Selling the Web: Web Features Used by Retailers

Albert Kagan, (E-Mail: aaajk@asu.edu), Arizona State University
Gerald Post, (E-mail: jerrypost@mindspring.com), University of the Pacific
Cecile Messier Noel, Arizona State University

Abstract

This study examines the use of the Web by retailers in business-to-consumer implementation of electronic commerce. An analysis of the content of retail Web sites was undertaken. Fourteen different business sectors encompassing 420 firms were evaluated. Results indicate that most current Web sites provide basic transaction features such as shopping carts and security. However, consumers want more advanced features such as the ability to determine if a product is in stock and the opportunity to track order progress online. Consumers also want greater assurances of confidentiality and privacy. Only a few firms currently provide these features.

Introduction

As the Internet reaches more households, interest has grown in using the visual and interactive features of the Web to market products to consumers. Initially, the Web was treated as a promotional system—similar to existing advertising channels. That is, vendors primarily focused on the pre-purchase aspects of marketing: distributing information, identifying and attracting consumers. However, as technology improved, interactive capabilities arrived, providing more opportunities for direct sales, and for post-purchase support. Internet-based consumer sales are estimated to exceed $100 billion by 2001 (Meeker and Pearson, 1997). Given this tremendous growth potential in retail sales, a more detailed understanding of the consumer perspective on Web sales is needed.

Much of the initial Electronic Commerce (EC) research has focused on business-to-business implementation such as EDI, database systems, and network interoperabilty solutions. Kalakota and Whinston (1996) discuss the adoption of a mercantile model for business-to-consumer focus of EC that applies the enabling technologies of the Internet, GUIs, and real time data management. Applegate et al. (1996) concluded that the implementation of EC would alter the way business is conducted in the future.

Hoffman, Novak and Chatterjee (1995) proposed a framework for evaluating

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the commercial aspects of the Web. Their conclusions focused on understanding the attributes of existing Web sites, viewing Web site characteristics as the site matures, and how firms use Web sites and the Internet to maintain a strategic advantage position. Jarvenpaa and Todd (1997) took an interesting approach and directly examined consumer attitudes towards early features of online shopping. They gathered comments from 220 participants on issues varying from the shopping experience to the perception of security aspects of electronic purchases.

The Web provides new opportunities for researchers, because substantial information is accessible from the desktop. Various studies show the patterns of development in Web retail sales. For example, the content of Fortune 500 Web pages was examined by Liu et al (1997). The findings of this study indicated that two thirds of the Fortune 500 firms maintained Web pages for the purposes of remaining in contact with customers and for the ability to expand the consumer base. This study stressed the use of the Web for providing a non-traditional communication channel to consumers.

More recent studies by Lohse and Spiller, 1998a (Lohse and Spiller, 1998b; Spiller and Lohse, 1998) examined Internet retail stores that sell women's apparel. They looked at three categories of features: firm size, service, and interface quality. Because of the early state of Web retail capabilities, the features emphasized the pre-purchase marketing aspects (e.g., presentation and navigation).

Numerous trade articles continue to discuss the use of the Web for retail marketing (Killen, 1996; Stipp,1996; Kavre, 1997; Linthicum, 1997). Dreze and Zufryden, 1997 analyzed the effectiveness of the communication message with respect to Web page design. While Holley and Hutton (1996) discuss the benefits of Web pages for accountants.

The Web provides a unique opportunity to observe business and marketing in detail. First, the Web provides researchers the ability to observe site features and modifications as they occur. Business strategies can be observed first hand as well as other business practices and techniques. Also the continued expansion of Web based commerce will enable researchers to observe how markets grow and change over time.

Currently, one significant complication to Web research is that it is difficult to obtain economic data, such as the level of sales made through the Web. Even public companies (which provide total sales data) rarely disclose the level of sales made through Web sites. Given the relatively new focus on business to consumer selling on the Web no time series data yet exists. Although it is possible to collect some individual (usually non-audited) sales values, it is not yet possible to obtain sales on a sufficient number of companies to perform statistical analyses.

The objective of this study to examine various firms to see how the Web site features have changed. The study also incorporates a measure of consumer satisfaction to help identify which features are more important. An important aspect of the study is a shift from pre-purchase emphasis to facilitating online sales.

Questions

To a businessperson, the most intriguing question raised by the Internet is: How do consumers want to use the Web? That is, what features does a site need to offer? A simple information Web site can be created and displayed for minimal cost. A fully-secure site with interactive access to the marketing databases of a firm is considerably more expensive

to create, operate, and upgrade.

In this respect, the demands placed on a site targeted towards consumers are different from those experienced by a commercial site aimed at typical business-to-business commerce. Business-to-business transactions are generally characterized as repetitive and high-volume. Hence, these sites tend to focus on using the Internet for order management (PO generation/inventory control) and tracking and payment mechanisms, as exemplified by EDI.

To business researchers, and to policy makers, another interesting set of questions revolves around how different industries handle electronic commerce. Do markets differ across industries? Do some industries lead in using the Web? Do consumers treat industries differently? Do consumers respond differently to EC differently by industry?

Methodology

This study's goal is to examine various firms to see what features they offer in their Web sites. Recent studies have examined the impact of Web page usage and the effect upon the business, service and retail marketing sectors (Holly and Hutton, 1996; Dreze and Zufryden, 1997; Liu et al, 1997; Vedder, Guynes and Vanecek, 1997). The data to answer these questions comes directly from the Web sites. Hence, the first step is to identify a sample of firms doing business on the Web. The focus is on firms actually selling products over the Web. Bizrate is an independent company that performs real-time market analysis for Web-based sales. Participating firms are not charged to be part of the evaluation process. Additionally, Bizrate does not accept advertising and encourages all firms to participate to minimize conflicts of interest. Bizrate makes money by offering consumer surveys and the corresponding analysis to member firms. However, Bizrate publishes a list of

companies in various industries, and provides a consumer-based rating of each member site. The rating consists of input from customers and Bizrate's professional evaluators from a consumer perspective. While this publicly available rating is not as detailed as the individual reports or other research (e.g., Liu et al.), this process provides a useful measure of overall consumer satisfaction with current Web sites.

At the time of the study (summer 1998), Bizrate provided public data on approximately 420 firms. Note that firms are continually being added and removed. Additionally, Bizrate often lists firms in more than one category, so it is difficult to obtain an exact count by looking at their site. To remove these factors, the 420 firms used in this study were reassigned to a single category and were surveyed in a three-day period to minimize dynamic effects.

This study's objective is to identify the various features offered by firms on existing Web sites and determine which features are important to consumers, and examine differences or similarities across industries. With the sample chosen, the next step is to create a list of Web site features to be examined.

The basic marketing model (pre-purchase, purchase, post-purchase) provides a classification system for various Web site attributes. Table 1 lists the Web site attributes along with the average percentage of firms providing that feature. The selection feature is currently offered by only 5 percent of the Web sites but the capability of this feature has dramatic potential for retail selling on the Internet. This feature provides a rules-based system to help customers identify a particular product (for example, someone who buys a CD-R drive would probably also be interested in purchasing blank media). Other firms, such as bookstores, provide affinity lists: items pur-

Table 1
Web Sites Attributes

Pre-purchase	Mean (Pct)	Std. Dev.	Feature
Link to internal database	0.076	0.123	Ability to see if item is in stock.
Internal cross-selling	0.031	0.069	Links to related products.
External cross-selling	0.025	0.047	Links to related vendors.
Manufacturer data	0.017	0.023	Reference links to manufacturer data.
Search capabilities	0.612	0.203	Ability to find products.
Selection advice	0.051	0.062	Rules based or affinity purchase lists of related products.
Purchase			
Secure transactions	0.915	0.065	Encrypted communication.
Shopping cart	0.747	0.188	Ease of purchase supported by shopping cart service.
Gift wrapping	0.246	0.153	Support for gifts.
International shipping	0.482	0.204	Ship to multiple countries.
Post-purchase			
Order tracking	0.142	0.121	The ability to identify the current status of an order.
Live support	0.896	0.071	Customer representatives available to resolve problems.
Privacy/confidentiality	0.267	0.089	A formal privacy statement supporting non-release of customer and sales data.

chased at the same time by people who bought the same item.

Various other consumer-oriented features tend to appear in a more traditional retail environment. In particular, the post-purchase experience should include trouble-shooting, returns, and referrals. However, at this time virtually none of the firms examined are using the Web for these activities. Similarly, it might someday be important for firms to offer multiple payment methods (debit cards, e-cash, etc.). Today, the dominant payment method is by credit card with almost no firms offering alternatives (except the occasional COD). Another possibility for future investi

gation is the computation of shipping charges. Almost all firms currently use a static base-cost model where the charge is assessed on the number of items or dollar value of the order. A handful incorporate buyer location into the computation. Currently, many of the firms do not reveal their method of computing shipping charges.

A classification process for categorizing firms by industry needs to be developed for further analysis. Bizrate provides an initial classification scheme. However, many of the firms are cross-listed in multiple categories. For analysis purposes, each firm was assigned to one of the detail categories shown in Figure 1. The final categories were chosen based on the number of cross-references in the original category set, and on the intrinsic similarity of the products and the way they are sold in the traditional retail environment.

With the choice of the attributes and industry categories established, the survey was conducted over the course of three days by examining each Web site and recording the presence of each attribute. The consumer rating of each firm was recorded as well.

Many firms market comparable products, for example, book sites carry similar items, as do music and video stores. The prices of representative products were recorded in each industry category. For comparative purposes the prices for competing firms were then computed as a percentage of the suggested list price (when available), or as a percentage of the highest price of a similar item within the category. Unique products/ stores were coded at 100 percent. This value provides an approximate measure of the price competition within the industry and allows for the impact of price to be evaluated along with the other features of the Web site.

Data for each category were normal-ized as percentages based on the number of firms in the category. Rating and Price variables were computed as averages within the appropriate category. Because most of the firms are private, it is difficult to obtain traditional financial performance measures. Consequently, the size variable is a proxy, generated from the number of observations reported by Bizrate. Larger firms reported a higher number of customer response ratings, and are coded with a one.

Results

Are there significant differences in features offered by Web sites? Are there differences related to industry types? If these differences exist, do consumers care? The first two of these questions ask for a comparison across the features and industries. By definition, this comparison represents a traditional analysis of variance (ANOVA) problem. ANOVA is designed to compare a cross-section of known factors (Web site attributes and industry type in this situation). The third question on consumer preferences can be analyzed statistically with multiple regression.

Consider the business offerings first. The ANOVA results reveal that there are significant differences across both Web attributes and industry type (P-value less than 0.005 in all cases). This result implies that significant differences exist between Web features and that certain attributes are more important than others and that industries differ in their support of particular Web site attributes.

Support for Web Site Features

To identify differences across industries and corresponding Web features, an examination of each item on an individual basis needs to be performed. The easiest way to evaluate individual Web site features is to identify the items above or below the mean.

Figure 1 shows the specific site features that are above or below the mean by more than one standard deviation. The mean is computed across all industries, so Figure 1 identifies which industries are more (+) or less (-) likely to provide a particular attribute.

An interesting finding is that computer retailers are the only industry sector that is extensively using internal database links to indicate the status of an inventory item. A second important result is that except for the book and music sectors, few other sites provide cross-selling links (either internal or external). Similarly, only a limited number of firms provide links to manufacturers (notably in the sports and health sectors). These results are somewhat surprising since cross selling is a

Figure 1.
Comparison of industries in terms of specific Web site features.

	Apparel	Appliance	Auction	Books	Computer	Department	Food	Games	Gifts	Health & Beauty	Home & Garden	Miscellaneous	Music & Video	Sports
DB					+									
Link internal				+										
Link related				+									+	
Link manufacturer										+		+		+
Find				+	+		-		-			-	+	
Selection											+	+		
Secure	-		+				-			+				
Cart			-											
Gift			-	+	-	+	+							-
International			-	+									+	
Track					+					-			+	
Live		+		-		+					-		-	
Privacy	-		+			+				-		-		

function that was viewed as a growth feature by prior research (Javenpaa and Todd; and Spiller and Lohse).

Book, music and computer sites were more likely to provide search systems to find products. On the other hand, the food, gift, and miscellaneous sites were least likely to provide search systems. This result makes sense when you compare the number of products sold by the first three segments—a search system is critical to finding one out of thousands of items. The food, gift, and miscellaneous sites tended to specialize in a limited number of products—hence requiring less need for searches. Note that the "food" sites in this study did not include the more recent grocery stores like Peapod; so they tended to be specialty food stores offering a limited number of products per site.

Surprisingly, sports-related and home and garden sites were more likely to provide help with item selection. This result can be partially explained by the diverse nature of these products, which requires a degree of site intervention to allow the customer to make the correct purchase decision. Overall, some of the book and music sites provided more sophisticated customer support. With a large number of sites in these categories it is surprising that few actually provided the advanced selection assistance capability.

In terms of purchasing, almost all commercial sites (over 90%) support secure transactions. However, the food and apparel sites were somewhat less likely to provide this feature. Similarly, electronic shopping carts are almost universal—except for small sites offering a limited number of products.

Twenty-five percent of the sites supported gift wrapping—led by the food, book, and department store sites. Auction and computer sites were less likely to support gifts.

International shipping was primarily a feature of the book and music industries—reflecting the international clientele of these sectors.

On the other hand, product tracking was most commonly offered within the computer industry—reflecting both the more advanced usage by computer-knowledgeable buyers and by the relatively high value of the shipments. The music industry also provided more options for tracking orders.

Live operators were most common at the appliance/electronic and department store Web sites. Books, music, and home and garden vendors were least likely to provide human operators. Privacy and confidentiality have become more important in the popular press (Cangemi 1998), but less than 30% of the sites had a published privacy statement. Apparel and health/beauty sites were least likely to have a proactive privacy statement.

As indicated in Table 2 certain Web attributes are more available to retail customers than others. Figure 2 emphasizes the presence of available Web features by highlighting those attributes that are significantly different from other attributes.

Security features, shopping cart availability, and a live representative to contact are important Web site attributes regardless of the industry. Search capabilities become more important in industries that have a large number of products (books, computer, department store, and music/video).

By far, the most surprising issue raised in Figure 2 is the relative unimportance of pre-purchase features. In particular, the lack of links (information and cross selling) and limited assistance in selection are amazing. It is possible that vendors are skeptical of cross-reference links. First, because they are afraid that once customers leave a Web site

Figure 2.
Comparison of Web site attributes in terms of industries.

	Apparel	Appliance	Auction	Books	Computer	Department	Food	Games	Gifts	Health & Beauty	Home & Garden	Miscellaneous	Music & Video	Sports
DB														
Link internal							-						-	
Link related														
Link manufacturer				-	-		-						-	
Find				+	+	+							+	
Selection				-									-	
Secure	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cart														
Gift														
International			+											
Track														
Live	+	+	+		+	+	+	+	+	+	+	+		+
Privacy														

(follow a link), they may not return. Second, managers may be concerned that adding links adds complexity and makes the Web site more difficult to use. Despite these misgivings, the result is still surprising. Providing related external links and assistance in selection should be two of the primary strengths of Web directed EC. Yet, instead of focusing on the strengths of the Internet, vendors are emphasizing basic transaction elements: security, shopping carts, and access to live representatives. This result is probably an indicator of the emerging nature of the medium.

Demand for Web Site Features

The previous section examined the features of Web sites that are currently provided by vendors in different industries. The next question to be answered is: Which Web site features are important to consumers? This question can be answered by examining the items that affect the overall rating of the Web site.

Table 2 shows the results of the regression computation of the Web site rating against the other site attributes. The attributes

Table 2.
Regression results of consumer preferences. $R^2 = 0.415$.
Percent is the percentage of firms offering this attribute.

Variable	Coefficient	Std. Dev.	Percent	Compare rank	
Constant	5.184**	0.431	na	Desired	Actual
Size	0.847**	0.111	na	-	
Link Manu-facturer	0.534*	0.267	0.017	1	-
Live	0.324**	0.102	0.896	2	2
Privacy	0.285**	0.074	0.267	3	6
Find	0.269**	0.073	0.612	4	4
Database	0.265*	0.125	0.076	5	-
Selection	0.261	0.143	0.051	-	-
Secure	0.246*	0.113	0.915	6	1
Track	0.209*	0.104	0.142	7	8
Cart	0.177*	0.082	0.747	8	3
Shipping	0.134	0.103	0.078	-	
Link Internal	0.066	0.199	0.076	-	-
Link Related	0.033	0.143	0.025	-	-
International	0.012	0.067	0.482	-	5
Gift	0.008	0.076	0.246	-	7
Price	0.005	0.004	na	-	-
Category	-0.012	0.013	na	-	-

are listed in descending order of the coefficients. The overall R^2 for the regression model is about 42%, which means these variables account for almost half the variation in consumer perception. Other variables may play a role in consumer satisfaction such as number or quality of items carried, prior experiences, and quality of service, but these variables are not available for all sites. This value is comparable to other studies (e.g., Spiller and Lohse which focused on one sector).

The most interesting result from the regression model (Table 2) is that consumers want the capabilities provided by a Web site that is developed on a database platform—notably the ability to determine if an item is in stock. A live customer service representative, privacy, and the ability to track orders online are also important. Based on consumer responses, the ability to search for products, secure transactions, have a shopping cart, and a more precise shipping calculation are also de-

sirable attributes from a consumer perspective.

Another important item is the strength of the coefficient regarding links to manufacturers. Associated with pre-purchase support, this feature is relatively easy to implement, so it is surprising that so few sites provide this capability. The significance of the coefficient indicates that consumers would prefer to see this feature.

For comparison, the percentage of Web sites providing the various features is also presented in Table 2. This column provides a useful commentary—look for the rows where there is a substantial deviation in ranking between desired (coefficient) and actual (percent). There are two types of variations: (1) desired is greater than actual, and (2) actual is greater than desired.

The major shortcomings in the first category arise from the lack of ties to manufacturers and the lack of database support: knowing what is in stock and the ability to track an order. Consumers would also prefer that Web sites provide more confidentiality with respect to purchases and personal data.

At first glance, it appears that Web site operators may be spending too much time on providing security and shopping cart services. Although these features are important to consumers, they do not have as strong an effect as other variables. This conclusion is a contrast to earlier studies. However, a more correct interpretation is that these items currently have less of an impact on ratings simply because so many sites offer them. Once every site provides the same feature, it will no longer be an important factor in consumer decisions. In other words, this feature is expect-ed to be present. That does not make the feature itself less important, it simply implies that this effect can no longer be measured.

Remember that Web technologies and the EC market are evolving. This result is an indication that the use of EC for retail purposes is moving beyond the initial phase. These two items (security and ease of shopping) were critical in the early stages of development. Now, the bar has been raised, and other issues become decision factors.

Conclusions

The key point to remember is that the Web is evolving (rapidly) as a vehicle for consumer marketing. Periodic investigations of this type can document the changes occurring in the Internet use for EC activities. As an evolving technology, the Web continues to offer new promises and challenges to business. The key to success will lie in using the technology to provide features that support the marketing elements desired by consumers. Initially, secure transactions and ease of use (shopping cart) were fundamental criteria for Web shopping. That is, Web designers were struggling simply to provide the foundations to handle purchase transactions. Now, consumers are demanding additional features. Specifically, consumers are looking for the ability to determine if items are in stock and to track their completed orders. To date, few Web sites provide these features. These two features will require a database-driven approach to creating Web sites, and will ultimately require that the Web data be tied to the firm's internal databases.

Consumers are also requesting that more emphasis be placed on privacy and confidentiality. At a minimum, a Web site should have a defined privacy policy. This procedure is relatively easy to implement—the difficulty lies in creating a policy that protects the consumers, yet still enables the business to utilize the wealth of data that can be collected from

each customer.

One unusual result from this study is that vendors make little use of links for cross-selling and for providing information. Additionally, consumer evaluations reveal that shoppers do not consider cross-selling to be an important feature. Both results are surprising since this feature is one of the technological strengths of the Web. Perhaps as Web marketing evolves there will be increased use of links and selection advice.

Managerial Discussion

As the use of the Web to expand business-to-consumer aspects of electronic commerce continues at an accelerated pace, it is important for mangers to understand the maturing aspects of Web site development and the associated features that will continue to attract satisfied retail customers. Currently the majority of consumer-oriented Web page sites are in the initial stages of the mercantile model for business to consumer marketing of EC.

This evolution process will encompass the Web features that are post-purchase in orientation and that reflect the need for a continuing customer focus. The attributes that most closely represent this focus are found in database-driven sites that will provide online inventory determination and the ability to monitor the completed order until it is delivered. This level of customer orientation will allow a firm to further differentiate a Web site from competition and design a cost structure of the Web site to generate maximum returns.

Suggestions For Future Research

As Web-directed commerce continues to expand towards the retail consumer the following issues will need to be addressed. What

is the cost structure of retail marketing on the Web? How well do Web sites target to specific customer segments. How do Electronic Commerce providers implement new and emerging technologies from an investment position. What is the impact of Electronic Commerce upon the traditional retail experience? ✇

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Notes