapid response time.

Thus, OLAP queries are able to analyze the relationships between many types of business elements (e.g., sales, products, regions, and channels) involving aggregated data over time (e.g., sales volumes, budgeted dollars, and dollars spent, on a monthly, quarterly, or yearly basis). The ability to present data in different perspectives involving complex calculations between data elements (e.g., expected profit calculated as a function of sales revenue for each type of sales channel in a particular region) enables users to pursue an analytical thought process without being stymied by the system.

Many vendors provide ready-made analytical tools, mostly in finance, marketing, and operations (e.g., productivity analyses, profitability analyses). Such packages include built-in Web-based DSSs. For example, Cognos Finance (from cognos.com) is an enterprisewide financial application for monitoring the financial performance of a business organization. It provides a framework for completing financial processes in a timely manner: monthly and quarterly closes, the budget process, and integration of the latest actual data with user-supplied forecasts. Users also can integrate Web information for a single view of the organization.

However, although OLAP can be quite useful, it is retrospective in nature and cannot provide the automated and prospective knowledge discovery that is done by advanced data mining techniques.

Knowledge Discovery

The process of extracting useful knowledge from volumes of data is known as knowledge discovery in databases (KDD), or just knowledge discovery (KD). The objective of KDD is to identify valid, novel, potentially useful, and ultimately understandable patterns in data. KDD is useful because it is supported by three technologies that are now sufficiently mature to produce meaningful data: massive data collection, powerful multiprocessor computers, and data mining algorithms.

Formal computer-based knowledge discovery has been done since the 1960s. However, the enabling techniques have been expanded and improved over time. KDD processes have appeared under various names and have shown different characteristics. KDD tools have evolved over time. Over time, KDD has become able to answer more complex business questions. For details, see Fayyad (1996).

Data Mining

Data mining derives its name from the similarities between searching for valuable business information in a large database and mining a mountain for a vein of valuable ore. Both processes require either sifting through an immense amount of material or intelligently probing it to find exactly where the value resides. In some cases the data are consolidated in a data warehouse and data marts; in others they are kept on the Internet and intranet servers.

Given databases of sufficient size and quality, data mining technology can generate new business opportunities by providing the following capabilities:

- **Automated prediction of trends and behaviors.** Data mining automates the process of finding predictive information in large databases. Questions that traditionally required extensive hands-on analysis can now be answered directly and quickly from the data. A typical example of a predictive problem is targeted marketing. Data mining can use data on past promotional mailings to identify the targets most likely to respond favorably to future mailings. Other predictive examples include forecasting bankruptcy and other forms of default and identifying segments of a population likely to respond similarly to given events.
Automated discovery of previously unknown patterns. Data mining tools identify previously hidden patterns in one step. An example of pattern discovery is the analysis of retail sales data to identify seemingly unrelated products that are often purchased together, such as baby diapers and beer. Other pattern discovery problems include detecting fraudulent credit card transactions and identifying invalid (anomalous) data that may represent data entry keying errors.

When data mining tools are implemented on high-performance, parallel-processing systems, they can analyze massive databases in minutes. Often, these databases will contain several years’ worth of data. Faster processing means that users can experiment with more models to understand complex data. High speed makes it practical for users to analyze huge quantities of data. Larger databases, in turn, yield improved predictions.

Data mining also can be conducted by nonprogrammers. The “miner” is often an end user, empowered by “data drills” and other power query tools to ask ad-hoc questions and get answers quickly, with little or no programming skill. Data mining tools can be combined with spreadsheets and other end-user software development tools, making it relatively easy to analyze and process the mined data. Data mining appears under different names, such as knowledge extraction, data dipping, data archeology, data exploration, data pattern processing, data dredging, and information harvesting. “Striking it rich” in data mining often involves finding unexpected, valuable results.

Data mining yields five types of information:

1. **Association.** Relationships between events that occur at one time (e.g., the contents of a shopping cart, such as orange juice and cough medicine)
2. **Sequences.** Relationships that exist over a period of time (e.g., repeat visits to a supermarket)
3. **Classifications.** The defining characteristics of a certain group (e.g., customers who have been lost to competitors)
4. **Clusters.** Groups of items that share a particular characteristic that was not known in advance of the data mining
5. **Forecasting.** Future values based on patterns within large sets of data (e.g., demand forecasting)

Data miners use several tools and techniques: case-based reasoning (using historical cases to recognize patterns); neural computing (a machine-learning approach by which historical data can be examined for patterns through massive parallel processing); association analysis (using a specialized set of algorithms to sort through data sets and express statistical rules among items); and intelligent agents (expert or knowledge-based software embedded in information systems).

### A Sampler of Data Mining Applications

According to a 2000 Gartner Group report (see Linden 2002), more than half of all the Fortune 1000 companies worldwide are using data mining technology. Data mining can be very helpful, as shown by the representative examples that follow. Note that the intent of most of these examples is to identify a business opportunity in order to create a sustainable competitive advantage.

#### Retailing and sales distribution.
Predicting sales, determining correct inventory levels and distribution schedules among outlets

#### Banking.
Forecasting levels of bad loans and fraudulent credit card use, predicting credit card spending by new customers, predicting which kinds of customers will best respond to (and qualify for) new loan offers

#### Manufacturing and production.
Predicting machinery failures, finding key factors that control optimization of manufacturing capacity

#### Brokerage and securities trading.
Predicting when bond prices will change, forecasting the range of stock fluctuations for particular issues and the overall market, determining when to buy or sell stocks

#### Insurance.
Forecasting claim amounts and medical coverage costs, classifying the most important elements that affect medical coverage, predicting which customers will buy new policies

#### Computer hardware and software.
Predicting disk-drive failures, forecasting how long it will take to create new chips, predicting potential security violations
Police work. Tracking crime patterns, locations, and criminal behavior; identifying attributes to assist in solving criminal cases

Government and defense. Forecasting the cost of moving military equipment, testing strategies for potential military engagements, predicting resource consumption; improving Homeland Security by mining data from many sources

Airlines. Capturing data on where customers are flying and the ultimate destination of passengers who change carriers in hub cities so that airlines can identify popular locations that they do not service, checking the feasibility of adding routes to capture lost business

Health care. Correlating demographics of patients with critical illnesses, developing better insights on symptoms and their causes, learning how to provide proper treatments

Broadcasting. Predicting the most popular programming to air during prime time, predicting how to maximize returns by interjecting advertisements

Marketing. Classifying customer demographics that can be used to predict which customers will respond to a mailing or buy a particular product

Text Mining

Text mining is the application of data mining to nonstructured or less-structured text files. Data mining takes advantage of the infrastructure of stored data to extract predictive information. For example, by mining a customer database, an analyst may discover that everyone who buys product A also buys products B and C, but does so 6 months later. Text mining, however, operates with less-structured information. Documents rarely have strong internal infrastructure, and when they do, it is frequently focused on document format rather than document content.

Text mining helps organizations find the “hidden” content of documents, as well as additional useful relationships. It also helps them group documents by common themes (e.g., identify all the customers of an insurance firm who have similar complaints).

Web Mining

The previous discussion of data mining refers to data that usually are stored in a data warehouse. However, to analyze a large amount of data on the Web, one needs different mining tools. Web mining is the application of data mining techniques to discover meaningful patterns, profiles, and trends from Web sites. The term Web mining is used to describe two different types of information mining. The first, Web content mining, is the process of discovering information from millions of Web documents. The second, Web usage mining, is the process of analyzing what customers are doing on the Web—that is, analyzing clickstream data.

In Web mining, the data are clickstream data, usually stored in a special clickstream data warehouse (see Sweiger et al. 2002) or in a data mart. The strategies used may be the same in both. Several companies provide tools for Web mining; for example, Iopus (iopus.com), KD Nuggets (kdnuggets.com), Megaputer (megaputer.com), and SPSS (spss.com).


**KEY TERMS**

<table>
<thead>
<tr>
<th>Term</th>
<th>Page</th>
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<tbody>
<tr>
<td>Business intelligence</td>
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<td>Data mart</td>
<td>12</td>
</tr>
<tr>
<td>Data mining</td>
<td>15</td>
</tr>
<tr>
<td>Data warehouse (DW)</td>
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<tr>
<td>Knowledge discovery in databases (KDD)/knowledge discovery (KD)</td>
<td>15</td>
</tr>
<tr>
<td>Metadata</td>
<td>11</td>
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<tr>
<td>Online analytical processing (OLAP)</td>
<td>14</td>
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<tr>
<td>Operational data store</td>
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</tr>
<tr>
<td>Text mining</td>
<td>17</td>
</tr>
<tr>
<td>Web mining</td>
<td>17</td>
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</tbody>
</table>

**REFERENCES FOR ONLINE FILE W4.6**


Online File W4.7 A Model of Organizational Buyer Behavior

**EXHIBIT W4.7.1**

### Individual Influences
- Age
- Gender
- Ethnicity
- Education
- Lifestyle
- Psychological makeup
- Knowledge
- Values
- Personality

### Interpersonal Influences
- Authority
- Status
- Persuasiveness

### Organizational Influences
- Policies and procedures
- Organizational structure
- Centralized/decentralized structure
- Systems used
- Contracts

### Market Stimuli
- Price
- Brand
- Promotions
- Advertising
- Product quality
- Design

### Decision Process
- (Group or Individual)

### Buyers' Decisions
- Buy or not?
- What to buy?
- Where (vendor)?
- When?
- How much to spend?
- Delivery terms?
- Payments?

### EC Systems
- Logistics Support
- Technical Support
- Customer Service

<table>
<thead>
<tr>
<th>Payments</th>
<th>Web design</th>
<th>FAQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery</td>
<td>Content and intelligent agents</td>
<td>E-mail</td>
</tr>
<tr>
<td></td>
<td>Security</td>
<td>Call centers</td>
</tr>
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<td></td>
<td></td>
<td>One-to-one</td>
</tr>
</tbody>
</table>
B2B Marketing Services

- **Digital Cement.** This firm provides corporate marketing portals. In essence, it provides content tailored to the client’s customer base. Digital Cement (digitalcement.com) advocates a private-label content approach versus partnering with a branded dot-com that will give a company content for free, but that also might take away its customers.

- **National Systems.** This company (nationalsystems.com) will track what is going on in a particular industry. It then generates competitive intelligence on pricing, product mix, promotions, and ad content and provides the client company with tailored marketing and advertising services.

- **BusinessTown.** This firm (businesstown.com) provides information and services to small businesses, including start-ups. It includes a directory of businesses in over 20 industries, information on functional areas (accounting, finance, legal, marketing), and business-planning advice. Although much of its offerings deal with intrabusiness and B2C EC, it offers several directories and information sources relevant to B2B.

Affiliate Programs, Infomediaries, and Data Mining

Many more methods and approaches can be used in B2B marketing and advertising. Here we examine three popular methods: affiliate programs, infomediaries, and online data mining services.

**Affiliate Programs**

B2C affiliation services were introduced in Chapter 1. There are several types of affiliate programs. With the simplest type, which is used extensively in B2C EC, an affiliate puts a banner of another vendor, such as Amazon.com, on its site. When a consumer clicks the vendor’s banner, the consumer is taken to that vendor’s Web site, and a commission is paid to the affiliate if the customer makes a purchase. The same method works for B2B.

With B2B, additional types of affiliate programs are possible. Schaeffer Research (scheffersresearch.com), for example, offers financial institutions a content alliance program in which content is exchanged so that all obtain some free content. For more on B2B affiliate programs, see en.wikipedia.org/wiki/Affiliate_marketing.

**Infomediaries and Online Data Mining Services**

Marketing managers must understand current shopping behaviors in order to effectively advertise to customers in the future. Traditional B2C retailers evaluate point-of-sale (POS) data (e.g., grocery scanner data) and other available data to generate valuable marketing information. In today’s online environment, more relevant information is available than ever before. However, the potential of the information can only be realized if the clickstream data can be analyzed and mined to produce constructive knowledge that can be used to improve services and marketing efforts. A new intermediary is emerging to provide such services to Web site owners who do not have the specialized knowledge and systems to perform such data mining on their own. As described in Chapter 2, these B2C and B2B intermediaries are called infomediaries.

Infomediaries start by processing existing information until new, useful information is extracted from it. This new information is sold to B2B customers or exchanged for more information, which is manipulated yet again, until even more valuable information can be extracted. B2B vendors use the information from infomediaries to identify likely buyers with much greater precision than ever before—leading to increased sales and drastically reduced marketing expenses. Representative infomediaries and data mining specialists are SAS Institute (sas.com), Unica NetTracker (unica.com), WebTrends (webtrends.com), NetIntelect (available from bizdesign.com), and SurfReport from netrics.com. For how data mining unveils promotion opportunities, see Amato-McCoy (2006).
**ONLINE FILE W4.9**

From Mass Advertising to Interactive Advertising

<table>
<thead>
<tr>
<th>Desired outcomes</th>
<th>Mass Advertising</th>
<th>Direct-Mail Advertising</th>
<th>Interactive Advertising</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive</td>
<td>Volume sales</td>
<td>Targeted reach, more sales, customer data</td>
<td>Volume sales, CRM, customer feedback, acquire new customers, improve target marketing ROI</td>
</tr>
<tr>
<td>Passive</td>
<td>Passive</td>
<td>Passive</td>
<td>Active</td>
</tr>
<tr>
<td>Passive</td>
<td>Food, personal care products, beer, autos, cameras, computers, appliances</td>
<td>Credit cards, travel, autos, some appliances</td>
<td>Upscale apparel, banking, books, travel, insurance, computers, autos, jewelry, office supplies</td>
</tr>
<tr>
<td>Passive</td>
<td>High-volume products</td>
<td>Targeted goods to segments</td>
<td>Targeted individual or groups</td>
</tr>
<tr>
<td>Passive</td>
<td>Madison Avenue (advertisers)</td>
<td>Postal distribution centers, warehouses</td>
<td>Cyberspace, logistics companies</td>
</tr>
<tr>
<td>Passive</td>
<td>Television, newspapers, magazines</td>
<td>Mailing lists</td>
<td>Online services, e-commerce, banners</td>
</tr>
<tr>
<td>Passive</td>
<td>Storyboards, TV</td>
<td>Databases</td>
<td>Servers, on-screen navigators, the Web</td>
</tr>
<tr>
<td>Passive</td>
<td>Channel surfing</td>
<td>Recycling bins</td>
<td>Log off</td>
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**REFERENCES FOR ONLINE FILE W4.9**


### Advantages and Limitations of Internet Advertising

<table>
<thead>
<tr>
<th>Medium</th>
<th>Advantages</th>
<th>Limitations</th>
</tr>
</thead>
</table>
| TV     | • Intrusive impact—high attention getter  
        • Ability to demonstrate product and to feature “slice of life” situations  
        • Very “merchandisable” with media buyers | • Fragmented ratings, rising costs, “clutter”  
        • Heavy “downscale” audience skew  
        • Time is sold in multiprogram packages; networks often require major up-front commitments; both limit the advertiser’s flexibility  
        • Audience surveys are limited in scope, do not provide socioeconomic demographics  
        • Difficult to buy with so many stations to consider |
| Radio  | • Highly selective by station format  
        • Allows advertisers to choose the time of day or the day of the week to exploit timing factors  
        • Copy can rely on the listener’s mood or imagination  
        • Offer unique opportunities to segment markets, both demographically and psychographically  
        • Ads can be studied and reviewed at leisure  
        • High impact can be attained with good graphics and literate, informative copy  | • Testing of copy is difficult because there are few statistical guidelines  
        • Reader controls ad exposure, can ignore campaign  
        • Difficult to exploit “timing” aspects  
        • Lack of creative opportunities for “emotional” selling campaigns  
        • High cost for large-size ads  
        • Lack of demographic selectivity; despite increased zoning, many markets have only one paper  |
| Magazines | • High single-day reach opportunity  
            • Reader often shops for specific information when ready to buy  
            • Portable format  
            • Internet advertisements are available 24 hours a day, 365 days a year  
            • Costs are the same regardless of audience location  
            • Accessed primarily because of interest in the content, so market segmentation opportunity is large  
            • Opportunity to create one-to-one direct marketing relationship with consumer  
            • Multimedia will increasingly create more attractive and compelling ads | • Low-quality reproduction, lack of color  
        • No clear standard or language of measurement  
        • Immature measurement tools and metrics  
        • Although the variety of ad content format and style that the Internet allows can be considered a positive in some respects, it also makes apples-to-apples comparisons difficult for media buyers  
        • Difficult to measure size of market, therefore it is difficult to estimate rating, share, or reach and frequency  
        • Audience is still small |
Online File W4.11 E-Mail Advertising Methods

E-Mail Promotions
E-Greetings Network (egreetings.com) produces digital postcards and animations for its customers, who are both individuals and corporations. For a modest membership fee ($13.95 annually), members have access to over 5,000 e-greeting cards, plus designs for flyers, fax covers, and envelopes. Through its free membership trial and its members list, E-Greetings Network has compiled a database of millions of recipients. E-Greetings Network’s goals for its e-mail promotion campaign include bringing value to its customers, driving traffic and transactions at the customer’s site, stimulating involvement with the site, expanding customer relationships, offering added means of sponsorship, and supporting brand affinity. E-Greetings’ main relationship-building tool is its newsletter “What’s Up @ E-greetings!” Key factors in its success are the fact that the mailing list is totally voluntarily (opt-in); newsletters are distributed on a regular, biweekly schedule; the content is relevant; and it handles unsubscribe difficulties and customer service in a timely manner.

Discussion Lists
Internet Security Systems (ISS), with $1 billion in sales per year, provides software that detects weaknesses in systems and gives detailed corrective measures for fixing security holes. Its success began when its founder, Chris Klaus, posted a notice about his security software on a newsgroup. He then offered a shareware version of the program to the newsgroup members and received 200 e-mail responses the following day. His company’s discussion list program includes approximately 80 specialized e-mail lists reaching over 100,000 people through discussions, partner lists, customer lists, and product announcement lists (Kinnard 2002). Sponsorship of discussion groups, communities, and newsletters is becoming quite popular on the Web (see sponsorship.com).

E-Mail List Management
L-Soft’s Listserv (lsoft.com), the leader in software for e-mail list management and marketing, is known for its electronic newsletters, discussion groups, and direct e-mail messaging. According to Kinnard (2002), the company understands that 9 out of 10 customer interactions are not transactions, so it offers database integration, mail merges, and customizable Web interfaces that allow companies to send pertinent information, such as product details or advertising, to specific customers. Listserv delivers 30 million messages each weekday and 1 million messages per hour from a single server. For e-mail challenges, see Berkowitz (2004).

REFERENCES FOR ONLINE FILE W4.11
Advertisers use dozens of innovative techniques to lure consumers into viewing online ads. The following list is only a sample of the many interesting ideas companies have used to attract Web surfers. For more on promotions, visit promomagazine.com.

- Retailers can provide online shoppers with special offers while they are purchasing or “checking out.” If a shopper’s profile or shopping history is known, the ads can be targeted.
- Netstakes runs sweepstakes that require no skill. Users register only once and win prizes at random (webstakes.com). Sponsors pay Netstakes to send them traffic. Netstakes also runs online ads, both on the Web and through e-mail lists that people subscribe to.
- Cydoor from Symantec (symantec.com/security_response/writeup.jsp?docid=2003–080115–1112–99) places ads, news, and other items on software applications. Consumers who download the software receive a reward each time they use the software (and presumably read the ads).
- CBS Marketwatch (cbsmarketwatch.com) uses animated beer bottles and interactive charts to attract viewers to its free financial site.
- Sometimes a catchy name draws Web surfers. For example, an old-economy seller of hard-to-find lightbulbs changed its name to topbulb.com and created an online catalog, called the Bulbguy, through which it sells lightbulbs online at a discount. The Web site is advertised both online and offline, and business is booming!
- Promotionworld.com is a magazine-format site dedicated to Web site promotions. Users can find rich resources and promotions on how to increase Web traffic.
- To promote its sport utility vehicle, the 4Runner, Toyota wanted to reach as many Internet users as possible. The company displayed Toyota banners on the search engine AltaVista (altavista.com). Whenever someone used AltaVista to search for anything related to automotives, they would see the Toyota banner. Also, Kelly Blue Book’s new-car pricing catalog (kbb.com) had links to Toyota’s car. In the first 2 months of the campaign, over 10,000 potential car buyers clicked on the banner ads looking for more detailed information about the Toyota 4Runner.
- Web surfers can play games, win prizes, and see “e-tractions” at uproar.com. Special promotion campaigns are also featured.
- To promote its job-recruiting visits on U.S. college campuses, IBM created over 75,000 college-specific banners such as, “There is life after Boston College: click to see why.” The students clicked on the banners at a very high rate (5 to 30 percent). As a result of this success rate, IBM restructured its traditional media plans using the “Club Cyberblue” scheme.
- Each year, almost 500,000 brides-to-be use theknot.com to plan their wedding. A “Knot Box” with insert folders is sent to users by regular mail. Each insert is linked to a corresponding page at theknot.com. Advertisers underwrite the mail campaign. The Web site provides brides with information and help in planning the wedding and selecting vendors. Orders can be placed by phone or online (not all products can be ordered online). A similar service, weddings411.com, operates primarily online.

Bargain hunters can find lots of bargains on the Internet. Special sales, auctions, and downloading of coupons are frequently combined with ads. Of special interest are sites such as coolsavings.com, hotcoupons.com, supercoups.com, clickrewards.com, and mypoints.com. A popular lottery site is world-widelotto.com. In addition to lotteries and coupons, free samples are of interest to many consumers, and “try-before-you buy” gives consumers confidence in what they are buying. Freesamples.com began to offer free samples in June 2000.
ONLINE FILE W4.13

WEB ADVERTISING STRATEGY HELPS P&G COMPETE

The Problem
The consumer goods market is a global one and extremely competitive. Giant corporations such as Procter & Gamble, Colgate Palmolive, Unilever, Nestlé, and The Coca-Cola Company are competing on hundreds of products, ranging from toothpaste to baby diapers to beverages. To survive, these companies must constantly research the markets, develop new products, and advertise, advertise, advertise. Market research and advertising budgets can amount to as much as 20 percent of sales, thus reducing profits. However, failure to advertise sufficiently and properly results in smaller revenue, loss of market share, and possibly going out of business. Thus, the proper advertising strategy, including Web advertising, is critical to the welfare of any company in the consumer goods industry.

Procter & Gamble (P&G) (pg.com) is the largest packaged-goods company in the United States, with over 300 brands (ranging from Crest to Tide to Pampers) and annual sales of over $55 billion. P&G spends more money on advertising than any other company, about $5 billion a year. P&G's business problem is how to best use its advertising budget to get the most marketing “bang for its bucks.”

The Solution
P&G started to advertise on the Internet in the late 1990s, both on major portals (using pop-up and banner ads for Scope and Tide) and on its own Web sites. By 2000, it had 72 active sites, mostly one site for each product (e.g., pampers.com, tide.com, and crest.com). Several of the sites were general (e.g., beinggirl.com), where teens find answers to questions about their bodies as well as advice about boys; pantene.com, where consumers can get personalized hair consultations; and reflect.com, where consumers can get customized beauty products. Today, P&G is considered by many (e.g., Bulik 2000) to be “pushing the envelope on the Web” by experimenting with many Web projects, mostly related to market research online and online advertising.

P&G's major objective is to build around each major product a community of users on the Web. The company has the following objectives in building and maintaining these sites: developing brand awareness and recognition (brand equity); collecting valuable data from consumers; cutting advertising costs; conducting one-to-one advertising; experimenting with direct sales of commodity-type products; and selling customized beauty products to individuals (through reflect.com).

P&G’s offline approach has always included research, development, and investment in hundreds of products simultaneously. Thus, the company's broad online approach is no surprise. Other aspects of its online advertising strategy include developing marketing partnerships (e.g., with iVillage.com), investing in promising start-ups, and joining Transora.com, a B2B marketplace consortium (other partners include Unilever, Coca-Cola, and Hershey Foods). P&G’s advertising approach is in itself experimental in nature: The company believes that its Internet strategy could lead to a comprehensive e-commerce position in the market. However, P&G also recognizes that the strategy could be just branding and result in a waste of money. P&G’s key reason for branching out from the laundry-tip types of sites (e.g., tide.com) to the more interactive sites (e.g., being-me.com) is so that it can conduct data mining on Web data. Interactive sites not only build brand equity and test the waters for direct sales to customers; they also collect valuable data from consumers. This information helps curtail marketing and advertising expenses by enabling the company to target consumers more precisely and economically. It lets the company gather more information about both the customers and the products and permits more one-to-one advertising.

The Results
As Robert Rubin of Netquity (a joint venture between Forrester Research and Information Resources) says, “P&G is the leading consumer packaged-goods company on the Net because they’re willing to try everything” (Bulik 2000). Although most of the improvements achieved by its Web advertising strategy were qualitative, P&G also was doing extremely well during the economic downturn of 2000–2003. As an indication of its success, its stock price climbed about 50 percent, whereas the average stock price on the New York Stock Exchange dropped over 30 percent in the same period.

Questions
1. Why was the online approach more effective than the traditional one?
2. Discuss the logic of multiple Web sites for one company.
3. What are the benefits of marketing partnerships? Are there any disadvantages?
4. What kind of marketing research can be conducted online by P&G?
One of the major issues in advertising is the cost-benefit (the relationship of cost to the benefits it provides) to the advertisers. The cost depends mostly on the method of payment.

**Pricing of Advertising**

Justifying the cost of Internet advertising is more difficult than doing so for conventional advertising for two reasons: (1) the difficulty in measuring the effectiveness of online advertising and (2) disagreements on pricing methods. Several methods are available for measuring advertising effectiveness, conducting cost-benefit analyses, and pricing ads.

**Pricing Based on AD Views, Using CPM**

Traditional ad pricing is based on exposure or circulation. So far, this model has been the standard advertising rate-pricing tool for Web sites as well, usually using ad views to measure circulation. Because advertisers pay an agreed-upon multiple of the number of “guaranteed” ad views using a CPM formula, it is very important that ad views are measured accurately in the context of the advertising business model. Generally, CPMs seem to average on the order of $40 (per 1,000 ad viewers), resulting in a cost of $0.04 per impression viewed (per ad view).

Some companies, such as USA Today Online, charge their clients according to the number of hits (about $0.035 per hit in 2005). However, hits are not an accurate measure of visitation, because one ad view may have several hits.

**Pricing Based on Click-Through**

Ad pricing based on click-through is an attempt to develop a more accountable way of charging for Web advertising. In this model, the payment for a banner ad is based on the number of times visitors actually click on the banner. Payment based on click-through guarantees not only that the visitor was exposed to the banner ad, but also that the visitor was sufficiently interested to click on the banner and view the target ad (Hoffman and Novak 2000).

However, a relatively small proportion of those exposed to a banner ad (about 1 to 3 percent of viewers) actually click on the banner. Therefore, space providers usually object to this method, claiming that simply viewing a banner ad may lead to a purchase later or to an offline purchase, much as newspaper or TV ads do. Advertisers, however, do not like to pay for ad views; they prefer the click-through method, which they feel is more accurate. Only large advertisers such as Procter & Gamble can pressure space sellers to accept click-through payment methods, or even better, interactivity.

**Payment Based on Interactivity**

Although payment based on click-through guarantees exposure to target ads, it does not guarantee that the visitor liked the ad or even spent a substantial time viewing it. The interactivity model (Hoffman and Novak 1996) suggests basing ad pricing on how the visitor interacts with the target ad. Such an interactivity measure could be based on the duration of time spent viewing the ad, the number of pages of the target ad accessed, the number of additional clicks generated, or the number of repeat visits to the target ad. Obviously, this method is more complex to administer than the previous methods.

**Payment Based on Actual Purchase: Affiliate Programs**

Many advertisers prefer to pay for ads only if an actual purchase has been made. Such arrangements usually take place through affiliate programs. Merchants ask partners, known as affiliates, to place the merchant’s logo on the affiliate’s
Which Is the Most Appropriate Pricing Method?

In addition to the four major methods just described, still other methods can be used to pay for ads. For example, some space providers charge a fixed monthly fee to host a banner, regardless of the traffic. Others use a hybrid approach, a combination of some of the previous methods. The question is, which is the most appropriate method?

Web space providers, such as Yahoo!, push for CPM. They argue that the problem with activity-based measures, such as click-through or interactivity, is that the Web space provider cannot be held responsible for activity related to an advertisement. (If the customer sees an ad, but it is a poor ad that does not inspire further activity, it is not the fault of the Web space provider.) They also argue that traditional media, such as newspapers or television, charge for ads whether or not they lead to sales. So why should the interactive condition be applied on the Web?

Advertisers and their agencies, on the other hand, argue that because the Web medium allows for accountability, models can and should be developed that measure actual consumer activities. The answer to the question of the most appropriate method has not been settled.

Advertisement as a Revenue Model

Many of the dot-com failures in 2000 to 2002 were caused by a revenue model that contained advertising income as the major or only revenue source (e.g., see the story of Go.com in Online File W3.18). Many small portals failed, but three large ones are dominating the field: AOL, Yahoo!, and MSN. However, even these heavy-traffic sites reported only small revenue growth in 2001 and 2002. There are simply too many Web sites competing for advertising money. For these reasons, almost all portals are adding other sources of revenue.

However, if careful, a small site can survive by concentrating on a niche area. For example, NFL Rush (NFLRush.com) is doing well. It pulls millions of dollars in advertising and sponsorship by concentrating on NFL fans. The site provides comprehensive and interactive content, attracting millions of visitors.

Measuring Advertising Effectiveness

Determining the cost of advertising is easier than assessing its benefits. Most of the benefits of advertising are intangible. However, more and more companies are requiring that some measure be made of the effectiveness of advertising. One financial measure is the return on investment. Another way to measure advertising effectiveness is to measure and analyze Web traffic.

Return on Investment

An increasing number of companies are requiring that the rate of return on investment (ROI) be used to measure the benefits received from their online advertising campaigns. ROI can be calculated in several ways. One popular formula for ROI is the net benefit (the total benefits minus the total cost) divided by the required investment. Obviously, the difficult part is to put a dollar amount on the total benefits. Nevertheless, Forrester Research (forrester.com) has developed an interactive ROI model (see Scheirer et al. 2001) for the “word-of-mouth” ad approach. Also, ad management companies such as Wordata.com generate reports that can help an organization to calculate the ROI of its e-mail ads (see the demo at wordata.com). Many other vendors offer ROI support services. For example, advertising.com offers optimization services that analyze campaign data in real time, helping the advertising team make necessary adjustments to the campaign.

The cost of advertising is perhaps the key component of ROI. (It certainly is the one that companies and advertisers have the most control over.) One of the ways to improve ROI is to lower advertising costs. Various vendors offer services to help do that. To reduce expenses, a company can negotiate ad purchasing at valueclick.com. In addition, companies can use reverse auctions to solicit bids from space providers.
Part 2: Internet Consumer Retailing

Measuring, Auditing, and Analyzing Web Traffic

Before a company decides to advertise on someone’s Web site, it should verify the number of ad views, hits, clicks-through, or other data reported by the site’s owner. A site audit validates the data claimed by the site, assuring advertisers that they are getting their money’s worth. An impartial, external analysis is crucial to advertisers to verify the accuracy of any counts claimed by sites.

The Audit Bureau of Circulation (ABC) (see abc.org.uk) is a nonprofit association created by advertisers, advertising agencies, and publishers, who came together to establish advertising standards and rules. The ABC verifies circulation reports by auditing circulation figures of newspapers, TV, radio, and now the Internet. It provides credible and objective information to the buyers and sellers of advertising. Several other independent third-party Internet auditing companies also are in operation, such as BPA Worldwide (bpawww.com), the Internet Advertisement Bureau (iab.net), and I/PRO (ipro.com).

Related to auditing is the rating of sites. This is done by companies such as Accipiter, I/PRO, Netcount, Interse, Hotstats, and CNET. Rating is done by looking at multiple criteria, such as content, attractiveness, ease of navigation, and privacy protection. Sites with higher ratings can command higher prices for advertising placed on their sites. In addition to outside independent monitoring, several vendors sell software that enables Webmasters to self-monitor traffic on their own Web sites. Examples are worldata.com, webtrends.com, and netratings.com. Additionally, Webmasters can measure who is coming to a site and from where (e.g., see leadspinner.com). Using such software, companies can assess if placing ads really increases traffic to their sites.

Audience Tracking

Advertisers are interested in gathering as much information as possible about the acceptance of ads, both online and offline. Arbitron Corporation has developed a portable, wearable meter (beeper-like) device. The device logs programming (including TV, radio, and streaming media Internet broadcasts) seen or heard anytime, anywhere, by whomever is wearing it. A motion detector on the device verifies that a person is wearing it (and does not just set it in front of the TV or computer screen). Each night the device is placed in a docking station in the wearer’s home from which it transmits the day’s data to Arbitron (arbitron.com).

According to the Interactive Advertising Bureau (2004), the keys to ad-serving success include:

- Gather information on all the types of ad serving units.
- Understand how much each type of ad performs on its own and in the campaign.
- Provide metrics for the advertiser to make meaningful comparisons.
- Give accurate statistics in a timely and dynamic fashion.
- Provide 24/7 information and ad management for the advertiser.

A complete ad-serving platform will measure business performance and site functioning as well as provide:

- Accurate forecasting
- Ad type management
- Traffic/audience measurement
- Reporting

REFERENCES FOR ONLINE FILE W4.14

Two related topics are presented in this online file: ad management and ad localization.

**AD Management**

The activities involved in Web advertising, which range from tracking viewers to rotating ads, require a special methodology and software known as *ad management* software. Ad management software lets an advertiser send very specific ads on a schedule and target ads to certain population segments, which can be very small. For example, an advertiser can send an ad to all male residents of Los Angeles County between the ages of 26 and 39 whose income level is above $30,000. The advertiser can even refine the segment further by using ethnic origin, type of employment, or whether recipients own their home.

When selecting ad management software, a company should look for the following features, which will optimize their ability to advertise online:

- **The ability to match ads with specific content.** Being able to match ads with Web content would allow an advertiser, for example, to run an ad from a car company in an article about the Indy 500.
- **Tracking.** Of course, the advertiser will need to deliver detailed metrics (performance measures) to its customers, showing impression rates, click-through rates, and other metrics. Tracking of viewing activity is essential in providing such metrics.
- **Rotation.** Advertisers may want to rotate different ads in the same space.
- **Spacing impressions.** If an advertiser buys a given number of impressions over a period of time, the software should be able to adjust the delivery schedule so that they are spread out evenly.

A variety of ad management software packages are available, including some from application service providers (ASPs) and some freeware. A comprehensive package is AdManager from *accipiter.com*, which delivers all of the features just discussed (see also their AdTraffick and AdMarket).

One topic in ad management is *campaign management*; that is, management of an entire marketing and advertising campaign. Campaign management tools fall into two categories: those that are folded into CRM (customer relationship management), which consist mainly of marketing automation, and those that are targeted, stand-alone campaign management products. Companies such as DoubleClick provide partial management. More comprehensive management is provided by Atlas Solutions’ Ad Manager (see [www.atlassolutions.com/publisher/solutions_premiuminventory.aspx](http://www.atlassolutions.com/publisher/solutions_premiuminventory.aspx)).

Another topic in ad management is measuring the *effectiveness* of Web advertising, which was discussed earlier. Yet another is localization.

**Localization**

*Localization* is the process of converting media products developed in one environment (e.g., a country) to a form culturally and linguistically acceptable outside the original target market. It is usually done by a set of *internationalization* guidelines. Web-page translation (Insights and Additions W4.15.1) is just one aspect of internationalization. However, several other aspects also are important. For example, a U.S. jewelry manufacturer that displayed its products on a white background was astonished to find that this display might not appeal to customers in some countries where a blue background is preferred.

If a company aims at the global market (and there are millions of potential customers out there), it must make an effort to localize its Web pages. This may not be a simple task because of the following factors:

- Many countries use English, but the English used might differ in terminology, spelling, and culture (e.g., United States versus United Kingdom versus Australia).
- Some languages use accented characters. If text includes an accented character, the accent will disappear when converted into English, which might result in an incorrect translation.

(continued)
Online File W4.15 (continued)

- Hard-coded text and fonts cannot be changed, so they remain in their original format in the translated material.
- Graphics and icons look different to viewers in different countries. For example, a U.S. mailbox resembles a European trashcan.
- When translating into Asian languages, significant cultural issues must be addressed, for example, how to address older adults in a culturally correct manner.
- Dates that are written mm/dd/yy (e.g., June 8, 2007) in the United States are written dd/mm/yy (e.g., 8 June 2007) in many other countries. Therefore, “6/8” would have two meanings (June 8 or August 6), depending on the location of the writer.
- Consistent translation over several documents can be very difficult to achieve. (For free translation in six languages, see freetranslation.com.)

Insights and Additions W4.15.1 Automatic Translation of Web Pages

Many vendors offer automatic Web translation applications. However, not all automatic translations are equally good so some evaluation of these products is needed. According to Sullivan (2001), the best way to access machine translation is to use the following three criteria: (1) intelligibility—how well a reader can get the gist of a translated document, (2) accuracy—how many errors occur during a translation, and (3) speed—how many words per second are translated. Because the quality of automatic translation has not always been as good as human translation, many experts advocate the use of the computer as a productivity booster, with human translation as a double-check. However, as time passes, automatic translation is becoming better (Sullivan 2001).

There are three Web page translation methods: (1) dictionary-based translation, (2) machine translation, and (3) methods using what in linguistic jargon is called parallel corpora. Direct dictionary-based translation is the simplest method. However, it suffers from some problems, among which are: (1) the problem of inflection (a translation problem due to the difference between written and spoken words); (2) translation ambiguity; (3) how to handle compound words and phrases; and (4) how to translate proper names and other untranslatable words (Hedlund et al. 2004).

Some popular translation products are:

- WorldPoint (worldpoint.com) offers a WorldPoint Passport multilingual software tool that allows Web developers to create a Web site in one language and deploy it in several other languages.
- AltaVista offers the free Babel Fish Translation (world.altavista.com) that translates Web pages, e-mail, and text. Babel Fish supports 19 language pairs. It is linked to Newstran.com (newstran.com), which translates online newspapers to English.
- Alis Technologies and Netscape developed AutoTranslate, which is offered in the Netscape browser. Available in the “view” menu (click on “translate”), users can translate a Web page to a desired language (out of 10 available languages).
- Google offers a service (google.com/language_tools) that automatically translates the content of Web pages published in French, German, Italian, Spanish, Portuguese, and more to English. All you have to do is click on the “Translate this Page” button that appears after a title in a foreign language.
- Uniscape.com (now trades.com) offers software that does multilingual translation for companies that want to provide translated Web pages from their URLs. Product documentation, Web sites, marketing materials, and software interfaces can be localized in many languages quickly and cost effectively. The company’s site (translationzone.com) also is a portal for translation professionals worldwide and offers resources to help translators expand their customer base. Professional translators can purchase the latest releases of TRADOS software (trados.com) as well as create online professional profiles, through which they can market themselves to potential clients. The portal currently has more than 12,000 registered users.
- Rikai.com (rikai.com) is an online character translator that allows users to translate Japanese Web pages.

(continued)
What Is Involved in Localization?

When companies bring their products and services to foreign markets, they may need to move away from standardization. The problem is how to do it in an efficient way. Rigby and Vishwanath (2006) provide a list of items that demand attention. Details are available in the original article.

For variables involved in localization see Exhibit W4.15.1.

Automatic Versus Manual Web Page Translation

Certain localization difficulties result in a need for experienced human translators, who are rare, expensive, and slow. Therefore, companies are using automatic translation software, at least as an initial step to expedite the work of human translators.

Using Internet Radio for Localization

Internet radio Web sites provide music, talk, and other entertainment, both live and stored, from a variety of radio stations (PCMag.com 2006). The big advantage of Internet radio is that there are few limits on the type or number of programs it can offer, as compared with traditional radio stations. It is especially useful in presenting programming for local communities. For example, KISSFM (kissfm.com) is a Los Angeles site that features music from up-and-coming L.A. bands, live concerts, interviews with movie stars, and so forth. About 40 percent of the site’s traffic comes from listeners in California, and the rest from listeners around the world. The company that powers the KISSFM Web site also operates sites focused on country music, Latin music, and so forth. Advertisers can reach fairly narrow audience segments by advertising on a particular Internet radio site.

EXHIBIT W4.15.1 What Is Involved in Localization?

Variables Considered in Localization

- Branding (names, language)
- Store formats (size, layout)
- Merchandise spaces and assortment (size, color, style, flavor, package design)
- Pricing (range, changes, financing)
- Promotions (types, duration, discount level)
- Vendor policies
- Management programs
- Store service levels
- Vendor services
- Operating policies

Location Variables

- Consumer characteristics
- Special demand drivers
- Competitor characteristics
- Company’s own stores’ characteristics vs. others

Internet radio

A Web site that provides music, talk, and other entertainment, both live and stored, from a variety of radio stations.
### KEY TERMS

<table>
<thead>
<tr>
<th>Ad management</th>
<th>Localization</th>
<th>Internet radio</th>
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<td>29</td>
<td>29</td>
<td>31</td>
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### REFERENCES FOR ONLINE FILE W4.15


*PCMag.com*. “Internet Radio: Definition,” 2006. [pcmag.com/encyclopedia_term/0,2542,t=Internet+radio&i=45248,00.asp](pcmag.com/encyclopedia_term/0,2542,t=Internet+radio&i=45248,00.asp) (accessed November 2007).


A logical way to classify EC agents is by relating them to the decision-making process (in a slightly expanded form), as shown in Exhibit W4.16.1. The decision-making model in the exhibit shows the second step was information search. Because of the vast quantity of information that software (intelligent) agents can sift through, the step has been split here into two types of agents: those that first answer the question, “What to buy?” and those that answer the next question, “From whom?” Let’s see how agents support each of the phases of the decision-making process.
Agents that Support Need Identification (What to Buy)

Agents can help buyers recognize their need for products or services by providing product information and stimuli. For example, Expedia notifies customers about low airfares to a customer’s desired destination whenever they become available.

Several commercial agents can facilitate need recognition directly or indirectly. For example, FindGift (findgift.com) asks customers questions about the person for whom they are buying a gift and helps them hunt down the perfect gift.

Agents that Support Product Brokering (From Whom to Buy)

Once a need is established, customers search for a product (or service) that will satisfy the need. Several agents are available to assist customers with this task. The comparison agents cited in Online File W3.17 belong in this category. An example of how these agents are used in advertising is provided in Case W4.16.1.

Some agents can match people that have similar interest profiles. Even more ambitious agents try to predict which brands of computers, cars, and other goods will appeal to customers based on market segmentation preferences in a variety of different product categories, such as wine, music, or breakfast cereal. (See discussion on collaborative filtering.) For a discussion on agents that do both product and merchant brokering, see He and Leung (2002). Guan (2006) describes how agents support product brokering.

Agents that Support Merchant Brokering and Comparisons

Once a consumer has a specific product in mind, he or she needs to find a place to buy it. BargainFinder (from Accenture) was the pioneering agent in this category. When used for online CD shopping, for example, this agent queried the price of a specific CD from a number of online vendors and returned a list of prices. However, this system encountered problems because vendors who did not want to compete on price managed to block out the agent’s requests. (Today’s version is at cdrom-guide.com, “Bargain finder.”) The blocking problem has been solved by agents such as Inktomi Shopping Agent.

CASE W4.16.1 EC Application

FUJITSU USES AGENTS FOR TARGETED ADVERTISING IN JAPAN

Fujitsu (fujitsu.com) is a Japanese-based global provider of Internet-focused information technology solutions. Since the end of 1996, Fujitsu has been using an agent-based technology called the Interactive Marketing Interface (iMi). The system allows advertisers to interact directly with specific segments of the consumer market through the use of software agents, while ensuring that consumers remain anonymous to advertisers. Consumers submit a personal profile to iMi, indicating such characteristics as product categories of interests, hobbies, travel habits, and the maximum number of e-mail messages per week that they are willing to receive. In turn, customers receive product announcements, advertisements, and marketing surveys by e-mail from advertisers based on their personal profile information. By answering the marketing surveys or acknowledging receipt of advertisements, consumers earn iMi points, redeemable for gift certificates and phone cards. Many other companies in Japan (e.g., nifty.com and lifemedia.co.jp) also use this technology.

Source: Compiled from fujitsu.com (accessed March 2007).

Questions

1. Why would customers agree to have a personal profile built on them?
2. What is the role of the software agent in this case?
Froogle.com, My Simon (mysimon.com), and Junglee (of Amazon.com). These agents originate the requests from whatever computer the user is accessing at the time. This way, vendors have no way of determining whether the request comes direct from a real customer or from the comparison agent.

Fraud is of major concern to buyers because buyers cannot see the products or the sellers (see Chapter 10). Several vendors offer agent-based fraud detection systems. One such system is Risk Suite (fairisaac.com). It is based on pattern recognition driven by neural computing. Other products from Fair Isaac are FICO Risk Score and VeriComp Fraud Managers.

Comparison Agents
Part of the merchant-brokering process is determining price and other purchase criteria. Large numbers of agents enable consumers to perform all kinds of comparisons, as was shown in Chapter 3. Here are some additional examples:

- Allbookstores.com and bestbookbuys.com are two of several agents that help consumers find the lowest prices of books available online.
- Bottomdollar.com, compare.net, shopper.com, roboshopper.com, and bargainville.com are examples of agents (out of several dozen) that suggest brands and compare prices once consumers specify what they want to buy.
- Pricescan.com guides consumers to the best prices on thousands of computer hardware and software products.
- Buyerzone.com is a B2B portal at which businesses can find the best prices on many products and services.

Agents that Support Buyer–Seller Negotiation
The traditional concept of “market” implies negotiation, mostly about price. Whereas many large retail stores engage in fixed-price selling, many small retail stores and many markets use negotiation extensively. In several cultures (e.g., Chinese), negotiation is very common. In many B2B transactions, negotiation is common, too. The benefit of dynamically negotiating a price is that the pricing decision is shifted from the seller to the marketplace. In a fixed price situation, if the seller fixes a price that is too high, sales volume will suffer. If the price is set too low, profits will be lower.

Negotiations, however, are time consuming and often disliked by individual customers who cannot negotiate properly because they lack information about the marketplace and prices or because they do not know how to negotiate. Many vendors do not like to negotiate either. Therefore, electronic support of negotiation can be extremely useful.

Agents can negotiate in pairs, or one agent can negotiate for a buyer with several sellers’ agents. In the latter case, the contact is done with each seller’s agent individually, and the buyer’s agent can conduct comparisons. Also, customers can negotiate with sellers’ agents. One system automates the bargaining on a seller’s side. The system can bargain with customers based on their bargaining behavior. For example, if the customer starts very low, the system helps the seller know how to respond. For details, see Sim (2006) and Chapter 5 (for B2B).

Agents that Support Purchase and Delivery
Agents are used extensively during the actual purchase, often arranging payment and delivery. For example, if a customer makes a mistake when completing an electronic order form, an agent will point it out immediately. When a customer buys stocks, for example, the pricing agent will tell the customer when a stock they want to buy on margin is not marginable or when the customer does not have sufficient funds. Similarly, delivery options are posted by agents at Amazon.com and other e-tailers, and the total cost of the transaction is calculated in real time.

Agents that Support After-Sale Service and Evaluation
Agents also can be used to facilitate after-sale service. For example, the automatic e-mail answering agents usually are effective in answering customer queries. A non-Internet-based agent can monitor automobile usage and notify owners when it is time to take their car in for periodic maintenance. Agents that facilitate feedback from customers also are useful.

Character-Based Animated Interactive Agents
Several agents enhance customer service by interacting with customers via animated characters. Similar agents are used to facilitate advertising. Animated characters are software agents with personalities. They are versatile and employ friendly front ends to communicate with users. They are not necessarily intelligent. These animated agents also are called avatars.
Avatars are animated computer representations of humanlike movements and behaviors in a computer-generated three-dimensional world. Advanced avatars can “speak” and exhibit behaviors such as gestures and facial expressions. They can be fully automated to act like robots. The purpose of avatars is to introduce believable emotions so that the agents gain credibility with users. Insights and Additions W4.16.1 describes the use of avatars at a virtual mall in Korea.

Avatars are considered a part of social computing, an approach aimed at making the human-computer interface more natural. Studies conducted by Extempo Systems (Extempo Systems, Inc. 1999) showed that interactive characters can improve customer satisfaction and retention by offering personalized, one-to-one service. They also can help companies get to know their customers and support advertising. Avatars play a major role in virtual world sites such as Second Life (Chapter 1). For more on avatars, see Rehm and Andre (2005).

**Avatars** are big business in South Korea. Internet users express themselves by putting clothes, shoes, and accessories on their avatars. The clothes are really pixels on the computer screen designed for avatars that represent the users and are moved around in a virtual chat room. Clothing the avatars in attire bought in virtual malls is part of the fun. Sayclub, operated by NeoWiz, was the first to introduce avatar services there in 2000. The company had more than 15 million members in 2002, who spent a total of $1.6 million a month on their avatars, dressing them in the over 30,000 outfits from the virtual shopping mall (saymall.sayclub.com).

“It is an unusual strategy, but avatars can be very effective marketing tools,” says Chung Jae Hyung, chief executive officer at DKIMS Communications, an online marketing agency. “They are so popular with young people these days that they can get you a lot of exposure very quickly. An avatar is a given; just like everyone has a cell phone, everyone has an avatar,” says Chung. Samsung Economic Research Institute estimates that the avatar industry generated $16 million in revenue in 2001 (Yoon 2002). By 2006, according to private communications with Samsung researchers, the estimate grew to $30 million.

As competition grew from the top portals, such as Yahoo!, Sayclub responded by offering more items, including hair dyes, accessories, and brands. “We needed something to differentiate ourselves and improve our brand image,” says Chang Hyun Guk, manager of the business planning team at Sayclub. “The best way to do that was to bring real-life brands to our virtual mall.” Therefore, to improve its own brand image, Sayclub sought to offer well-known consumer brands as products one could buy for one’s avatar from the Sayclub site. In addition to improving the Sayclub brand, these products would generate money from additional sales.

However, convincing top brands to go virtual was not easy. For example, because Mattel, the maker of Barbie, did not have any idea what the avatar market was all about, it needed to be educated before it would sign a licensing agreement allowing outfits from the Barbie Fashion Avenue line of doll dresses to be “avatarized” for a percentage of total sales. Numerous Barbie outfits have gone on sale at prices ranging from $4 to $5.35. That may not sound like much, but as of June 2002, avatar outfits made up almost 15 percent of Barbie’s licensing business in Korea. By exposing Sayclub’s users (mostly people in their teens and 20s) to Barbie paraphernalia, Mattel has been able to extend her popularity beyond children the ages of 8 or 9. Jisun Lee, a 23-year-old student, had not owned anything “Barbie” in over a decade but spent more than $85 in 2002 dressing her avatar in Barbie outfits.

During the Korean World Cup games in June 2002, Sayclub formed a partnership with Nike Korea and introduced avatars based on real images of Korean soccer players. They provided various soccer-related avatar items, including uniforms and Nike products. Sayclub granted uniform numbers of national soccer players to all users who bought Nike soccer items, including soccer player avatars or national team uniforms. They also gave away gifts to users with uniform numbers (selected by lottery) if the players their avatars represented scored during the games.

**Sources:** Compiled from Yoon (2002), sayclub.com (accessed November 2007), and neowiz.com (accessed November 2006).
Chapter Four: Online Consumer Behavior, Market Research, and Advertisement

Chatterbots
A special category of animated characters is characters that can chat, known as chatterbots. A chatterbot is a program that attempts to simulate a conversation, with the aim of at least temporarily making customers feel that they are conversing with a human. The concept started with Eliza, created by Joseph Weizenbaum at MIT in 1957. In his program, users conversed with a psychoanalyst. Today’s version is very powerful (try simonlaven.com/eliza.htm; the program can be downloaded for free). The major differences are that today the programs are on the Web and they include a static or moving character. The technology is based on natural language programming (NLP), an applied artificial intelligence program that can recognize typed or spoken keywords and short sentences.

A major use of character-based interactive agents is in customer service and CRM. The following sites offer demos and the opportunity to converse with virtual representatives:

- Artificial-life.com. This site offers CRM, chatterbots, and other character-based applications. The site can be accessed by cell phones as well as traditional Web connections. (In Online Appendix B, we illustrate the use of CRM agents.) This company offers e-learning applications, too.

- Verity.com. This site offers “Virtual Response,” which acts as a “v-rep” (virtual representative) that can answer customer questions and provide potential solutions.

- Zabaware.com. This site provides desktop assistance for answering customers’ queries.

For an inventory of chatterbots and other resources, visit Simon Laven’s site (simonlaven.com).

Chatterbots can do many things to enhance customer service, such as greeting consumers when they enter a site or giving the consumer a guided tour of the site. For example, consider the following chatterbot agents: “Ed, Harmony, and Nina” are virtual guides that help visitors who wish to learn more about products and tools available at extempo.com (which specializes in avatars). “Arthur bot” helps people build their own chatterbots at AI-Buddy (ai-buddy.com). For additional information on interactive characters, see Agent Interactive (2008), microsoft.com/msagent, and artificial-life.com. Rehm and Andre (2005) studied communication behaviors of humans and whether these behaviors differed when conversing with an agent as opposed to talking with other humans.

Other EC Agents
Other agents support consumer behavior, customer service, and advertising activities. For example, Resumix is an application that wanders the Web looking for Web pages containing résumé information. If it identifies a page as being a résumé, it tries to extract pertinent information from the page, such as the person’s e-mail address, phone number, skill description, and location. The resulting database is used to connect job seekers with recruiters. For current lists of various EC agents, see botspot.com and agents.umbc.edu. For a comprehensive guide to EC agents, see Iyer and Pazgal (2003). For more information about these EC agents and others, see Exhibit W4.16.2.

Online File W4.16 REVIEW QUESTIONS
1. List the major types of software (intelligent) agents used in customer-related and advertising applications.
2. What role do software agents play in need identification?
3. How do software agents support product brokering and merchant brokering?
4. What are avatars and chatterbots? Why are they used on Web sites?
EXHIBIT W4.16.2  Examples of Intelligent Agents

**Buyer Agents (Shopping Bots)**
Shopping bots help Internet surfers find products and services. For example, when a person surfs for an item on Amazon.com, a list of similar products that other customers who did the same search looked at is available. It is assumed the users’ tastes are relatively similar and they will be interested in the same products. This technology is known as **collaborative filtering**.

**User Agents (Personal Agents)**
These agents are meant to carry out tasks automatically for the user. For example, some bots sort e-mails according to the user’s order of preference, assemble customized news reports (e.g. *newshub*), or fill out Web page forms with the user’s stored information (e.g. *form filler bot*).

**Monitoring-and-Surveillance (Predictive) Agents**
These agents are used to observe and report on equipment, usually computer systems. For example, an agent keeps track of company inventory levels, observes competitors’ prices, and relays them back to the company.

**Data Mining Agents**
This type of agent uses information technology to find trends and patterns in an abundance of information from many different sources. Users can sort through this information in order to find whatever information they are seeking. For example, the agent may detect a decline in the construction industry for an economy. Based on this relayed information, construction companies will be able to make intelligent decisions regarding the hiring/firing of employees or the purchase/lease of equipment in order to best suit their firm.

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**KEY TERMS**

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# REFERENCES FOR ONLINE FILE W4.16


