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INTERNET USES AND GRATIFICATIONS

A Structural Equation Model of Interactive Advertising

Hanjun Ko, Chang-Hoan Cho, and Marilyn S. Roberts

ABSTRACT: This study investigates the interactivity construct in terms of its antecedents (i.e., motivations for using the Internet) and consequences (i.e., attitude toward the site, attitude toward the brand, and purchase intention). A structural equation model was developed for an empirical test, based on uses and gratification theory applied to the interactivity context. A sample of 385 college students in the United States and Korea participated in the experiment. The findings suggest that consumers who have high information motivations are more likely to engage in human–message interaction on a Web site, whereas social interaction motivations are more strongly related to human–human interaction. Both human–message and human–human interactions had a positive effect on attitude toward the site, which leads to positive attitude toward the brand and purchase intention.

There is little doubt that the Internet has experienced an exponential growth in the number of users and has created enormous increases in its marketing and communication applications during a considerably short period of time. The Internet is considered to be the communities of people who use and develop the networks, as well as a collection of resources that can be shared at anytime from anywhere (Hoffman, Novak, and Chatterjee 1995). More than 606 million people had Internet access worldwide as of September 2002 (NUA Internet Surveys 2003). As surfing the World Wide Web and exchanging e-mail have become progressively easier, the Internet has become an integral part of daily life. Therefore, it is not surprising to find that an average of one out of three people in the United States and northern Europe uses the Internet (Kowalczykowski 2002). Given the current rates of growth, it was expected that people from all demographic and socioeconomic backgrounds would be Internet users, and on-line households would be similar to general households by 2004 (Pastore 2000). In addition, the Internet provides a number of benefits to both consumers and advertisers in the context of marketing.

Among many important features provided by the Internet, such as interactivity, irrelevance of distance and time, low setup

costs, targeting, global coverage, and ease of entry (Berthon, Pitt, and Watson 1996), interactivity has been considered one of the main reasons that the Internet is a unique marketing communication medium in comparison with other traditional media (Morris and Ogan 1996; Rafaeli and Sudweeks 1997). In other words, the Internet is considered a virtual marketplace where consumers interact with a wide array of product choices in a nonlinear fashion. Accordingly, emergence of the Internet brings about better interactive tools to strengthen relationships with customers regardless of their physical locations. Therefore, considering the importance of interactivity on the Internet, it is natural that many researchers in the field of marketing and communication have examined why and how people use interactive functions of the Internet in terms of their motivations and behaviors (Kaye and Johnson 2001). For instance, Korgaonkar and Wolin (1999) and Papacharissi and Rubin (2000) identified Internet usage motivations, while Novak, Hoffman, and Yung (2000) and Luo (2002) developed structural models based on Internet users' on-line experiences. Novak, Hoffman, and Yung (2000) offered one of the first studies in this area to examine the role of various variables, such as control, challenge, and focused attention, on consumer on-line experiences such as flow¹ and telepresence.² However, it still seems that only a crude understanding exists about the role of "interactivity" concerning the measurement of "advertising effectiveness." Therefore, it is imperative to examine consumers' psychological and behavioral aspects in Internet usage from the perspectives of interactive advertising.

The main objective of this study is to examine the causal relations among motivations for using the Internet and major interactive advertising variables. The major theoretical frame-

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work of this study is uses and gratification theory, because this theory has effectively provided one of the most relevant perspectives to explain psychological and behavioral dimensions involving mediated communication (Lin 1996; Ruggiero 2000). This study develops a structural equation model of interactive advertising that links a number of motivations for visiting marketing Web sites to interactive advertising variables, such as interactivity, attitude toward the site, attitude toward the brand, and purchase intention. The structural model is based on prior research, and is expected to integrate several previously unrelated streams of mass communications and advertising research. Once a structural model is developed, this study can explain the effects of motivations and interactivity in establishing consumers' attitudes and purchase intentions. Based on this model, the following presumed assumptions were examined: (1) people would actively engage in surfing the Internet to satisfy their particular needs, and (2) different motivations for using the Internet would affect the level of interactivity on the Web. Finally, interactivity of the Internet would lead to more positive attitudes toward a Web site and brand, as well as a higher level of purchasing intention.

LITERATURE REVIEW

Uses and Gratifications Research

Uses and gratifications theory is considered a psychological communication perspective that focuses on individual use and choice by asserting that different people can use the same mass medium for very different purposes (Severin and Tankard 1997). Specifically, audiences' psychological processes during exposure to various types of mass media have been examined by many uses and gratifications studies (Swanson 1987). The main objective of uses and gratification theory is to explain the psychological needs that shape why people use the media and that motivate them to engage in certain media-use behaviors for gratifications that fulfill those intrinsic needs (Lin 1999a; Rubin 1994). According to Katz, Blumler, and Gurevitch (1974), this theory assumed that media users are goal-directed in their behavior, and are active media users. Furthermore, they are aware of their needs and select the appropriate media to gratify their needs. Uses and gratifications theory has been considered an axiomatic theory in that its principles are generally accepted and applicable to various situations involving mediated communications (Lin 1999a). Therefore, uses and gratification studies have dealt with virtually every kind of mediated communication tool in traditional media, such as newspapers (Elliott and Rosenberg 1987), radio (Mendelsohn 1964) and television (Babrow 1987; Conway and Rubin 1991), and in nontraditional media, such as cable television (Heeter and Greenberg 1985), VCR (Cohen, Levy, and Golden 1988; Levy 1987), pager (Leung and Wei

1999), e-mail (Dimmick, Kline, and Stafford 2000), and the World Wide Web (Eighmey 1997; Ferguson and Perse 2000; Korgaonkar and Wolin 1999; Lin 1999b; Luo 2002; Papacharissi and Rubin 2000). Indeed, audiences' motivations and decisions to use a certain type of mediated communication tool have been investigated through this theory whenever a new technology enters the stage of mass communication (Elliott and Rosenberg 1987).

Internet Uses and Gratifications Research

The rapid growth of the Internet has strengthened the potency of uses and gratification theory because this medium requires a higher level of interactivity from its users in comparison with other traditional media (Ruggiero 2000). Rayburn (1996) also suggested that the Internet is "intentionally" consumed, as audiences must make purposive choices about which site to visit. For this reason, many researchers have examined psychological and behavioral aspects of Internet users to identify a set of common underlying dimensions for Internet usage motivations (LaRose, Mastro, and Eastin 2001; Lin 1999b). Korgaonkar and Wolin (1999) examined Internet users' motivations and concerns by categorizing 41 items into seven factors: social escapism, transactional security and privacy, information, interactive control, socialization, nontransactional privacy, and economic motivation. The study by Korgaonkar and Wolin suggested that people use the Internet not only for retrieving information, but also for seeking entertainment and escape. Lin (1999b) identified the relationship between Internet usage motivations and the likelihood of on-line service adoption. She argued that surveillance motivation shows the strongest effects for visiting both information and infotainment Web sites, whereas shopping sites are most strongly affected by entertainment and surveillance motivations. Papacharissi and Rubin (2000) also developed a scale of Internet usage motivations that consists of five primary motives for using the Internet: interpersonal utility, pastime, information seeking, convenience, and entertainment. Recently, Luo (2002) explored effects of informativeness, entertainment, and irritation on various on-line consumer behaviors, such as attitude toward the site, Internet usage, and satisfaction. In sum, uses and gratification theory has been quite effective in understanding motivations and needs for using the Internet. Nonetheless, some uncertainties still exist as to the relationship between Internet users' motivations for using the medium and interactive aspects when visiting a certain type of Web site.

Interactivity

Even though "interactivity" is not really new to communication fields, computer-mediated communication, especially via

the Internet, has added new levels of interactivity beyond what is available in traditional mass communication (Morris and Ogan 1996; Pavlik 1996; Rafaeli and Sudweeks 1997). For example, interactivity on the Internet allows consumers to actively participate in the persuasion process by controlling the advertising messages, amount of information, and order of presentation at any time, according to their needs and preferences (Hoffman and Novak 1996). In addition, the commercial value of interactivity has been considerably increased since the advent of the Internet.

The term "interactivity" refers to a complex and multidimensional concept (Heeter 1989; McMillan 2000; Newhagen, Cordes, and Levy 1996; Steuer 1992), and there is little agreement on a set of specific conceptual and operational definitions related to it (Kiousis 2002; Lombard and Snyder-Duch 2001; McMillan and Hwang 2002). Interactivity has been defined using various underlying dimensions, but two dimensions appear most frequently in the extant literature: human-message interaction and human-human interaction. These two dimensions hold promise for the examination of interactivity on the Internet because they serve as umbrellas for different definitions and dimensions of previous interactivity studies. For example, human-message interaction encompasses various dimensions/subconcepts of interactivity related to people's interaction with messages, such as choice, levels, control, manipulation, navigation, and/or modifying of form, content, messages, structure, pace, and so forth, while human-human interaction covers two-way communication, mutual discourse, feedback, interpersonal interaction, dialogue, role exchange, connectedness, responsiveness, and reciprocal communication between senders and receivers.

Human-Message Interaction

First, human-message interaction concerns users' interactions with messages. In traditional media, users have many choices, but little control over the messages. The only thing they can do is, for example, flip through the channels looking for messages that match with their own existing attitudes and interests (Klapper 1960; Westin, Mundorf, and Dholakia 1993). With interactive media, by contrast, users not only have many choices; they also have control over the messages. They can select, search, edit, and modify the form and content of mediated messages by interacting with the messages (Ariely 1998; Steuer 1992). In other words, users can manipulate and customize the messages by alternating colors, shapes, graphics, sounds, and order of message contents. In the context of interactive advertising, this kind of interactivity can be set in motion by clicking a series of hyperlinks as voluntary exposure to further information provided in the advertisers' Web site, using keyword search functions, consuming multimedia features or virtual reality

displays on the site, downloading software, playing games, and so forth (Cho and Leckenby 1999).

Human-Human Interaction

Human-human interaction denotes the two-way, reciprocal communication from senders to receivers and vice versa. In traditional mass media, there is usually only a one-way message flow from senders to receivers (Cook 1994; Flaherty 1985; Rogers 1995; Wells, Burnett, and Moriarty 1992; Williams, Rice, and Rogers 1988). In contrast, in new interactive media, for example, marketers can deliver information to individual consumers, and the consumers can provide feedback to the marketers.³ In the context of interactive advertising, this kind of interactivity can be illustrated as providing comments, feedback, and/or personal information to an advertiser, participating in a series of on-line discussions or forums, completing site or product surveys, writing new-product proposals, requesting on-line problem diagnostics, and so forth (Cho and Leckenby 1999).

Although they do not directly use the terms "human-message" and "human-human" interactions, there have been several studies explicitly denoting the two dimensions of interactivity (e.g., Cho and Leckenby 1999; Massey and Levy 1999; Straubhaar and LaRose 1996). For example, Massey and Levy (1999) explained interactivity as "content" and "interpersonal" interactions, and Straubhaar and LaRose (1996) described it as "modifying the message" and "real-time feedback."

In addition, multiple dimensions of interactivity identified by previous studies can be successfully classified into either human-message or human-human interactions (e.g., Ha and James 1998; Heeter 1989; McMillan and Hwang 2002). For example, the five dimensions of interactivity postulated by Ha and James (1998) can be summarized by two dimensions: Choice, information collection, and playfulness could be seen as a human-message interaction, whereas connectedness and reciprocal communication would probably belong to a human-human dimension.

In short, the current study employs the two-dimensional concept of interactivity, defined as "the degree to which people engage in advertising processing by actively interacting with advertising messages (human-message) and advertisers/consumers (human-human)." For each dimension of interactivity, we propose hypotheses with regard to its antecedents (i.e., uses and gratifications) and consequences (i.e., advertising effectiveness).

HYPOTHESIZED MODEL

Extending past research on the uses and gratification theory and interactivity on the Internet, this study proposes a hypothesized theoretical model that examines the relationship

between motivations for using the Internet, duration of time on a Web site, interactivity, attitudes, and purchase intentions (see Figure 1). Lin (1999a) argued that there are four major concepts of uses and gratification theory: motivations, uses, gratifications, and active audience. This model also consists of four major parts based on uses and gratification theory: general motivations before visiting a Web site, duration of time on a Web site, interactivities during a particular exposure occasion, and attitudes and purchase intentions after visiting the Web site. Both duration of time on a Web site and interactivities can be a result of either purposeful or habitual decisions by an active audience. These decisions are related to the antecedent conditions (i.e., motivation) and the consequent conditions (i.e., gratification) in media use (Rubin 1994). Blumler (1979) said that gratification is a subjective reaction of the individual to the media, and this concept indicates usage satisfaction of media audiences. Since this study examined a commercial Web site, individual gratifications were measured by advertising outcomes, such as attitude toward the site, attitude toward the brand, and purchase intention. Consequently, the following three major relationships are hypothesized in this analysis: (1) the effects of Internet usage motivations on exposure to a Web site and interactivity at the site, (2) the effects of interactivity on advertising effectiveness outcomes, and (3) the causal relationships among the advertising outcomes.

In the first instance, the objective of this study is to find an acceptable confirmatory factor analysis (CFA) measurement model by representing theoretical constructs of Internet usage motivations. According to Papacharissi and Rubin (2000), audience activity (i.e., Internet usage) is central to uses and gratifications research, and motivations are key components of audience activity. Based on the studies of Kaye and Johnson (2001) and Papacharissi and Rubin (2000), the present study postulates that there are four major motivations for using the Internet: information, convenience, entertainment, and social interaction. Previous research suggests that providing higher media usage value (e.g., entertainment, information, etc.) can motivate consumers to use the media more frequently by satisfying their intrinsic needs and motivations. For example, people who have high entertainment motivation are more likely to expose themselves to mediated contents (e.g., programs, advertising, etc.) than those who have low entertainment motivation (Alwitt and Prabhaker 1992). Therefore, it is reasonable to expect that people who have a high degree of certain motivations are more likely to stay at a Web site longer to satisfy their intrinsic motivations.

H1: Motivations for using the Internet will have a significant effect on the user's duration of time at a Web site.

Motivations for using a certain type of media differ from person to person (Flanagin and Metzger 2001). Whereas some

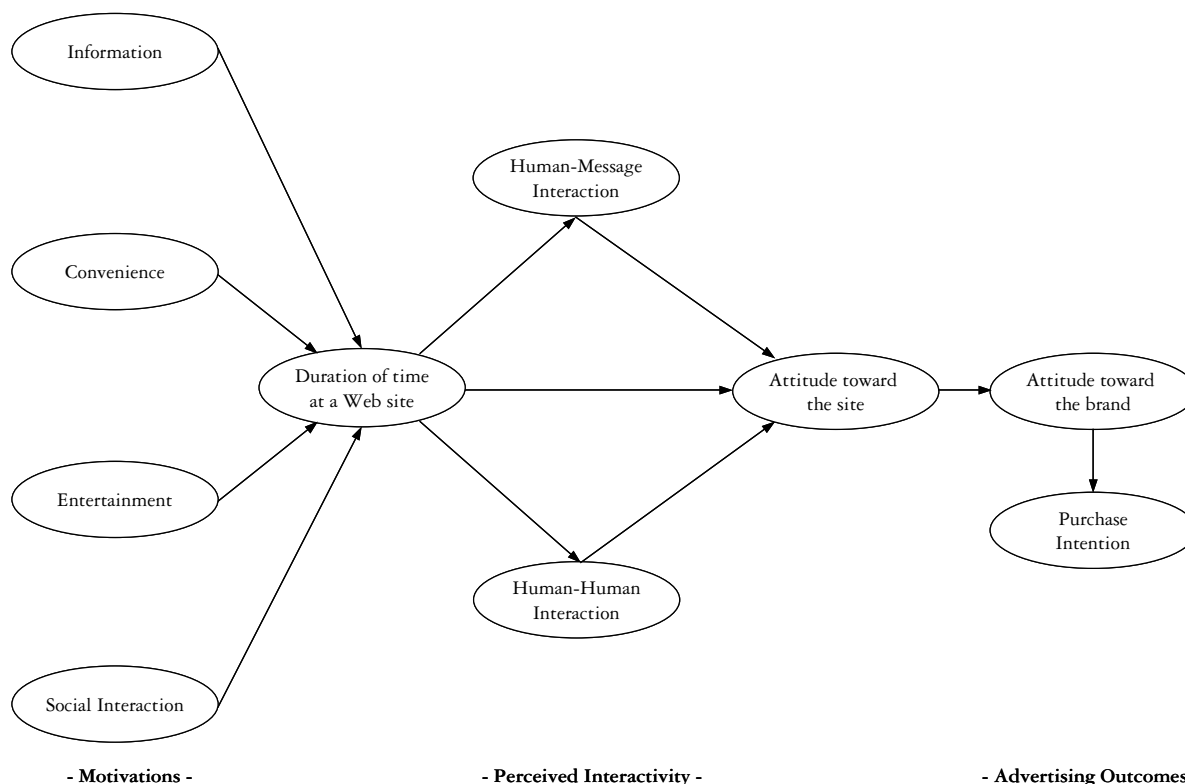
users visit a Web site because of multiple motivations, other users visit the site with a single motivation. Nonetheless, this study assumed that a certain type of interaction is strongly related with a certain type of motivation. In other words, people click onto deeper links for more information or interact with the content when they have high information motivation and perceive that the mediated content satisfies their information needs. For example, Maddox (1998) suggests that people visit informative Web sites more frequently when they have high information motivation. Ducoffe (1996) illustrates the importance of the information value of Web advertising in the interactive context. On the other hand, people actively participate in customer discussion on a Web site or provide their own opinions to the site when they have high social-interaction motivation. In other words, people may visit a Web site to exchange ideas, communicate with friends, or interact with other people when they have high social-interaction motivation. This may be why Web sites in highly collectivistic cultures (i.e., cultures that encourage group harmony and activities) are more likely to utilize Internet features that promote interactions among people (i.e., human-human interaction) (Cho and Cheon 2003). Therefore, applying the positive relation between consumers' motivations and their corresponding activities on the Internet, it seems reasonable to expect that people who have a high degree of certain motivations are more likely to actively interact with messages, advertisers, and/or consumers to satisfy their intrinsic motivations. Based on this assumption, this study generates the following hypotheses:

H2a: The information motivation for using the Internet will have a significantly positive effect on the human-message interaction.

H2b: The social-interaction motivation for using the Internet will have a significantly positive effect on the human-human interaction.

Once consumers visit a Web site and interact with advertising messages (human-message interaction) and with advertisers (human-human interaction), they may evaluate the mediated messages and message senders (i.e., Web site and brand). How, then, does interactivity relate to consumer evaluation of advertising? What are the consequences of interactivity on the Internet? Previous research suggests that better opportunities to process mediated messages lead to greater processing of the messages (Batra and Ray 1986; Cacioppo and Petty 1985; Rethans, Swasy, and Marks 1986). On the Internet, various interactive features can provide consumers with better opportunities to process information to meet their intrinsic needs. These increased opportunities to process information are found to result in increased thought production and a

FIGURE 1
Hypothesized Structural Equation Model of Interactive Advertising



greater proportion of product-related thoughts (Celsi and Olson 1988), which leads to positive evaluation of advertising and brand acceptance (Greenwald and Leavitt 1984). Though not vigorously tested as a causal relationship (e.g., using the structural equation modeling approach), there have been several research studies that found a positive relation between interactivity and attitude toward the Web site (Cho and Leckenby 1999; Jee and Lee 2002; Wu 1999). In addition, some studies have highlighted the positive role of interactivity on advertising effectiveness on the Internet, but without directly measuring attitudes toward the site (Cho 1999; Ghose and Dou 1998; McMillan and Hwang 2002). Therefore, it is legitimate to expect that high elaboration and more information processing through a high degree of interactivity on a Web site might result in better attitudes toward and evaluations of the Web site. This may be true regardless of the two dimensions of interactivity. Therefore, we hypothesize that

H3: Interactivity on a Web site will have a significantly positive effect on attitude toward the site.

In the context of mass media, many researchers have presented the construct—attitude toward the ad—as a mediator of advertising’s effects on consumer outcomes, such as brand attitudes and purchase intentions (Lutz 1985). Pavlou and

Stewart (2000) argue that the usefulness of all the traditional advertising outcome measures is not different for interactive advertising. Therefore, we can expect that attitude toward the site will work similarly as attitude toward the ad in traditional advertising, influencing attitude toward the brand and purchase intention. That is, following from the study of MacKenzie, Lutz, and Belch (1986), this study postulates that attitude toward the site directly affects attitude toward the brand, and attitude toward the brand exerts a direct influence on purchase intention.

H4a: Attitude toward the site will have a directly positive effect on attitude toward the brand.

H4b: Attitude toward the brand will have a directly positive effect on purchase intention.

As shown in the hypothesized model (Figure 1), the causal relations among 10 variables are as follows. First, duration of time on the Web site is affected by the information offered there, convenience of use, entertainment value, and social interaction motivations. Second, duration of time, as well as the motivations for using the Internet, are causes of both human–message and human–human interactions. Third, attitude toward the site is affected by both types of interaction and duration of time. Fourth, attitude toward the site is a

cause of attitude toward the brand. Finally, attitude toward the brand is a cause of purchase intention.

RESEARCH METHODS

Sample and Data Collection

The main experiment was conducted from September 23 through October 3, 2002, in a computer laboratory equipped with a high-speed Internet connection. The data for this study were collected simultaneously in the United States and in Korea because these countries show the highest broadband penetrations in the world (Kirk 2001). The experimental settings in the two countries were matched as closely as possible. This experiment adopted two versions of the questionnaire in two languages, English and Korean. The questionnaire for Korean participants was developed through a translation and backtranslation process by two bilingual coders in Korea. Participants were told they would be taking part in a study investigating how people use the Internet.

The data were obtained from a total of 408 college students with Internet experience in the United States and Korea. Participants in both countries volunteered to attend a 50-minute experimental session in return for extra credit in courses where the researchers had obtained the permission of their instructors. In the United States, 204 participants were recruited from three different undergraduate courses at a large southeastern university, while 204 participants came from three large universities in Seoul, Korea. Rather than attempting to select participants representative of the general population, the participants for the present study were selected on the basis of convenience sampling.⁴ The minimum sample size to ensure appropriate use of maximum likelihood estimation is 100 to 150 (Hair et al. 1998). Considering that the total sample size is 385, the present study was expected to meet sample-size requirements for a structural equation model with maximum likelihood estimation.

Stimulus Material

While filling out the questionnaire, the participants in this experiment were asked to visit a real marketing Web site under a given condition for an on-line purchase. Mitchell (1986) has argued that real ads rather than mock ads are more effective in experimental research because they draw a more natural response from participants. Hence, exposure to a real Web site was expected to increase the external validity of the experiment. For the stimulus material, a computer printer was selected, because according to Ernst & Young's annual *Global Online Retailing Report* (2001), it was one of the most popular products in on-line shopping across countries.

As a pretest, we checked familiarity with and intention to purchase a printer among college students, and found that they were familiar with printers and were considering purchasing one in the near future because they needed a printer to help them produce polished, professional-looking academic work. Therefore, based on the pretest, this study assumed that the main participants were familiar with printers and had some experience with them. In addition, a printer was considered to be a relatively high-involvement product (Tan 1999); previous studies suggest that people are more likely to interact with ad messages when they are highly involved with the product (Cho and Leckenby 1999), and there is a strong positive correlation between involvement and interactivity (McMillan 2000). Accordingly, we selected a high-involvement product as a stimulus and encouraged the study sample to spend some time interacting with the Web site, since interactivity and duration of time were important study variables in this research. In addition, a printer was regarded as a product with affordable but considerable price to the participants. As a result, the hypothetical situation for this study was established as "to find an ideal color ink-jet printer model at a printer company's Web site." Given that a real Web site was used as the stimulus material in the experiment, a printer company's Web site that showed consistency among the Web pages with all the necessary interactive functions used in our study, as well as different language options, was selected as the stimulus in this experiment.

Independent and Dependent Variables

Table 1 provides a summary of measures and descriptive statistics for each study variable. First, before exposure to a Web site, participants were asked to express their levels of agreement with 16 statements about reasons for using the Internet. Papacharissi and Rubin's (2000) list of Internet motives was the basis for developing the independent variables in the present study. Initially, each statement was derived from four motivational dimensions (information, convenience, entertainment, and social interaction), and modified for better wording based on the pretest. A seven-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree), was used to measure consumer motivations for using the Internet in general. The reliability (Cronbach's α) of the resulting multi-item scales was marginally acceptable, as the reliability value ranged from .65 (the convenience motivation) to .78 (the entertainment motivation). The generally agreed on lower limit for Cronbach's α is .70, although it may decrease to .60 in exploratory research (Hair et al. 1998). Second, to examine the duration of time on the site, participants were asked to write down the current time, which was shown at the right bottom on the computer screen, when they began to visit a Web site. The current time was requested once more when participants com-

TABLE I
Summary of Measures and Descriptive Statistics

Latent variables	Mean	SD	MSA	Cronbach's α
<i>Information motivation</i>				.67
To learn about unknown things	5.08	1.30	.77	
It's a good way to do research	6.01	1.11	.84	
To learn about useful things	5.11	1.25	.77	
<i>Convenience motivation</i>				.65
It's convenient to use	5.90	1.14	.72	
I can get what I want for less effort	5.77	1.14	.86	
I can use it anytime, anywhere	5.28	1.49	.74	
It's easier to use*	5.64	1.35	.73	
<i>Entertainment motivation</i>				.78
To pass time	5.52	1.35	.81	
I just like to surf the Internet	4.60	1.48	.85	
It's enjoyable	5.17	1.28	.81	
It's entertaining	5.17	1.30	.81	
It's a habit*	4.86	1.60	.81	
<i>Social-interaction motivation</i>				.76
I wonder what other people said	4.03	1.68	.76	
To keep up with what's going on*	4.91	1.43	.87	
To express myself freely	3.54	1.56	.77	
To meet people with my interests	3.89	1.70	.77	
<i>Human-message interaction</i>				.78
I would click into deeper links	4.96	1.50	.79	
I would stay longer for details	4.62	1.71	.77	
I would use multimedia features	4.02	1.55	.79	
I would use a search engine	4.14	1.59	.84	
<i>Human-human interaction</i>				.79
I would participate in customer discussions	3.26	1.66	.72	
I would provide my feedback to the site	3.15	1.43	.76	
I would contact the company	3.01	1.57	.82	
I would sign in at the site for information	3.85	1.65	.83	
<i>Attitude toward the site</i>				.85
This site builds a relationship with me	4.31	1.28	.88	
I would like to visit this Web site again	4.33	1.42	.90	
I am satisfied with the service of this site	4.64	1.34	.85	
I feel comfortable in surfing this Web site	4.94	1.47	.84	
This site is a good place to spend my time	3.28	1.51	.87	
I would rate this site as one of the best	3.98	1.39	.91	
<i>Attitude toward the brand</i>				.83
Good/bad	5.31	1.15	.82	
Pleasant/unpleasant	5.01	1.24	.88	
Favorable/unfavorable	5.17	1.19	.83	
<i>Purchase intention</i>				.89
Likely/unlikely	4.69	1.66	.75	
Probable/improbable	4.69	1.62	.75	
Possible/impossible	4.88	1.46	.88	

*Variables that were deleted to improve the fit of the measurement model.

pleted the assignment at the site. Consequently, the difference between the two current times was considered to be the amount of time each participant spent completing a given

assignment at the site. Third, interactivity was measured with a multi-item scale, ranging from 1 (not at all) to 7 (frequently), based on the participants' future intentions (Cho and Leckenby

1999). Originally, actual interactive behaviors were also measured in this study. Factor analysis could not define the underlying structure in terms of the experience of interactivity, however, as only one factor was yielded. Therefore, it was impossible to classify participants' experiences of interactivity into human–message interaction and human–human interaction. Regarding this result, it was assumed that forced exposure to the site under experimental circumstances might account for the dominance of one dimension of interactivity. In other words, placing participants in an experiment situation may simply set them up for a particular mode of interactivity. This possible biasing effect might suppress otherwise naturally occurring real interactivity behavior. For example, with such a limited time ($M = 7.69$ minutes) in the experimental setting, people might not have a real chance to interact with the Web site, especially for human–human interaction, such as “I participated in the customer discussion group.” As it turned out, future intention of interactivity was selected as an operational definition of interactivity for further analysis. As shown in Table 1, the reliability (Cronbach's α) of the resulting multi-item scales was considered meritorious, as each construct showed a reliability value of .78 (the human–message interaction) and .79 (the human–human interaction), respectively. Fourth, attitude toward the site (Chen and Wells 1999) was measured with a six-item, seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). Fifth, attitude toward the brand was measured with three, seven-point semantic differential scales (favorable/unfavorable, good/bad, and pleasant/unpleasant) based on the study by MacKenzie, Lutz, and Belch (1986). Finally, purchase intention was measured with three, seven-point semantic differential scales (likely/unlikely, probable/improbable, and possible/impossible) based on the study of MacKenzie, Lutz, and Belch (1986). The reliability (Cronbach's α) of the resulting multi-item scales was considered highly acceptable, as each construct showed a reliability value of .85 (attitude toward the site), .83 (attitude toward the brand), and .89 (purchase intention), respectively.

Data Analysis

As input data for estimating the structural equation model, the correlation matrix among all the variables from the total participants was used in the present study. To estimate the hypothesized model, a two-step procedure was adopted in this study (Kline 1998). Given an acceptable measurement model and simultaneous equation model based on a number of the goodness-of-fit measures, the two-step procedure involved comparing the fits of both models by way of the χ^2 -difference ($\chi^2_{\text{difference}}$) test. Both the measurement model and the simultaneous equation model were estimated with LISREL 8.50 by the method of maximum likelihood. In this process, all the factor variances were set equal to one.

RESULTS

Subject Profile

A total of 408 college students who had used the Internet participated in the experiment. After eliminating 23 cases that indicated incomplete answers, the same numbers throughout the questionnaire, or a wrong answer to the screening question, this study examined 385 participants (94.4%) for the actual data analysis. Among the 385 participants, 196 participants (50.9%) were American students, and 189 participants (49.1%) were Korean. The demographic analysis of the sample shows that it consisted of 171 (44.5%) males and 214 (55.6%) females. Respondents ranged in age from 18 to 29 years, with a mean of 21.5.

Measurement Model and Simultaneous Equation Model

For the measurement model, a confirmatory factor analysis was run on the correlation matrix of the 37 observed variables. The measurement model was selected on the basis of the selected goodness-of-fit results, and the results indicate that the final measurement model fits the data quite well across most goodness-of-fit indexes,⁵ so this model was selected as the base model for the simultaneous equation model.

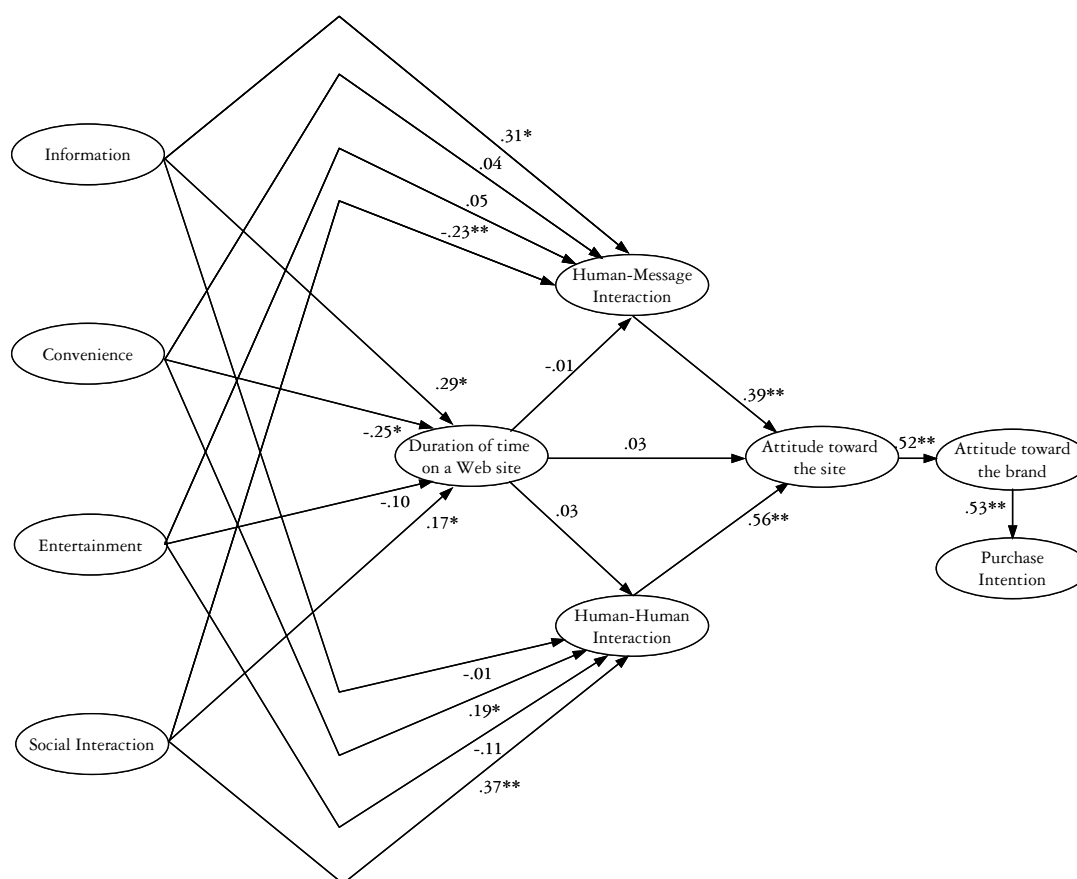
The simultaneous model was selected on the basis of the selected goodness-of-fit results as well, and the results indicate that the final simultaneous equation model fit the data very well across most goodness-of-fit indexes,⁶ so this model was selected as the base model for the $\chi^2_{\text{difference}}$ test with the measurement model in the next stage.

To test whether estimating the simultaneous equation model results in a significant decrement in fit, the fit of the simultaneous equation model was compared to the fit of the measurement model. The $\chi^2_{\text{difference}}$ test between the measurement model and the simultaneous equation model was shown as $\chi^2_{\text{difference}} = \chi^2_{\text{sem}} - \chi^2_{\text{mm}} = 711.80 - 695.97 = 15.83$, and the degrees of freedom were $df = df_{\text{sem}} - df_{\text{mm}} = 375 - 360 = 15$. Since the critical value of $\chi^2_{.05,15}$ is 25.00, the simultaneous equation model was not rejected in favor of the measurement model in this analysis. This implies that the measurement model and the simultaneous equation model were virtually identical, without a significant decrement in fit. As a result, this simultaneous equation model was selected as the interactive advertising model in this study. Figure 2 presents the full path diagram of the final structural equation model.

Causal Model Analysis

Hypothesis 1 examined the direct effects of the motivations for using the Internet on the duration of time on a Web site.

FIGURE 2
Path Diagram of the Final Structural Equation Model



* $p < .05$.

** $p < .01$.

The individual path coefficients were examined based on the causal relations in this model (see Figure 2). To evaluate the estimated causal relations, the actual size of each parameter was assessed in terms of the standardized β coefficients. Three out of the four Internet usage motivations (information, convenience, and social interaction) showed significant direct effects on the duration of time on a Web site. The only exception was the entertainment motivation, which did not show a significant relation with duration of time on a Web site. This makes sense when we consider that the stimulus Web site was more information-oriented (i.e., a Web site for printers).⁷ The results suggest that duration of time on a Web site is affected by certain motivations for using the Internet. Therefore, H1 was partially supported. On the other hand, the model revealed that duration of time had nonsignificant direct effects on the human–message interaction ($\beta = -.01, p > .05$), the human–human interaction ($\beta = .03, p > .05$), and attitude toward the site ($\beta = .03, p > .05$). One possible interpretation of this finding is that the duration of time as a single predictor of interactivity was not sufficient to explain all the

variances in interactivity. The insignificant effect of the duration of time also might have been affected by the artificial condition in this experiment. Although participants were allowed to view the site for as long as they needed, a lab setting with supervision might have made them feel more time pressure to complete the assignment as early as possible ($M = 7.69$ minutes). Therefore, the duration of time may not be as strong a behavioral indicator as it appears to be in a natural setting.

The second set of hypotheses stated the direct effects of the information motivation on the human–message interaction (H2a) and the social interaction motivation on the human–human interaction (H2b). As expected, the information motivation had a positive effect on human–message interaction ($\beta = .31, p < .05$), which suggests that those who have high information motivation tend to click a series of hyperlinks as a voluntary exposure to further information provided on advertiser Web sites. Therefore, H2a was fully supported. As expected in H2b, the social interaction motivations had a positive effect on human–human interaction ($\beta = .37, p < .01$). It is interesting to note that the social-interaction motivation

had a negative effect on human–message interaction ($\beta = -.23, p < .01$). According to Cho and Leckenby (1999), the human–human interaction requires a two-way flow of communication between senders and receivers, whereas the human–message interaction refers to the extent to which people can choose and control the messages on a Web site. This finding might imply that people who visit a Web site for the purpose of social interaction are less likely to interact with the provided messages and instead interact more with advertisers and other consumers (e.g., providing comments or feedback to advertisers, participating in on-line discussions, forums, and/or chat rooms). Therefore, H2b was also supported. Convenience motivation had a positive effect on human–human interaction ($\beta = .19, p < .05$), but little effect on human–message interaction ($\beta = .04, p > .05$). The results imply that those who have high convenience motivation are more likely to use interactive features promoting interactions among people rather than human–message interactive features.

Hypothesis 3 stated the direct effects of interactivities (human–message and human–human interactions) on attitude toward the site. As expected, attitude toward the site was significantly affected by both types of interactivity. More specifically, attitude toward the site was more strongly affected by the human–human interaction ($\beta = .56, p < .01$) than the human–message interaction, while the human–message interaction also had a significant direct effect on the variable ($\beta = .39, p < .01$). This result indicates that if a Web site gets visitors interacting with other people, it is expected that this site can achieve more positive outcomes from the visitors. Therefore, H3 was also supported, as the causal relations between interactivity and attitude toward the site were significantly positive.

The final set of hypotheses examined the causal relations among advertising effectiveness measurements. Based on the assumption that measuring attitude toward the site (A_{st}) was considered parallel to evaluating attitude toward the ad in traditional mass media (Chen and Wells 1999), attitude toward the brand was strongly affected by attitude toward the site ($\beta = .52, p < .01$). Therefore, H4a was supported. In addition, the indirect effect of attitude toward the site on purchase intention via attitude toward the brand was also significantly positive ($\beta = .27, p < .01$). On the other hand, attitude toward the brand had a strong effect on purchase intention ($\beta = .53, p < .01$); therefore, H4b was also supported.

DISCUSSION

This study should be viewed as a benchmark study for an empirical examination of the structural antecedents and consequences of interactivity in the Internet usage context. Stewart and Ward (1994) argued that the continuing rapid evolution of media would present new opportunities for research that analyzes the ways in which individuals interact with and act

upon new media in the context of advertising. Following from this focus, the main objective of the present study was to investigate whether interactivity can be explained by motivations for using the Internet and whether this construct can also determine the consequences of interactive advertising variables: attitude toward the site, attitude toward the brand, and purchase intention. Building on recent applications of uses and gratification theory, this study suggests ways in which the relation between motives for media uses and media effects could be theoretically and empirically clarified. The structural equation modeling in this study identified major constructs in motivations for using the Internet, and then confirmed their effects on other major constructs in interactive advertising. The present study also provides broad perspectives about consumer interactivity processes, which can serve as antecedents to affect interactive advertising effectiveness, and offers examples of operationalizing interactivity on a marketing Web site. The key findings of the current study can be summarized as follows:

- Consumers who have high information, convenience, and/or social interaction motivations for using the Internet tend to stay at a Web site longer to satisfy their corresponding motivations; consumers who have high information motivations are more likely to engage in human–message interaction on a Web site; consumers who have high convenience and social–interaction motivations are more likely to engage in human–human interaction on a Web site; consumers who engage more in human–message and human–human interactions evaluate the Web site more positively, which leads to positive attitude toward the brand and purchase intention; human–human interaction has a more significant effect on attitude toward the site than human–message interaction.

From a theoretical perspective, this study supports an application of uses and gratification theory to the Internet. Rubin stated, “The media uses and effects process is a complex one that requires careful attention to antecedent, mediating, and consequent conditions” (1994, p. 432). With this in mind, the present study examined the media effects process by analyzing the causal relations among motivations for using the Internet (i.e., antecedent variables), interactivity (i.e., mediating variables), and advertising effectiveness measurements (i.e., consequent variables). In addition, this study supports the assumption of an active audience in the mediated communication process. Although Swanson (1979) criticized the fact that uses and gratification theory does not explicitly seek to investigate whether audiences are active when they select and use media, this study suggests the notion that interactivity can offer users the means to develop new ways of communica-

tion and greatly increase user activity. Some practical implications of this finding might be that Web sites should facilitate human–message interactive functions, such as keyword search, virtual product display, multimedia shows, and so forth, to appeal to those who have high information motivation. By the same token, in targeting those who have high social-interaction motivation, Web sites can utilize various human–human interactive functions, such as features of feedback, comments, site survey, product survey, information exchanges, on-line discussion forums, chat rooms, and so forth.

The present study also found significantly positive effects of human–message and human–human interactivity on attitude toward the site. Although the interactivity dimensions were defined differently, this finding is consistent with previous studies on interactivity and advertising effectiveness (Cho and Leckenby 1999; Jee and Lee 2002; Wu 1999). This finding also contributes to the practical field of advertising by confirming the important role of interactive features on a Web site in generating a positive attitude toward the site, which ultimately leads to a positive attitude toward the brand and purchase intention. In other words, based on the results of the causal relation, it is suggested that a Web site should customize interactive features to the personal style and needs of particular consumers, focusing on the human–message and human–human interactions.

This study found that the means for human–message interaction are higher than those of human–human interaction. This finding might imply that people are more likely to interact with the content than with the advertiser and/or other customers. Yet it is interesting to note that the effect of human–human interaction on attitude toward the site was stronger than that of human–message interaction. This seems to suggest that despite the lesser likelihood of people's human–human interaction, advertisers might achieve better outcomes if they can get consumers to interact with people. Therefore, we might expect that the paradigm of the Internet as an information source can shift to that of a virtual communication tool. In other words, Web sites should focus more on human–human interactive functions to generate more positive responses from consumers. Regarding this notion, Roehm and Haugtvedt (1999) similarly argued that a Web site should be developed to make visitors think they are actually having a conversation with the site. If the human–human interaction can enhance the mutual relationship between a company and its target consumers, this may also provide a means for relationship marketing with potential consumers all around the world.

Similar to all research endeavors, this study does have its limitations. First, the nonrandom sample of college students might weaken the generalizability of these findings to the whole population, although the student group does account for a considerable portion of total Internet users. Second, self-reported data may not be adequate to measure respondents'

motivational and behavioral aspects (Ruggiero 2000). Third, the forced exposure to a company's Web site in the lab might produce results that have little direct application to real-world settings, where consumers are continually exposed to competing stimuli. As Lutz, MacKenzie, and Belch (1983) have suggested, placing participants in an experimental situation may simply lead them to a particular mode of response from the exposure to the site. This may be a reason that the actual interactivity experience had a single factor/dimension and we found no significant effects of duration of time on interactivity and attitude toward the site. Therefore, it would be worthwhile to conduct future research with less artificial experimental settings (e.g., measuring actual behavioral responses using log file analysis for the corporation Web sites). Moreover, this interactive advertising effectiveness research was based on only one printer company's Web site, in which the contents are mostly information-oriented; this may limit generalizing the results to other types of Web sites. This could be a major reason that the entertainment motivation was not significant in the causal relations, that is, the Web site did not trigger entertainment motivation on the part of the participants, and thus entertainment motivation had little impact on duration of time and interactivity. If we had selected a Web site that satisfied multiple motives that included entertainment, entertainment motivations might have affected duration of time and interactivity. Hence, for future research, it would be worthwhile to employ various types of Web sites as experimental stimuli. In addition, the current study did not include involvement as a study variable; since we only used a high-involvement product situation, its generalizability is limited. It would be fruitful to examine the role of involvement in the structural relations among motivation, interactivity, and attitude.

In spite of its limitations, this study is believed to support an application of uses and gratification theory to the Internet. In this new media environment, in which access to the Internet is becoming as convenient as television, it is critical to know why and how people use the Internet. Furthermore, as people become more active with just a few clicks, it is important to figure out how they utilize a variety of interactive options while visiting a Web site. For this purpose, the present study provides a theoretical model of the relations among motivations for using the Internet, interactivity on a Web site, and interactive advertising effectiveness measurements. Subsequently, the results of this study may help predict Web site effectiveness for Internet users based on their motivations and interactive options. In conclusion, considering the ever-changing nature of the Internet, this study offers help in understanding why and how people use the Internet in this new and evolving field of communication and in understanding the implications for development of effective advertising messages on the Internet.

NOTES

1. In Novak, Hoffman, and Young, "flow" is described as "[a]n optimal, intrinsically enjoyable cognitive state experienced during online navigation." (2000, p. 24).

2. In Stewer, "telepresence" is defined as "[t]he compelling sense of being present in a mediated virtual environment" (1992, p. 76).

3. We limit our human-human interaction to direct interactions, such as when consumers directly interact with advertisers beyond the contents/messages provided in Web sites (e.g., requesting additional information, providing input, feedback, or comments to advertisers, etc.). That is, human-human interaction describes more committed and extra activities beyond the contents provided (e.g., sending feedback, providing personal information, participating in surveys, etc.), whereas human-message interaction refers to any activity within the contents/messages/databases provided by senders (e.g., advertisers) in senders' Web sites.

4. Muehling (1987) said that the use of a homogenous population of participants may be more effective in examining relations of variables than the use of a more heterogeneous group in experimental research. On the other hand, Davis (1999) argued that college students have acted as opinion leaders about Internet content, and that they represent an important group to marketers seeking to develop effective advertising on the Internet. However, the use of a homogeneous student sample might result in different effects than would be found in the general population. Therefore, this should be noted as a limiting condition when interpreting findings generated by student participants.

5. First, the χ^2/df ratio of 1.93 was far lower than 3, the criterion for a good fit. Second, a value of GFI (goodness-of-fit) (.89) indicated a moderate fit because this value is a little lower than .90. Third, a value of RMR (root mean squared residual) (.052) was quite acceptable because this value is much lower than .09. Fourth, the value of RMSEA (root mean square error of approximation) (.050) was lower than .06. Finally, the model had the satisfactory values of CFI (comparative fit index) (.93) and NNFI (non-normed fit index) (.91).

6. The χ^2/df ratio (1.90) was far lower than 3; a value of GFI (.89) was a little lower than .90; RMR (.065) was much lower than .09; RMSEA (.048) was lower than .06; CFI (.91) and NNFI (.93) were higher than .90.

7. The type of Web site may influence which motivations play a more important role in determining duration of time. Since we used an information-oriented Web site, it may be biased since information motivations may play a more significant role in affecting duration of time. Therefore, in future research, it would be worthwhile to employ various types of Web sites as experimental stimuli.

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