Interactive Functions and Their Impacts on the Appeal of Internet Presence Sites

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The importance of the World Wide Web as an advertising medium has been rapidly gaining ground in recent years. According to a recent Online Advertising Report released by Jupiter Communications (1997), total annual ad spending on the Internet reached $301 million in 1996, was expected to total $940 million in 1997, and reach $4,352 million in 2000. An interesting trend is that marketers are focusing more (by spending more) on advertising their products/firm at their own corporate sites than on advertising in somebody else’s site (Williamson, 1997). The range of Web site objectives could, of course, be anything from pure advertising of the firm’s name to implementing customer support or online sales. It is, therefore, becoming increasingly important for companies to be able to successfully attract potential customers to their own Web sites.

How does a firm hope to attract target customers or compete for them especially among sites of the same nature (e.g., personal-computer sites)? With the explosion in the number of Web sites (the site of companiesonline.com contains more than 100,000 sites for public and private companies as of October 1997), this has become a challenging question. To help consumers navigate the “wild jungle,” Ducoffe (1996) suggested that a regularly published series of rankings of Web sites would increase the public’s expertise as Web consumers. When search engines (such as Yahoo) are used with keywords (such as “personal computers”), they still tend to generate a very long list of URLs.

Couple this with the fact that downloading times are often long (Dreze and Zufryden, 1997), and we can see why a reputed ranking list would increase the search efficiency of Web users. Just as manufacturers of consumer products would like to see their products ranked high by Consumer Reports, it also appears reasonable that firms would like their sites to be included among the attractive ones in such a list.

In this research, we use the well-known Lycos Top 5% list to assess the quality of corporate Web sites. Analogous to the profile of Consumer Reports, sites cannot pay to be listed in the Top 5% directory, thus ensuring impartiality. This Web site review service has been rated very highly by the reputed publication Internet World magazine (Venditti, 1997). This list is published by Lycos which has been given an A grade as a search engine by the noted publication PC World (Scoville, 1996).

Overall then, the Lycos Top 5% list appears to have substantial credibility. The task of increasing potential customer visits to a firm’s Web site should clearly be facilitated, once the Web site is included in the Lycos Top 5% list.

What factors might be influential in improving the quality of company Web sites? One factor that appears to be a good candidate is that of interactivity. In contrast to the traditional one-to-many marketing communications media, the Web exemplifies an interactive many-to-many communication scenario (Hoffman et al., 1995). Berthon et al.
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(1996) have even suggested that the level of interactivity in a Web site might be critical in getting surfers involved in the marketing communication process. It would thus seem logical for firms to explore whether interactivity plays any significant role in affecting the overall quality of their Web sites.

Consequently, in this paper we are interested in examining the impact of interactivity on the attractiveness of corporate Web sites. We perform statistical analysis with data and information obtained from the Internet to perform this evaluation.

STUDY OBJECTIVES

The overall goal of this study is to examine the role of interactivity in increasing the attractiveness of Web sites of firms. To do this we consider information related to 101 sites. About half of these sites were included in the Lycos Top 5% list, while the remaining were not. Given that interactivity is a multidimensional concept and can thus manifest itself in various forms, we visited each of these 101 sites to gather the interactivity information of each of these sites. By using descriptive statistics, we are able to generate a profile of the nature and usage frequency of different forms of interactivity functions in corporate Web sites.

In this research, we hypothesize that the degree and nature of interactivity have a significant effect on the quality of corporate Web sites, as indicated by their inclusion/noninclusion in the Lycos Top 5% list. In other words, we expect that the attractiveness of sites would increase with the increase in the number of interactive functions. In addition, we also expect that certain types of interactive functions could have relatively stronger effects on the standing of sites. Recognizing the difference in sites’ goals, we explore the existence and differential benefits of alternative types of interactions and also examine whether the impact of interactivity differs by site goals.

We use Chi Square Analysis and the Logit model to test our hypothesis. Our results provide specific directions on how Web site designers can modify their site attributes to increase the quality recognition of their sites.

In our next section, we primarily focus on discussing the multidimensional aspects of interactivity; we also discuss characteristics of the Lycos Top 5% list. This is a precursor to the next section, where we describe our research design linking interactivity features to site attractiveness. Following that, we provide the results of our analysis. Finally, our last section contains discussions and managerial implications of our study and also indicates directions for future research.

INTERACTIVITY AND SITE ATTRACTIVENESS

In this section, we first briefly review the current thinking in the literature about interactivity and Web sites. Second, we discuss in details the various forms of interactivity that we observed in our considered sample of Web sites. We follow this with a discussion on the subject of site attractiveness.

Building interactive Internet Presence Sites

The nomenclature of “Internet Presence Site” (IPS) is nowadays being commonly used to denote a corporate Web site (Hoffman et al., 1995) that provides a virtual “presence” for a firm and its offerings. Firms may have different objectives in setting up their IPSs. Some desire full-scale content or image-rich sites for visitors to explore and enjoy, while some may aim to be more like cyber-brochures with flat ads containing general company and product information. Since image-rich or content-rich IPSs have a greater ability than flat ad sites to motivate consumers with messages embedded with interactive presentations, Hoffman and Novak (1995) have posited that they represent the future of advertising and marketing communications on the Web.

Interactivity, in the context of the Web, is a multidimensional concept. Blattberg and Deighton (1991) defined interactivity as the facility for individuals and organizations to communicate directly with one another regardless of distance or time. In Steuer’s (1992) model of computer-mediated communication, interactivity is “...the extent to which users can participate in modifying the form and content of a mediated environment in real time.” Deighton (1996) interpreted interactivity as two features of communication: the ability to address an individual and the ability to gather and remember the response of that individual. Those two features also make possible a third: the ability to address that individual once more in a way that takes into account his or her unique response.

A number of researchers have identified the roles of interactivity in firms’ efforts to build a good relationship with their customers. Hoffman and Novak (1995) pointed out that the Web frees customers from their traditionally passive role as receivers of marketing communications, gives them much greater control over the information search and acquisition process, and allows them to become active participants in the marketing process. Upham (1995) also argued that the interactive nature of the Web offers marketers new opportunities to create stronger brand identities that have the potential to translate into brand loyalty. Cuneo (1995) stated that the potential for customer interaction, which is largely asynchronous under current implementations, facilitates relationship marketing and customer support to a greater degree than ever before.
possible with traditional media (TV, broadcasting, etc.). Berthon et al. (1996) have suggested that the level of interactivity of the site would be critical in converting site visitors from interested contacts into interactive customers. Therefore, it seems reasonable to infer that surfers who visit interactive sites may be more likely to positively evaluate the sites and their surfing experience than surfers who run into less interactive sites with static information and humdrum presentations. It is important to recognize, however, that corporations may have varying motivations when they decide to set up their IPSs. The importance of interactivity seems obvious for "content/image" rich sites as firms that spend efforts in building such sophisticated IPSs should expect customers to get actively involved in surfing their sites. Yet, interactivity may still play an important role for "flat ad" sites. As suggested by Davis (1997), pure information sites such as cyber-brochures can make their site visitors’ probes more fruitful and enjoyable by providing positive interaction mechanisms, examples of which would be key-word search, inquiry, and so on. Thus, the impact of interactive mechanisms on site attractiveness may be present regardless of site goals. It would also be beneficial to empirically assess how firms might be drawing on the differing benefits offered by alternative types of interactions, in order to be compatible with their overall site objectives. The following subsection describes different forms of interactive functions.

Forms of interactive functions in IPSs

At the current level of Web technology development, there already exists a variety of technical tools that enable visitors to interact with Web sites. Marrelli (1996) gave an excellent point-by-point analysis of how a firm utilizes various forms of interactive functions in its Web site (the Zima site). His step-by-step analysis illustrated how such functions as "e-mail feedback loop," "multimedia presentation," "Web questionnaire," "affinity (user) groups," and "software downloading" had helped Zima to build a massive advertising presence in cyberspace. Emerick (1995) has also identified "end user news group," "end user information gathering," "product/service utilization service," "product/service explanation and problem solving," and "ordering" as forms of interactive functions that can be utilized by IPSs.

It should not be a surprise that as Web technology evolves, new forms of interactivity are going to emerge. To summarize the latest developments in this area, our study here presents a broad spectrum, if not an exhaustive, list of various forms of interactivity tools that are employed by IPSs in their marketing communications.

5. Online problem diagnostics The Whirlpool site has a built-in function that allows Whirlpool to diagnose product problems pointed out by site visitors. The function works just as if the customer is engaging in a conversation with the Whirlpool service representative who asks the customer a series of questions. Based on the customer’s input, the function can usually nail down the problem spot and provide trouble-shooting suggestions. Advantages of this function are manifold. First, the need to maintain a complete service center is reduced. Second, such routinized service assistance will be available around-the-clock. Third, service instructions to the customers could be aided by multimedia thus making it much easier for customers to follow, e.g., by showing a three-dimensional figure of the machine being examined. Finally, service quality will always be guaranteed as long as the server and the software are functioning well, since the function can boast of a better memory than the most diligent service person, and has none of the service person’s distaste for repetitive work (Deighton, 1996).

6. Order status checking The Dell site enables customers to track their orders on-
### TABLE 1
Forms of Interactive Functions

<table>
<thead>
<tr>
<th>Customer Support</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Software downloading</td>
<td>surfers download software from a site, usually for free.</td>
</tr>
<tr>
<td>Online problem diagnostics</td>
<td>customers report their problem spots and this function helps them to locate the problem exactly.</td>
</tr>
<tr>
<td></td>
<td>Whenever possible, “trouble shooting” suggestions are given.</td>
</tr>
<tr>
<td>Electronic-form (e-form) inquiry</td>
<td>e-forms on which customers can type in online inquiries regarding the products or the firm.</td>
</tr>
<tr>
<td>Order status tracking</td>
<td>customers can track the status or whereabouts of their orders online in real time.</td>
</tr>
<tr>
<td>Comment</td>
<td>customers can fill out e-forms to express their opinions about the company, products, and the site.</td>
</tr>
<tr>
<td>Feedback</td>
<td>customers can type in their feedback in e-forms with regard to specific questions raised by the site.</td>
</tr>
<tr>
<td>Site survey</td>
<td>e-form survey for visitors that solicits their comments on the content and design of the site.</td>
</tr>
<tr>
<td>Product survey</td>
<td>e-form survey designed for measuring customer satisfaction about firm’s offerings and service.</td>
</tr>
<tr>
<td>New-product proposal</td>
<td>e-forms for customers to write about their expectations of new products and their suggestions for new products.</td>
</tr>
<tr>
<td>Key word search</td>
<td>a function that allows a visitor to pinpoint the particular information he or she is interested in.</td>
</tr>
<tr>
<td>Personal-choice helper</td>
<td>a function that can make relatively sophisticated recommendations on consumers’ choices based on their input of preferences and decision criteria.</td>
</tr>
<tr>
<td>Virtual reality display</td>
<td>a function that permits consumers to virtually “feel or experience” the product.</td>
</tr>
<tr>
<td>Dealer locator</td>
<td>a function that allows users to pinpoint a dealer closest to his or her residence.</td>
</tr>
<tr>
<td>Electronic coupon</td>
<td>distributed online and can be used in retail stores.</td>
</tr>
<tr>
<td>Usergroups</td>
<td>cyber community for product users.</td>
</tr>
<tr>
<td>Online order</td>
<td>an option to order products online.</td>
</tr>
<tr>
<td>Sweepstakes/prize</td>
<td>events held to attract surfers and to encourage surfer participation by special incentives.</td>
</tr>
<tr>
<td>Multimedia shows</td>
<td>quicktime movie, streamline video, and other forms of multimedia presentations.</td>
</tr>
<tr>
<td>Push media</td>
<td>similar to TV channels. Users select to participate and receive information directly to their screens on a regular basis.</td>
</tr>
<tr>
<td>Interactive job placement</td>
<td>online resume building, personal career goal check, etc.</td>
</tr>
<tr>
<td>Electronic post card</td>
<td>written by senders online and to be retrieved by recipients.</td>
</tr>
<tr>
<td>Surfer postings</td>
<td>a section for surfers to write their stories, opinions, or others.</td>
</tr>
<tr>
<td>Games</td>
<td>online games.</td>
</tr>
</tbody>
</table>

*Advertising/ Promotion/Publicity*

*Entertainment*
line in real time. This capacity challenges the firm to stick to its delivery time claims, and this, in turn, may give customers added confidence in purchasing Dell products. If this function performs satisfactorily, then customers may achieve positive post-purchase reinforcement of their product-choice decisions.

7. Site survey The BMW USA site had online survey forms for visitors to fill out, with a view to understanding their perceptions and evaluations of the site. This function provides one way of establishing a dialogue (Berthon et al., 1996) between site visitors and the firm’s site design team which can then use such feedback to improve the site.

8. Product survey The BMW USA site also has an electronic form of survey about the company’s products. Again, as in a site survey, a dialogue between the customers and the firm itself can be established through this channel.

9. New product proposal The Kenwood USA site allocated a special section in which visitors can express their opinions on their ideal new products. By doing this, surfers are likely to feel that the firm values their opinions and their self-perceptions might therefore be positively enhanced.

10. Key word search A surfer interested in Kodak’s foreign operations can simply type a key phrase “foreign operations” in the “search” section of the site. Then all the relevant information contained in the Kodak site will be shown on the screen. Since the organization of Web site content is nonlinear in nature (Hoffman and Novak, 1996), it is crucial that a Web site is nonlinear in nature (Hoffman and Novak, 1996), it is crucial that a Web site is

11. Personal choice helper The Internet gives firms the unique opportunity of moving consumers from being potential buyers to purchasers by actively helping them make their final purchasing choices. This is illustrated in the Ford site: once a surfer indicates that he or she is interested in a certain model, (say, Escort), then the site can instantly calculate the required monthly payment for the model if they specify the amount of down payment and APR rate. A comparison of lease versus buy option is also immediately available. Getting the financial information in a handy fashion significantly reduces consumers’ time spent and lessens their efforts in the prepurchase information search phase.

As posited by Winer et al. (1997), the applications of new information technology (such as Peapod) may significantly affect the traditional ways consumers make choices. They argued that the ability of Peapod to sort brands easily on any of the product attributes may affect consumers’ decision rules and ultimately their brand choice.

12. Virtual-reality presentation A visitor to the BMW USA site who is interested in getting a real “feel” for the M3 model can virtually examine the interior and exterior of the car and experience the fast ride. While physically the visitor is not moving, the virtual-reality function enables him or her to “test drive” the vehicle—an experience that is unimaginable in a traditional marketing setting. This interactive function ensures that potential consumers of the BMW model are no longer passive recipients of its Web marketing communication. They can actually participate and be a part of it. Again, this is yet another interactive technique that firms can employ to help its potential consumers make their purchasing choices.

13. Dealer locator A fundamental issue that consumers must address during decision making is where they should buy a product (Engel et al., 1993). A firm can provide such information in its presence site by employing a dealer/retailer locator function. For instance, the “where to buy” function in the Acer site can direct a visitor quickly to the closest retail store that carries Acer products.

14. Electronic coupon The Burpee site offers electronic coupons for its gardening products. Surfers can print the coupons and use them in retail stores. Compared to traditional coupon distribution, the company can monitor and even control the number of e-coupons in circulation. For instance, the company can withdraw the e-coupon section once there are too many downloads. In addition, the cost of setting up the e-coupon section is nominal for the firm. Further, since the e-coupon is there for the consumers to actively seek out, it is quite likely that consumers who download e-coupons will use them in real purchasing. Thus, the firm sending out e-coupons will have a better estimate of how many of them might be redeemed whereas in traditional situations the company has no idea how many consumers have actually clipped the coupons from the print media.

15. Online ordering of goods A visitor to the Gateway2000 site can order his or her computer online. After specifying the designed model, the visitor can choose from a number of modes of payment, e.g., secured server credit, telephone, or check by mail. While online shopping at this time is
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relatively infrequent (Gupta, 1997), this option provides innovative visitors with an alternative way of making a purchase. With the continual growth of Web commerce, it is not surprising that the online ordering function is continuing to find applications on more and more ISPs.

16. Online contests/prize The Acer site has a monthly sweepstakes campaign that invites visitors to participate by filling out an electronic entry form in which they are also asked to provide some personal information. While visitors are likely to view such message types as advertising (Ducoffe, 1996), they might benefit (e.g., by winning prizes) from such events and the participation requires very little effort. Further, if such an even is held constantly, it is quite likely that visitors may come back regularly. An online contest with prizes may serve the same purpose.

17. Push media The GM site can “broadcast” its content to interested users. Once a visitor registers to participate, the GM site will deliver multimedia-rich information content about GM products and events to the user’s screen. Users of the GM channel can even specify which type of information they would like to receive (e.g., new vehicle information). This technique allows visitors of the GM site the convenience of receiving information tailored to their personal interests. While it still retains the interactive nature of the new media, it also provides users with the same ease associated with TV viewing.

18. Interactive job placement The presence site of Texas Instrument (TI) is one of the best examples of how companies can utilize their Web sites to improve their recruiting procedure. The “employment” section in the site contains a list of openings, a job-search planning guide, a fit-check questionnaire which “measures” the degree of the applicant’s fit with TI’s culture and organizational goals, and an online resume builder which allows the visitor to type in relevant information for constructing a resume. The highly interactive nature of this section provides the means to treat each online applicant in an individual manner. Even for those who are not applying for TI jobs, this section may project a favorable image of a company that is considerate to its potential employees.

19. Electronic post card Kellogg’s site allows visitors to send electronic post cards to their friends right from the site. Senders can simply type in their messages and then choose the graphs, settings, etc., to build their cards. The recipients, on the other side, will come to the Kellogg’s site to check the cards out. Borrowing the concept of aesthetic enjoyment (McQuail, 1983), we anticipate that this function serves not only to furnish real benefits to surfers but also to entertain visitors by fulfilling their needs for aesthetic enjoyment.

20. Surfer postings The BMW site asks customers to write down their driving experience with BMW cars on an online form. It will publish those details on the site. In a sense, consumers are also content providers to the site. In encouraging consumers to write out their consumption experience, BMW is also encouraging them to relate their personal experience to the site content. The possible self-referencing effect is desirable to the firm in that the likelihood of information retrieval may be enhanced (Engel et al., 1993).

21. Usergroup The Agfa site has a special section for its user groups on different topics, e.g., scanners, or photo imaging. Users of Agfa products can share their experiences with others and also ask questions which may be answered by others. According to Berthon et al. (1996), user groups may build a community atmosphere in the site, which in turn may make this site a satisfying and adaptive marketplace option.

22. Games Young people are known for their fondness of computer games since they provide escapism and emotional release (McQuail, 1983). This is also illustrated in the fact that the 1996 sales in the United States for software games totals $1.1 billion (cnn.com, 6/22/97). Given that an average surfer in the United States is in the lower 30s (Gupta, 1997), it is not surprising that firms are increasingly using games as incentives to attract surfers to visit their ISPs. For instance, the Electrolux site offers several cleverly designed games that can be related to the firm’s product, such as a game featuring an Electrolux vacuum cleaner sucking bugs in a room. The interactive games aim not only to entertain consumers in the cyberspace but also to reinforce their impressions about the company’s products. Though a majority of visitors may recognize that games are part of the firm’s advertising (Ducoffe, 1996), they may still love to play because games provide escapism, diversion, and possibly emotional release (McQuail, 1983).

23. Multimedia presentations The Coca-Cola site neatly slides in multimedia presentations that have several interesting themes, e.g., mini-movies about its animated spokesperson the “Sun.” New inventions in Web technology today such as Quick Time movies and xilivescreen now allow multimedia techniques to make much more sophisticated and integrated presentations in the form of video, sound, music, graphics, and text. This enhanced capability not only makes surfers’ experiences more fun and stimulating (Spalter, 1996) but also gives surfers the flexibility...
to activate only a needed part of the presentation, e.g., movie frames four to eight.

Assessing site attractiveness
In their exploratory work concerning new metrics for Web-measurement standards, Novak and Hoffman (1996) argued that the degree to which the visitor interacts with the target ad should be measured in addition to examining purely exposure measures such as “click through rates.” They suggested that such an interactivity metric could be based upon duration of time spent viewing the ad, the depth or number of pages of the target ad assessed, or the number of repeat visits to the target ad. Such measures inevitably require in-depth monitoring from Web masters, and it is quite unlikely that such information will be disclosed to a firm’s competitors.

The typology of measuring Web-site efficiency proposed by Berthon et al. (1996), in which awareness, locatability/attractability, contact, conversion, and retention efficiency measures are constructed, seems to be applicable for an individual site that is aiming to improve its site efficiency. All the information the firm can collect will be site specific, and it can only compare its current site attractiveness to its past records. If the firm wants to compare its site attractiveness to its competitor’s by using such absolute measures, then it has to gather such information from its competitors’ sites. Obviously, the difficulty in obtaining such competitive information is easy to realize. A new Web-based methodology of measuring the effectiveness of promotional content (Dreze and Zufryden, 1997) by tracking time spent and page visited also seems to fall into this category. In general, the above measures might be difficult to implement for a site (e.g., Nike site) that is concerned about its Web-site attractiveness for target surfers (e.g., young sports fans) relative to its competitors (e.g., Reebok site). In this scenario, an aggregate level indicator of relative Web-site efficiency (such as Web-site rankings or a list of “top sites”) may be a more practically available benchmark for firms to refer to.

Lycos Top 5% Sites List
Previous research (Holbrook, 1992) has used product-rating reports such as Consumer Reports to study important issues such as “brand equity.” In a similar vein, we also need Web-site rankings to carry out our research. Fortunately, at the aggregate level, a few indicators now exist for signaling the excellence of Web sites. They differ in the objects they survey and in the ways they conduct surveys to construct such indicators. For example, the “Hot 100 Web Sites List” is primarily based on a ranking of the real number of hits (which itself is under criticism for its incomparability across sites, see Novak and Hoffman, 1996). Another approach is to rely on expert reviews; an example of this approach is the Lycos Top 5% sites list. As a pioneering Web-site rating agency, the Lycos Top 5% sites list has been reviewing Web sites and recommending “top 5% sites” in lists since 1994. Being an integrated operation of the popular Lycos search engine, the Lycos Top 5% sites list is regarded as one of the most authoritative Web-site rating agency in the WWW (Vendittip, 1997). Another nice feature of the lists is that it maintains a separate list for different categories, e.g., business, education, etc. Since there is a special list for top 5% corporate homepages, this makes the Lycos Top 5% sites list especially relevant to our study which probes for factors that lie behind successful IPSs of companies.

The Lycos Top 5% sites list also has publicly announced reviewing guidelines that make it more credible. According to the guidelines, Web sites are evaluated by independent reviewers (experts) on three aspects—content, presentation, and experience. Content refers to the broadness, thoroughness, accuracy, and updatedness of the information. Presentation refers to the beauty and originality of design. Finally, experience refers to the intangible asset of Web-site fun or personality.

Firms following conventional marketing practices seek to enhance consumer trials of their products through various means, e.g., samples, coupons, advertising, or publicity (such as being recommended by Consumer Reports). Similarly in Web marketing, firms seek to bolster their Web presence by attracting more visitors to their IPSs. To accomplish this goal, firms can spend more on advertising their Web site—clearly an important way. The second mechanism can take advantage of positive reviews of their IPSs from independent experts—something comparable to Consumer Reports’ ratings. In our opinion, being included in the Lycos Top 5% sites list represents such a mechanism. In this research, we use the Lycos list and focus on investigating how firms can get their IPSs into this list.

RESEARCH DESIGN
Sample
Our sample consists of 101 Internet presence sites (IPSs). Forty-nine of them were in the Lycos Top 5% list for corporate homepages, whereas the remaining fifty-two were not in that list. We also classified the IPSs into “flat ad” sites and “content/image” sites following the guidelines of Hoffman and Novak (1996). The time frame of the sampling was restricted to mid January and mid March in 1997, during which period there was no change in the Lycos list with respect to our sample sites.

All of the corresponding companies are manufacturers of consumer goods—both durables (e.g., automobiles) and nondurables (e.g., soft drinks). We picked gen-
eral consumer-goods companies (e.g., foods, electronics, medicines, etc.) because they appear to be more relevant to "average" consumers than are companies that produce industrial goods or specialty goods (e.g., hearing-aids).

Our sample encompasses a wide spectrum of product categories, and it includes well-known companies from North America, Europe, and Asia. Since we are also interested in cross-comparison among sites in the same industry, we also deliberately selected some from the same product category (e.g., personal care) of companies that are usually categorized as market leaders (e.g., P&G), market challengers (e.g., Unilever), and market followers (e.g., the Bodyshop). In terms of its variety and depth, we can assume that our sample is "representative" of major manufacturers of consumer goods. Yet we caution that it is still a judgmental sample.

Table 2 gives a list of product categories and the number of firms selected within each category. Sites classified as "top 5% sites" or "flat ad sites" are also indicated in this table.

**Data processing**

We choose to apply content-analysis-type techniques to our investigation of the 101 Web sites. While the application of this technique has been reported in the advertising and marketing literature (e.g., Resnick and Stern, 1977), its application in Web advertising is relatively new. A recent work by Philport and Arbittier (1997) expanded the guidelines by Resnick and Stern (1977) and applied the traditional content-analysis technique to examine the information content of Web advertising. Their results were then used in comparing different brand communication styles in established media and the Internet.

Following guidelines similar to that adopted by Philport and Arbittier (1997), we constructed an "Interactivity Index" for each site to denote the maximum number of interactive functions within that site. This interactivity index (II) then can be used to quantify the highest possible level of interactivity a visitor may experience in this site.

Since our analysis also endeavors to explore what type of interactivity functions may be more effective, we also constructed five groups of interactive marketing functions, each consisting of interactive functions that are associated with a

<table>
<thead>
<tr>
<th>TABLE 2</th>
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</thead>
<tbody>
<tr>
<td><strong>IPSs Used in the Study</strong></td>
</tr>
<tr>
<td><strong>Category</strong></td>
</tr>
<tr>
<td>Athletic foot wear</td>
</tr>
<tr>
<td>Automobile</td>
</tr>
<tr>
<td>Battery</td>
</tr>
<tr>
<td>Beer</td>
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<tr>
<td>Clothes</td>
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<tr>
<td>Film</td>
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<tr>
<td>Food</td>
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<tr>
<td>Gardening supply</td>
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<tr>
<td>Gasoline</td>
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<tr>
<td>Home appliances</td>
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<td>Home electronics</td>
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<td>Office supply</td>
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<td>Personal care</td>
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<tr>
<td>Soft drinks</td>
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<td>Tires</td>
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<tr>
<td>Toys</td>
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</table>

*denotes Lycos Top 5% site, †denotes "flat ad" site.
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Marketing function (see Table 1). Our mutually exclusive grouping here was largely based on two previous studies: one study (Berthon et al., 1996) outlined possible utilities of Internet presence sites and the other one (Emerick, 1995) specified dialogue, research, service, support, lead acquisition, and ordering as major forms of interactivity. As discussed earlier, Web sites could have varying goals. Following Hoffman et al. (1995), we divided the IPSs we visited into two groups: "content/image rich" type and "flat ad/cyber-brochure" type sites.

RESULTS

Overview of our findings

Supporting our basic hypothesis, we found that the degree and nature of interactivity have a statistically significant effect on the quality of corporate Web sites. We found that the greater the degree of interactivity in a site, the greater was its likelihood of being included in the Lycos Top 5% Sites list. Examining different groups of interactive functions, we found that the interactive function group of "customer support" had a significant positive effect on the quality rating of Web sites. We also found that forms of interactions used varied logically with the differing objectives of the Web sites. Finally, we observed a pattern where the impact of interactivity mechanisms was a little stronger for content/image type of sites than for flat ad/cyber-brochure type sites. (Each of the following subsections has the following structure. It first gives a summary of our findings followed by the analytical details.)

Usage frequency of different interactive functions

We examined our Web-site sample to get an idea of how often various forms of interactive functions were being used. We found, for example, that the following forms occurred relatively more frequently in the sites we studied: "key word search," "dealer locator," "software downloading," "comment," "online ordering," "sweepstakes," and "surfer postings." Their exact percentage of occurrences are shown in Figure 1.

The overwhelming presence of the "key word search" function (64 out of 101) clearly illustrates a primary perceived advantage of Web-based communications, i.e., firms can set up complicated IPSs to cater to a wide audience yet still easily retain the sensitivity to be able to respond to individual-level information needs. "Dealer locator" also has a high 36 percent percentage occurrence rate as we expect that firms provide purchasing-location knowledge in order to convert interested potential buyers to actual purchasers. "Software downloading" also appears to be popular with its 31 percent rate, probably because it provides unique benefits which are otherwise unavailable in traditional media environments. "Comment" enjoys a 28 percent percentage rate, indicating perhaps that surfers prefer two-way communications to simply being passive recipients of firms' communications. The relative popularity of "online ordering," "sweepstakes," and "surfer postings" also seemed to suggest that Internet surfers value not only the tangible benefits (convenience in ordering or a prize) but also less tangible benefits such as good feelings (postings) in an IPS.

The percentage occurrence rates of most of the remaining interactive functions are in the neighborhood of 10 to 20 percent: personal-choice helper (18 percent), site survey (17 percent), product survey (17 percent), multimedia show (16 percent), games (15 percent), user group (12 percent), interactive job placement (12 percent), and feedback (11 percent).

The percentage occurrence rates for the remaining few interactive functions are lower. These functions may be industry specific as in "problem diagnostics" (6 percent) which are commonly used by computer companies, or they might be site idiosyncratic as in "electronic post card" (9 percent), "new-product proposal" (4 percent...
percent), and “electronic coupon” (2 percent). The very low rates (1 percent) for the remaining three interactive functions may be due to the innovative nature of the marketing communication used (e.g., push media) or due to high expense (e.g., for virtual reality or order-status tracking)—making them less appealing for a majority of the IPSs.

Site goals versus forms of interactive functions

Considering that firms may have different goals in setting up their IPSs, we would expect that the type of interactive functions employed might also vary with site types. Our analysis did uncover some interesting patterns. For example, we found that the presence of “dealer locator” was not related to site goals whereas that of “online order” was significantly related to site goals. It was evident from the data that “online ordering” was more frequently associated with content/image sites than with flat-ad-type sites. In contrast, the “dealer locator” function was fairly evenly associated with both categories of Web sites. This kind of finding indicates that differences in site objectives are related to the differential benefits of alternative types of interactions. Consider two sites, one which is not more than a cyber-brochure, and another which has enhancing product sales as a goal. The former might include the “dealer-locator” function simply to provide a broader range of information about the company’s setup to readers of its corporate brochure. The latter type of site may want to include the “dealer-locator” function with an intent to increase the probability of sales in the near future.

Our calculations here applied the Chi-square-analysis method to situations not involving small-cell counts. We tested null hypotheses of the form: “There is no significant relationship between Web site goals and the existence of a certain type of interactive function.” For each of the 12 forms of interactive functions, we performed a Chi-square analysis with the existence/nonexistence of the individual function as a categorical variable and the classification of site goals (content/image versus cyber-brochure) as the other categorical variable. The test results indicated that “dealer locator,” “games,” “postings,” and “comment” were not associated with goals. In other words, our data suggested that there was no relation between each of these four specific functions and different types of site goals. Thus, these functions might be suitable for use by “content/image” type of sites as well as by “flat ad/cyber-brochure” type of sites. On the other hand, we did find that the following functions were associated with different types of site goals: “online ordering,” “downloading,” “site survey,” “product survey,” “contest/prize,” “personal choice helper,” “multimedia show,” and “site search” (p < .05 in each case). Since these functions were used more frequently among “content/image” type of sites, we could conclude that these functions might be more closely aligned to the goals of the more complicated “content/image” sites and less so with those of “flat ad/cyber-brochure” sites.

Impact of interactive functions on the Lycos Top 5% Site List

Here we present different aspects of the issue of how interactivity impacts Web site attractiveness—as indicated by the probability of a site’s inclusion in the Lycos Top 5% Sites List. First, we found that increase in the degree of interactivity had a significant positive effect on Web site attractiveness/quality. Second, we detected that certain types of interactive marketing functions, e.g., the “customer support” function, have relatively stronger effects on site attractiveness. Third, we also observed that the impact of interactive marketing functions might differ in their magnitudes by site goals—though such a difference was not statistically significant. We did observe the general pattern that as sites goals change from those of a “cyber-brochure” to those of a “content/image,” the impact of “customer support” functions on an IPS’ likelihood of getting into the Lycos Top 5% list becomes slightly stronger.

In our logit model 1, we used the inclusion/noninclusion of the Lycos Top 5% Sites List as a dependent variable; the independent variable was the “interactivity index” (II)—the total number of interactive functions found in a given IPS. Our results here indicated that as II gets larger, the probability that the IPS will get into the Lycos list also gets larger. For example, if an IPS has no more than four interactive functions, then the odds of it being “in the top list” versus “not in the top list” will favor the latter. However, when II is more than four, the odds start to favor “in the top list.” In fact, the odds of “top list” versus “not in top list” are two to one for an IPS that has eight interactive functions.

The analytic form of our logit model 1 is given as follows:

\[
\text{Prob (in Lycos list)} = \frac{e^{\alpha + \beta II}}{1 + e^{\alpha + \beta II}}
\]

where II is the interactivity index or the predictor, \(\alpha\) is the intercept, and \(\beta\) is the slope coefficient in the model.

The model fitting was performed by the logistic procedure in SAS (1990), and major output results are listed in Table 3. The log-likelihood ratio test (Agresti, 1990) used in this procedure indicated that our model fit was significant at \(\alpha = 0.1\) level (\(p < 0.07\)). The parameter estimate of the Interactivity Index (II) was also significant.
TABLE 3
Results from Logit Model Runs

<table>
<thead>
<tr>
<th>Variable</th>
<th>Logit Model 1</th>
<th>Logit Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model fit: p-value of the</td>
<td></td>
</tr>
<tr>
<td>Log-Likelihood Ratio Test</td>
<td>p &lt; 0.07</td>
<td>p &lt; 0.05</td>
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<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Interactivity Index</td>
<td>0.178 (p &lt; 0.08)</td>
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<tr>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Coefficient Estimates</td>
<td>0.178 (p &lt; .08)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Percentage of correct predictions for Logit model 2 using the leave-one-out method</td>
<td>61</td>
<td></td>
</tr>
</tbody>
</table>

(p < 0.08). Further, the positive parameter estimate (0.178) clearly suggested that the probability of an IPS being classified into the Lycos Top 5% list increases with the increase in II.

In our logit model 2, we again used the inclusion/noninclusion of the Lycos Top 5% Sites list as a dependent variable; the independent variables were the five interactive marketing functions as defined previously in our “Data processing” section. Our results here indicated that as the value of “customer support” (i.e., total number of individual interactive functions belonging to the “customer support” domain) gets larger, the probability that the IPS will get into the Lycos list also gets larger.

Major output results of our logit model 2 are listed in Table 3. The log-likelihood ratio test (Agresti, 1990) used in this procedure indicated that our model fit was significant at α = 0.05 level (p < 0.05). Among the five predictors, only the parameter estimate of “customer support” was significant (p < 0.01). Further, the positive parameter estimate (0.885) clearly suggested that the probability of an IPS being classified into the Lycos Top 5% list increases with the increase in the value of “customer support.”

For example, if the value of “customer support” is just 1 in an IPS (e.g., it has a “software downloading” section on site), then the odds of it being in the Lycos “top list” versus “not in top list” is about 1:1. However, if this IPS adds another interactive form of “customer support” (e.g., it now adds a “comment” section), then the odds can be elevated to about 2.5:1 (holding other forms constant). That is, this IPS is now more than twice as likely to be classified into the Lycos list.

One interesting question that might naturally arise from the above discussions is: How well does this logit model predict the classification of Lycos Top 5% Sites List for a “future” observation? One way of answering this question was to split our original sample into a model calibration sample and a holdout sample for prediction. In view of our sample size (101), such an approach might be appropriate. A better way to provide an answer to the above question is to use the “leave-one-out” method (closely related to jackknifing)—which we used here.

Lachenbruch and Mickey (1968) originally proposed the “leave-one-out” technique. Not only does this method yield almost unbiased estimates of misclassification probabilities but also it is not sensitive to normality assumptions (Dillon, 1979). The method involves removing one observation i from a sample size of n, estimating model parameters with the n-1 size sample, and predicting the binary response (in our case) probability for the removed observation i, using parameters obtained from the calibration sample size of n-1. The procedure is then repeated n-1 times resulting in a total of n holdout predictions.

Using this method on our logit model 2, we obtained a correct prediction rate of 61 percent. This is higher than a prediction rate that one would get by random chance—clearly indicating that our model has satisfactory predictive ability.

This study also probed into other aspects of the effect of interactivity mechanisms on site attractiveness. For example, we examined whether this effect differs across sites with different site goals. To answer this research question, we used a standard procedure in logistic regression to look for the existence of possible interaction effects between site goals and the most important interactive marketing function—“customer support.” We observed a general pattern in the data which
showed that increase in an interactivity mechanism (i.e., customer support) was more likely to propel a "content/image" type site (than a "cyber-brochure" type site) into the Lycos Top 5% List; the difference in the magnitude of this effect across site types was, however, not significant.

We used a standard variable selection procedure in logit models (Hosmer and Lemeshow, 1989) to search for any interaction effect. First, a logit model with "customer support" as the only independent variable and the classification of Lycos Top 5% sites as the dependent variable was built and the model fit was established (p < 0.05). The coefficient estimate for "customer support" was 0.89. Then, a categorical "site goal" variable (1 for content/image type of sites and 0 for cyber-brochure type of sites) was added into the model. A Log-likelihood ratio test indicated that the addition of the "site goal" variable significantly increased the logit model fit. Thus, this variable should be kept in our logit model. Coefficient estimates for "customer support" and "site goals" were 0.76 and 0.51, respectively.

Following that, an interaction term of "customer support" and "site goals" was included in the logit model as the third predictor. For this model, coefficient estimates for "customer support," "site goals," and "customer support × site goals" interaction term were 0.62, 0.38, and 0.18, correspondingly. The positive coefficient estimate for the interaction term thus implied that the impact of "customer support" on Lycos Top 5% Sites List was larger for "content/image" types of sites than for "cyber-brochure" type of sites. According to those coefficient estimates, for a content/image site, the predicted probability of getting into the Lycos list is 14 percent higher than that for a cyber-brochure site—when the value of "customer support" is 1. In addition, such a difference in predicted probabilities increases to 17 percent when "customer support" is increased to 2. However, a closer examination through a Log-likelihood ratio test revealed that the inclusion of the interaction term did not significantly improve the logit model fit (p > 0.10). In other words, this interaction term was not significant.

Based on the above three different logit model runs, we could conclude that the impact of "customer support" on site attractiveness seemed to be greater for content/image type of sites than for cyber-brochure type of sites; such a difference in the magnitude of impact was, however, not statistically significant.

DISCUSSIONS AND MANAGERIAL IMPLICATIONS

This study identifies the interactivity mechanism as a significant factor affecting the attractiveness of Internet Presence Sites (IPSs). It also highlights the importance of certain dimensions of "interactivity," namely those interactive functions that serve primarily as customer-support functions. Hence, this research contributes to a better understanding of the success factors of quality IPSs. In accordance with our conclusions, we suggest that firms should critically examine the degree and forms of interactivity in their corporate Web sites and improve the designs accordingly. This will provide two benefits. First, it will help them get their Web sites included in a Lycos type list. Quality recognition of this type will encourage Web users to visit the firms' IPSs. Second, the Web sites themselves will be more appealing to those people who actually visit the sites. If that happens, then as Berthon et al. (1996) pointed out, visitors to those highly interactive sites will be more likely to get actively involved in those firms' Web communications—which is a very important reason for many firms to set up their IPSs in the first place.

This research also summarizes a variety of interactive functions that are currently employed by major consumer goods companies. Some of them are becoming "near standard" (e.g., key word search) while some of them are just emerging (e.g., push media). While a firm does not need to incorporate every single interactive function into its IPSs, it is definitely desirable for a firm to increase the level of interactivity in its IPS at least to the same level that is being employed by its best Web competitor (which might be in the Lycos Top 5% list). This rationale follows from one of our main conclusions that the increase in site interactivity will be helpful in elevating site recognition (i.e., being included in the Lycos Top 5% Sites List). Hence, given other things constant, an IPS with a better "Web" reputation (e.g., Frigidaire in the Lycos Top 5% Sites List) is more likely to attract visitors and get them involved than its competitor site (e.g., Whirlpool—not in the list), even though otherwise they may be providing similar kind of information (e.g., product and usage information about home appliances).

Another finding from this study calls for firms to choose different combinations of interactive functions that fit well into their Web communication strategy and site goals. For instance, such interactive functions as "dealer locator," "games," "postings," and "comment" are used by "content/image" type of sites as well as by "cyber-brochure" type of sites. So both type of sites can experiment with these four functions. On the other hand, interactive functions such as "online ordering," "downloading," "site survey," "product survey," "contest/prize," "personal-choice helper," "multimedia show," and "site search" are used more frequently among "content/image" types of sites. If we can make the realistic assumption that such market practices are compatible with firms' overall communication...
we suggest that firms should critically examine the degree and forms of interactivity in their corporate Web sites and improve the designs accordingly.

strategies and objectives, then we can suggest that IPSs that are more oriented toward image-building or selling should consider planting these functions into their sites.

Our study also highlighted the particular importance of those interactive functions that are primarily geared toward "customer support." This includes activities such as "software downloading," "online problem diagnostics," "order tracking," "comment," and "feedback." Clearly, this interactive marketing function group can efficiently handle a portion of conventional customer support tasks that are commonly performed by firms' customer-support representatives. Not only is such service less costly, it is also less subject to quality variations caused by human errors. In essence, we would argue that this interactive marketing function exemplifies the new model of customer support in the interactive age—taking customers' inputs and serving each of them as a unique individual.

On the other hand, we also have to be reminded that the pace of change in Web communications is very fast. Thus, a firm should not be content with its present high Web site ratings but should closely monitor how other interactive marketing functions may be gaining momentum. For instance, "personal-choice helper" is one such remarkable interactive marketing function that may in the future significantly affect how people make product choices in the hyper-media mediated environment (Winer et al., 1997). The "push media" technology in the "advertising/promotion/publicity" interactive marketing function domain is also gaining ground very rapidly as can be seen by its integration into the latest release (October 1997) of the Netscape Navigator and Microsoft Internet Explorer (version 4.0). In fact, with the rapid increase in the usage of corporate Web sites as firms' communication vehicles (Williamson, 1997), the competition in building interactive IPSs to attract more surfers is likely to get more intense.

After all, just as firms in the same industry compete in the traditional marketplace, their IPSs are also competing for a common target population on the Web. If a company can provide a better-designed IPS then it is more likely to be noticed by Web-site rating agencies. As a result, it may be subsequently put into the lists of popular Web sites such as the "Lycos Top 5% Site" or some other list of a similar nature. Once the IPS is recommended in such a list, then it is more likely to attract more surfers. In addition, visitors are more likely to stay longer in browsing the more interactive IPSs (Novak and Hoffman, 1996).

Future studies can extend our research in several directions. For example, a more comprehensive study may look at the interactive aspects of IPSs. Under this scenario, to help a firm to evaluate its IPS relative to those of its competitors, researchers may have to get surveys from a number of sites.

Secondly, since our study used the Lycos Top 5% Sites ranking as a reference for Web-site excellence, we did not consider advertising spending level in our study. Thus the potential effect of advertising spending on site effectiveness was not examined in this study. Even though Lycos reviewing guidelines did not seem to suggest that there could be any disadvantage to smaller firms with less advertising spending, it still might be interesting to investigate whether firms' widely different advertising spending levels (e.g., P&G spent $2,622 million in 1996 whereas Packard Bell spent $114 million) had an impact on the contents of such a list. We also consider this an area for future research.

Another interesting subject of future research might be to investigate if different levels of ad spending directly affect the number of visits to a site. The data required for such research would be, however, difficult for researchers to get access to. At the minimum, it will require actual site-visit information from many firms plus information about advertising spending specifically designed to increase site visits. As exemplified by the increasing availability of the state-of-the-art scanner data in conventional marketing research, we expect that growth in Web-based studies will spawn creation of innovative data sets (e.g., click-stream data) that will facilitate implementation of some of the suggested areas of future research.

In the present research, we have focused on the variable of interactivity mechanisms in the World Wide Web. Specifically, our empirical analysis using econometric models have demonstrated that usage of interactive functions is likely to...
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to increase the attractiveness of corporate Web sites. Our findings also provide diagnostic information, which should help firms to redesign their Web sites for achieving greater marketing communication effectiveness. JAR

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