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Interactive Advertising and Its Effectiveness: An Exploratory Study of Cross-National Computer Users

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ABSTRACT

With the increasing popularity of interactive media, interactive advertising has become one of the hottest topics among advertising and marketing professionals. Since October, 1993, the trade weekly, Advertising Age, began a special feature section on interactive media. Other trade publications, MediaWeek and Marketing News, also followed. The recent hype about the Internet, the World Wide Web, and the National Information Infrastructure (NII) has further pushed the commercial potential of the interactive advertising. In spite of the somewhat overrated optimism of interactive advertising, there lacks an empirical study of effectiveness of interactive advertisements, as compared to non-interactive advertisements.

The study used an experiment to investigate the effectiveness of interactive advertisements. One hundred and eight computer users from Taiwan, China, and the U.S. watched both interactive and non-interactive advertisements featuring either a battery or a floppy disk. Four measures of advertising effectiveness were tested: attitude toward advertising (Aad), attitude toward advertised brand (Ab), pur

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chase intention, and time of exposure to advertisements. Results indicate that the interactivity of advertisements does not create a favorable attitude toward advertisements and advertised products. It does not lead to a high purchase intention of the product featured in an interactive advertisement. The lack of effectiveness of interactive adverting may be explained by subjects' lack of interest in cybershopping, characteristics of virtual stores, and the appropriateness of traditional effectiveness measure. Furthermore, since nationality has no effect on how subjects responded to interactive advertising, the viability of standardized interactive advertising for the global marketplace is substantiated.

Introduction

Interactive advertising is a type of advertisements delivered through a variety of interactive media, ranging from CD-ROM, floppy disk, interactive television, videotext, cable television, and a combination of television and satellite. With recent popularity of the Internet and the World Wide Web (WWW), interactive advertising can now be delivered synchronously through high-speed broadband communication networks. Furthermore, the multimedia capacity of new Internet browsers (such as WWW, Moasic, and HotJava) has further enhanced the commercial potential of interactive advertising.

Compared with one-way and linear advertisements appeared in traditional mass media, interactive advertising is different, in that "it, in real time, (1) is available on individual demand, and (2) permits an individual to modify its content" (Raman and Leckenby, 1995, p. 248). Thanks to its interactive capabilities, consumers can choose a variety of product information and to have more control over "when" and "where" informercials will be presented to them (Ray, 1985). Unlike traditional advertising, interactive advertising will be selected by, rather than forced upon, the viewers (Winski, 1993).

Despite all the hype about the potential of interactive advertising in the

advertising and marketing circles, there is a lack of empirical studies on the effectiveness of interactive advertising. The main purpose of this paper is to examine the effectiveness of interactive advertising. In addition, as interactive advertising is most commonly delivered via the Internet, this paper will also investigate its application to global marketing communication. Finally, its challenges to traditional advertising effectiveness measures will also be brought into discussions.

Interactive Advertising

What differentiate conventional from interactive advertising is the capability that enables consumers to select only desired and needed merchandise information from advertisements presented to them. In terms of the advertising communication, traditional media distribute commercial messages to mass viewers, whereas advertising using interactive media will allow consumers to control and interact with the advertising contents. Harbeson further (1989) argued that interactive advertisements can simulate the interaction of a personal sales call.

The term "interactivity" can be broadly refers to as "an interaction between senders and receivers in a communication process" (Raman and Leckenby, 1995, p. 248). Conceptually, Heeter (1989) identified six dimensions of interactivity: Complexity of choice available, amount of effort users must exert, extent of responsiveness to users, capacity of monitoring information use, extent of responsiveness to users, ease of adding information, and potential to facilitate interpersonal communication. Other researchers such as Rafaeli (1988; 1986), Steuer (1992), and William, Rice, and Rogers (1988) have conceptualized interactivity in terms of the extent of information modification in a communication exchange situation (Steuer,1992), the recursiveness of interactive communication (Rafaeli, 1988), and the extent that communicating parties have control over their communication roles (William et al., 1988).

Most relevant to the application of interactivity to the design of advertising messages is the definition of interactivity as selectivity and modification of advertising contents. Selectivity is related to the extent to which users can choose available information through interactions with interactive media (Heeter, 1989). McQuail (1984) predicted that technological developments in communications are likely to cause a shift from address/dissemination to search and exchange/

interaction patterns of communication. Westin, Mundorf, and Dholakia (1993) argued that selectivity in interactive media (e.g., computer) was actually part of the new communication process. Modification refers manipulation and editing of messages by a receiver and in receiver's control over selective exposure (Westin et al., 1993).

Many studies have pointed out the positive effects of interactivity on communication outcomes. Past literature has found that interactivity has effect on motivation, effects on performance, cognition, learning, sense of fun, normativity, and extremism (Rafaeli, 1988). Schaffer and Hannafin's (1986) study on interactive video instruction materials discovered that greater recall of the materials was consistently found among high-school students exposed to more interactive situations. It was found that subjects had equal or better performance in a test when presented with interactive materials. Rafaeli's study (1986) also found that computerization and interactivity can increase sense of efficacy and satisfaction among subjects.

Global Interactive Advertising

With the construction of the National Information Infrastructure (NII) and the Global Information Infrastructure (GII), the "global village" McLuhan envisioned is becoming a reality. The wired globe is now a fact of life because of the popularity of the Internet. The global reach of the Internet and other commercial on-line information services (e.g., Prodigy, CompuServe, and America Online) have made interactive advertising internationally available to computer users around the world. For example, interactive advertising available on the WWW can be accessed by people around the world--simply with a computer, a modem, a browser software. Although some of these advertisements are not originally designed to cater to global consumer segments, new global networking technologies did prove to be efficient tools by which international advertising can be disseminated.

As the global advertising environment emerges, the long-debated issues of advertising standardization and localization resurfaced. The standardization of advertising messages and campaigns came from cost-reduction advantages perceived by multinational corporations (Jain, 1989; Mueller, 1990). Researchers have found that the top two reasons cited for the standardization of international advertising are the benefits from a scale economy (Onkvisit & Shaw, 1994) and an experience

curve (Synodinos, Keown, & Jacobs, 1989; Verhage et al., 1989).

However, Whitelock and Chung (1989) also pointed out that factors such as language, traditions and habits, consumers' perception, nationalism, availability of media, and income level are likely to influence the standardization process. Onkvisit and Shaw (1987) further summarized previous research findings and provided a list of factors that will determine the feasibility and the extent of advertising standardization: consumption, psychosocial, culture, relative importance of visual vs. verbal in advertising messages, experience, eating patterns, and customs.

Although opponents of advertising standardization raised issues of language, consumer differences, and cultural differences in their arguments (Nielsen, 1959; Onkvisit and Shaw, 1987; Thackery, 1985). What makes today's advertising standardization environment so different from the past is that the cost of implementing interactive advertising in the Internet is relatively low and the interactivity of these advertising messages--which allowed consumers to select information they need--is supposedly taken to mean the increase of advertising effectiveness. As long as the information needs (e.g., language) of cross-national consumers are taken into consideration during the design of interactive advertisements, it ironically nullifies the standardization versus localization arguments, in that interactive advertising can encompass contents tailored for both international and domestic consumers. The ability to customize and personalize advertising information is also viewed as a vital advantage that interactive advertising can provide for one-to-one marketing (Peppers and Rogers, 1995).

In addition, research on advertising standardization and global market segmentation also supported that interactive advertising can be standardized. Researchers have found that the success of international advertising depends on several factors: commonalities of physiological and psychological needs among cross-national consumers (Onkvisit and Shaw, 1987), the globalization of the market (Levitt, 1984; Naisbitt and Aburdene, 1990; Ohmae, 1985), selection of culture-free products (Main, 1989), and correct "intermarket segmentation" (Hassan and Blackwell, 1994).

Furthermore, scholars such as Naisbitt and Aburdene (1990), Hassan and Blackwell (1994), Ohmae (1985), and De Mooij (1991) have discussed the existence of global market segments. Researchers also pointed out that consumers are homogeneous in their psychological needs, in that travel, technology, education, and communication have contributed to the homogenization of language, ideas, religion,

living conditions, tastes, and culture (Onkvisit and Shaw, 1994). Concluding from both standardization and localization arguments, it is important to examine how an emerging Internet user segment around the world will respond to interactive advertising on the WWW and whether interactive advertising can be effective in a global context.

Products Featured in Interactive Advertising

What products are suitable for featuring in standardized interactive advertisements? Past research has found that products influence the effectiveness of international advertising (Jain, 1989; Mueller, 1990). Rosenberg (1975) found that the same product can be perceived differently by consumers in different countries and/or cultures (cited in Onkvisit and Shaw, 1980). For example, VCRs or PCs are perceived to be high-involvement products in the Western world and Far East, while in most of the Third World countries, they are low involvement products (Salmi et al., 1993).

Furthermore, Onkvisit and Shaw (1994) noted that a standardization strategy was favored when there was a fit between product and market because of some cultural universals. They argued that watches and diamonds were some examples of culture-free products. Main (1989) also listed four types of products that were suitable for a global marketing strategy: 1) products that meet similar customer needs worldwide (e.g., soft drinks, pharmaceuticals, and cosmetics); 2) luxury products with the country-of-origin advantage; 3) technology-intensive products with high R&D costs (e.g., supercomputers and commercial aircraft); 4) products with standardized technologies and in a price-competitive market (e.g., CD players and VCR).

For this research, instead of simply examining what product categories are suitable for interactive advertising, product involvement is used to approach the issue of product selection. "Product involvement" means "how the product fits into that person's life" (Cushing and Douglas-Tate, 1985, p. 243). Bloch and Richins (1983) argued that product involvement will influence consumer behavior constantly and varies with individual differences. Zaichkowsky (1985) referred to involvement as the relevance that individuals perceived in products, according to their inherent values, interests, and needs.

Furthermore, involvement is also an important factor in deciding advertising ef-

fectiveness. Researchers have found that, under high involvement situations, individuals are aroused to process stimuli more attentively and more systematically (Chaiken, 1980; Houston and Rothschild, 1978). As a result, more information is retained and retrievable when the involvement is high (Salmon, 1986). Burnkrant and Sawyer (1983) suggested that involvement affects the depth of information processing and individuals' capacity to process information. Celsi and Olson's (1988) study supported that involvement affects the direction and focus of subject's attention and comprehension processes. Greenwald and Leavitt (1984) associated involvement with cognitive activity of the audience. In their view, when the level of involvement increased, the amount of attention capacity increased and, consequently, produced a durable effect on memory. As a result, since product involvement is associated with individual and culture differences, the selection of products for cross-national interactive advertising should be cautious about these differences.

Measures of Advertising Effectiveness

In advertising industry, the effectiveness of advertising campaigns is often measured by the size of the audience exposed to advertising campaigns, the segments of audience successfully targeted, and the effect on opinion, knowledge, or behavior of individuals reached by the media (Chaffee and Mutz, 1988). The increase in sales is also an important measure of advertising effectiveness, although researchers have found that advertising has little or no effect on sale (Drane, 1988).

Unlike the advertisements in traditional mass media, interactive advertisers have no control over the time and frequency that viewers will be exposed to interactive advertisements. If viewers do not click their icons on the screen, advertising messages will not be seen at all. Their advertisements may never be retrieved by their target consumers. Even when their advertisements are used, it is impossible to know when they are watched or if they will be seen by the same users again. This situation has some implications. Will traditional advertising effectiveness measures be valid for interactive advertising? Is there a need to figure out new advertising effectiveness measures? What will they be? In other words, are the measures mentioned in the previous paragraph appropriate to measure the effectiveness of interactive advertising?

At the beginning of this research, these important questions were contemplated.

Because the lack of control over what viewers will or will not see, this makes recall or recognition tests less useful. Therefore, in this study, cognitive measures are replaced by the measures of viewers' affective responses to interactive advertising.

Four variables were used to measure advertising effectivessness: attitude toward advertisements (A_{ad}), attitude toward advertised products (Ab), purchase intention of advertised products, and the total amount of time spent on watching advertisements. MacKenzie and Lutz (1989) defined A_{ad} as "a predisposition to respond in a favorable or unfavorable manner to a particular advertising stimulus during a particular exposure occasion" (p. 49). Therefore, A_{ad} is a situation-bound construct and "an attitudinal reaction to the advertisement generated at the time of exposure" (MacKenzie and Oslon, 1989, p. 49). Attitude toward an advertisement (A_{ad}) was found to be a mediator of advertising effects on brand attitude and purchase intention (Mitchell and Olson, 1981; MacKenzie and Lutz, 1989). MacKenzie and Lutz (1989) have also found that attitude toward an advertisement is related to executional elements of advertisements, audience attitudes toward advertising in general, and contextual impact on advertisements.

Researchers have suggested that viewers' affective reaction to an advertisement will be generalized to the advertised products (Bartos 1980; Light 1980 cited in Percy & Lautman, 1986). MacKenzie and Lutz (1989) found that brand attitude is strongly influenced by attitude toward an advertisement. Therefore, MacKenzie and Lutz (1989) proposed that attitude toward an advertisement is a stronger predictor of brand attitude than ad credibility. In addition, Zinkhan, Locander, and Leigh (1985) found that attitude toward an advertisement and attitude toward a brand are strongly associated with aided brand recall and recognition.

Time spent on advertisements is a behavioral measure often used in advertising research (Olney, Batra, and Holbrook, 1990). Olney et al.'s (1990) study used the time of looking at an advertisement to measure the effect of attitude toward an advertisement on advertising effectiveness. Viewers' interest in the advertisement is often shown by the time they spend on the advertisements and by their search patterns.

Unlike traditional mass media such as television, radio, or print media that are often concerned about inattentive audience, zippers, or zappers, consumers are predisposed to advertising messages when they select and retrieve interactive advertisements from the shopping services (Talarzyk and Young, 1987). Attention-

getting strategies such as flashing text, graphics, and sound can certainly increase the probability that advertising messages will be chosen.

Research Hypotheses

From the literature review, interactivity is expected to greatly affect all dependent measures. Subjects watching an interactive advertisement are expected to like the advertising stimuli and advertised products better, to have higher purchase intention, and to spend more time on an advertisement than those in a non-interactive version.

The specific hypotheses examined in this study are:

H 1: Subjects will have a more positive attitude toward an interactive advertisement than its non-interactive version.

H 2: Subjects will prefer an advertised product featured in an interactive advertisement than its non-interactive version.

H 3: Subjects will have higher purchase intention when a product is presented in an interactive advertisement than its non-interactive version.

H 4: Subjects will spend more time on an interactive advertisement than its on-interactive version.

H5a: Nationality does not affect subjects' attitude toward advertisements regardless of the interactivity of test messages.

H5b: Nationality does not affect subjects' attitude toward advertised products regardless of the interactivity of test messages.

H5c: Nationality does not affect subjects' purchase intention regardless of the interactivity of test messages.

H5d: Nationality does not affect subjects' time spent on the advertisements regardless of the interactivity of test messages.

H6a: Product involvement does not affect subjects' attitude toward advertisements regardless of the interactivity of test messages.

H6b: Product involvement does not affect subjects' attitude toward advertised products regardless of the interactivity of test messages.

H6c: Product involvement does not affect subjects' purchase intention regardless of the interactivity of test messages.

H6d: Product involvement does not affect subjects' time spent on the

advertisements regardless of the interactivity of test messages.

Methodology

Experiment Design

An experiment was conducted in which the effects of interactivity on four dependent measures could be observed. Within-subject designs were used to compare the differences between non-interactive and interactive advertisements in a simulated cybershopping store. Each subject was exposed to both interactive and non -interactive advertisements. The experiment took about 50 minutes to complete. At the first telephone contact, all subjects were clearly informed of the length and requirements of this experiment and incentive for their participation.

Subjects

This study was conducted in a large mid-Western university in the United States. Graduate students from Taiwan, China, and the United States in this university participated in this study. A gift certificate worth of ten U.S. dollars was mailed to participants upon completion of the experiment. There were 3,243 people in the graduate student population with 359 people from Taiwan, 2,369 people from the U. S., and 366 people from China. This study used a non-proportional stratified random sampling method. In this study, 36 students were selected from each nationality group. A total of 108 subjects was selected to participate in this experiment.

Experiment Stimuli

Seven pairs of advertisements were developed by the researcher, following Macromedia's (1992a, b, c) manuals of Authorware software development handbooks. Two design principles were strictly followed. First, layouts of the current advertisers of the same or similar products were adapted to create test advertisements. Second, the researcher also referred to the design strategies and formats of major online cybershopping services such as CompuServe's Electronic Mall or Prodigy's shopping section.

Advertisements grouped as the same pair contain the same amount of product information. In other words, they all have the same number of frames/pages, although

arranged in different hierarchies for different interaction patterns. An interactive advertisement is different from its non-interactive version, in that viewers of the interactive advertisements have full control over 1) for how much time they would like to watch; 2) what branch of information hierarchies they want to go into; 3) how deep they want to go through layers of information pages; 4) how much time they want to spend on individual frame/page; 5) in what order the product information will be presented; 6) the capability of test stimuli to allow users to click buttons to quit and proceed to the ordering page without watching the whole advertisement. Viewers of non-interactive advertisements are only allowed to exit the test advertisement at certain nodes of presentation sequences. They do not have control over the timing and order that information is to be presented to them.

All advertising stimuli were stored in a computer server in the laboratory. Connectivity time from subjects' computer to the serve is very fast.

Involvement Level of the Advertised Products

The Product Involvement Scale is made up of fourteen 7-point semantic differential scales adapted from Zaichkowsky (1985) and Kapferer and Laurent (1985). Some bipolar adjectives are useful-useless, affordable-not affordable, interested-not interested, etc. A convenience sample of 46 from the study population first responded to these scales. Individual composite scores were calculated for two products featuring in the test stimuli (i.e., battery and floppy disk). The average product involvement score for battery was 4.519 (SD=1.012). The average product involvement score for floppy disk was 5.117 (SD=1.000).

This survey showed that batteries and floppy disks are viewed as low- to mid- involvement products by subjects from all three nationalities. The means of battery among the U.S., Taiwanese, and Chinese subjects were 4.24 (SD=.96), 4.69 (SD=.90), and 4.62 (SD=1.10) respectively, while those of the floppy disk are 5.00 (SD=.91), 5.14 (SD=1.19), and 5.21 (SD=.93).

Dependent Measures

To measure the attitude toward advertisements, subjects were asked to respond to thirty-five Likert-type statements regarding informativeness and personal relevance of advertisements, emotions about advertisements, liking of presentation elements, evaluation of advertisement presentation, and attitude toward advertising.

Attitude toward products was measured by eleven scales adapted from Batra and Ray (1985), Messmer (1979), MacKenzie and Lutz (1982), Lutz, MacKenzie, and Belch (1983), Madden (1983), and Moore and Hutchinson (1983) (cited in Madden, Dillon, and Twible, 1986). Subjects were asked to respond to these Likert-type items such as superior-inferior, perfect-imperfect, positive-negative (Messmer, 1979), dependability, reliability, and value of the brand (MacKenzie and Lutz, 1982).

Purchase intention of advertised brands/products was measured by two fill-in questions asking how likely subjects would purchase the advertised product right after they watch each advertisement (Weistein, Mundorf, and Dholakia, 1993).

Time spent on individual advertisement was measured by accumulative seconds each subject spent watching each test advertisement.

Reliability

Reliability of instruments was tested by computing Cronbach's alphas for each scale. In general, all instruments have high reliability values. Scales that measured subjects' attitude toward advertisements and products were reliable as their alpha values are over 0.80. Cronbach's alpha for the attitude toward the battery advertisement scale was 0.91, whereas that for floppy disk advertisement scale was 0.92. Scales that measured subjects' attitude toward a battery has a Cronbach's alpha of 0.90, whereas that of a floppy disk was 0.89.

Experiment Procedures

The experiment was conducted in an on-campus computer lab. Subjects from the sample were randomly assigned to four types of experimental conditions. Each condition was composed of 27 subjects (Table 1). Subjects were exposed to both non-interactive and interactive advertisements featuring either a floppy disk or a battery, but in different orders of presentation (Table 1).

Before subjects were exposed to test advertisements, practice advertisements similar to the formats of test commercials were shown to subjects. These advertisements featured a camera, a fax machine, and an automobile. Subjects were allowed to watch these advertisements as long as they wished. Subjects proceeded to the next section only after they felt comfortable with these advertisements.

After watching each test advertisement, subjects were asked to complete

questions regarding their purchase intention, attitude toward this advertisement, and attitude toward this advertised product.

Data Collection Methods

Methods of data collection were traditional pencil-and-paper questionnaire and on-line computer monitoring techniques (Rice and Borgman, 1983; Westin et al., 1993). Pencil-and-paper product involvement scale was placed next to individual computer for subjects to complete. For on-line questionnaire, system variables (e.g., BeginTime, EndTime) and function variables (e.g.,WriteExtFile and AppendExtFile) in the Authorware software were used to allow the researchers to collect subjects' responses to each question to an inserted floppy disk in the computer.

Results

Manipulation Check

In this experiment, subjects were exposed to both interactive and non-interactive advertisements. To make sure that the manipulation intended by the researcher was similarly perceived by subjects. Subjects were asked to respond to a question (i.e., "I feel that I am in full control when reading this advertisement.") in two post-treatment questionnaires. Heeter (1989) and Westin, Mundorf, and Dholakia (1993) argued that selectivity in interactive media was actually part of the new communication process. Viewer's ability to select whatever information they prefer will lead to a greater sense of control in an interactive communication process.

In general, subjects rated an interactive advertisement as more interactive than non-interactive one (the mean score=3.58 on a five-point scale, SD=1.47, the mean score for non-interactive advertisement is 3.12, SD=1.27). The difference between two means is statistically significant, $F(1, 96)=11.38$, $p<.05$. The statistics are presented in Table 2.

Tests of Hypotheses

Several ANOVA procedures were employed to test these hypotheses, using SAS statistical software run on the university mainframe computer.

H1 *Attitude toward Advertisements (Aad)* Significance was not achieved, for the main effect of interactivity, F(1, 96)=1.90, p=.17, product, F(1, 96)=.10, p=.76, and nationality, F(2, 96)=2.57, p=.08. The joint effects of product, nationality, and interactivity were not statistically significant, F(2, 96)=.86, p=.43. In addition, interactions between nationality and product, F(2, 96)=1.32, p=.27, between nationality and interactivity, F(2, 96)=.94, p=.40, between product and interactivity, F (1, 96) =.34, p=.56, were not statistically significant at the .05 level. In brief, there was no support for the hypothesis that an interactive advertisement created a more positive attitude toward advertisements than its non-interactive version. The first research hypothesis was not supported. These results are summarized in Table 3.

Hypothesis 2 *Attitude toward Advertised Product (Ab)* Results suggested that there was no main effect of interactivity, F(1, 96)=.15, p=.70. There was no support that interactivity of advertisements would affect subjects' attitude toward advertised products. In addition, there was no statistically significant effect of nationality, F(2, 96)=.33, p=.72, at the .05 level. Significance was only achieved for the main effect of the product, F(1, 96)=11.34, p<.05.

Two-way or three-way interactions between and among three independent variables were all found to be not statistically significant. F-ratios for two-way or three-way interactions were not significant at the .05 level. The analyses are reported in Table 4.

Hypothesis 3 *Purchase Intention of Advertised Products* The main effect of interactivity was not statistically significant at the .05 level, F(1, 96)=.64, p=.43. The analysis also revealed that subjects' purchase intention of advertised products was not affected by their nationality. Significance was not achieved for the main effect of nationality, F(2, 96)=1.53, p=.22. The type of product was found to influence subjects' purchase intention, F(1,96)=4.40, p<.05.

Interactions between and among independent variables did not affect subjects' purchase intention, either. Two-way or three-way interactions were not statistically significant at the .05 level. Summary results from this analysis are reported in Table 5.

These analyses suggested how products were presented did not affect subjects' purchase intention. There was no support of the hypothesis that an interactive advertisement increased the likelihood that subjects would buy these advertised

products than its non-interactive version. Research hypothesis 3 is not supported.

Hypothesis 4 *Time Spent on Individual Advertisement* The main effect of interactivity was statistically significant, $F(1, 96)=17.22$, $p<.05$. Significance was also achieved for product, $F(1, 96)=9.49$, $p<.05$. It was also found that product and interactivity jointly affected how much time each subject would spend on each test advertisement. Significance was achieved for the interaction between these two variables, $F(1, 96)=9.13$, $p<.05$. However, three-way interactions among three independent variables were not statistical significance at .05 level, $F(2, 96)=.61$, $p=.55$. See Table 6.

The interactive battery advertisement had a mean of 135.96 (SD=118.65) comparatively shorter than a non-interactive battery advertisement that had a mean of 372.96 (SD=451.28). Time spent on an interactive disk advertisement averaged 135.32 seconds (SD=104.57) whereas that of a non-interactive disk advertisement was 171.13 (SD=62.30) (See Figure 1).

Hypotheses 5a-d *The Effect of Nationality* The ANOVA procedures used previously failed to reject the null hypotheses that nationality does not affect subjects' attitude toward advertisements (See Table 3), their attitude toward advertised products (See Table 4), their purchase intention (See Table 5), and differences in time spent on the advertisements (See Table 6).

Hypotheses 6a-d *The Effect of Product Involvement Level* The ANOVA procedures used previously support the null hypotheses that product involvement level does not affect subjects' attitude toward advertisements (See Table 3). However, results failed to reject that null hypotheses that product involvement does not affect subjects' attitude toward advertised products (See Table 4), their purchase intention (See Table 5), and differences in time spent on the advertisements (See Table 6).

Discussion

Is interactive advertising more effective than conventional advertising? Contrary to the optimistic views held by many communication and advertising researchers and practitioners (Roger, 1986; Mayer, 1991; Stewart, 1992; Winski, 1993), results from this research did not support the hypotheses that interactivity of

the advertisements would produce positive communicative outcomes.

Unexpectedly, interactivity did not contribute to subjects' positive attitude toward advertisements. Several explanations were explored. The first is subjects' lack of interest in shopping in virtual stores. This may explain their lukewarm responses to on-line interactive advertisements. In the sample, only 55.6% of respondents (n=60) were interested in on-line cybershopping (See Table 7). ANOVA procedures by including online shopping interests also indicated that there is the main effect of subjects' online shopping interests on subjects' attitude toward advertisements and advertised products (See Table 8 and 9). As interactive advertisements aim to facilitate shoppers' search for product information before making any purchase decision, uninterested shoppers will not spend time on going through pages and layers of product information.

The interactive capability of interactive advertising can be useful only when viewers are willing to interact with the advertising stimuli. Their willingness is often manifested by their external search behavior in terms of the selection of certain databases, the breadth and depth of search, and the time of search. Consumer behavior theorists (Engel, Blackwell, and Miniard, 1990) have found that search for information needs consumer's cognitive and temporal resources. Uninterested shoppers are not likely to give out both resources, in particular, in an artificial experiment circumstance.

The lack of the main effect of interactivity on subjects' purchase intention may be attributed to similar reasons. Among those subjects interested in cybershopping, over 89.9% agreed or strongly agreed that they would buy something from this shopping service only if they found just what they wanted (Table 10). Given the small sample size and the need to control the variations of advertising stimuli that subjects were exposed to, only two products were selected to be featured in these advertisements. Although the researcher was very cautious at the very beginning of the product selection process, the problems of cross-national subjects and astomatous subjects certainly limited the scope of this research. However, future scholars interested in continuing the same avenue of the research will need to consider the same problem that interactive media and advertising have caused.

Is there a need for new advertising effectiveness measures? Findings from this experiment did not support that subjects would be more likely to buy the products advertised in interactive than non-interactive advertisements. It is likely that the

presentation format of advertising messages only plays a minor role in deciding consumers' purchase behavior. The questions about whether advertising is an effective tool to achieve marketing objectives have been heatedly debated in the past decades. However, in a cybershopping situation, the effectiveness of advertising can be measured in a very different way. The temporal factor (e.g., time delay between advertising exposure and purchase of the products) can be removed as cybershopping usually needs shoppers to make decision instantly by pressing ordering buttons. The effectiveness of advertisements can be shown in a way more relevant to business profit than traditional measures?

Although consumers' awareness and knowledge of advertised products will still be important, this new shopping situation may open new avenues on the study of advertising effectiveness. There is an urgent need to rethink the appropriateness of conventional measures of advertising effectiveness (Stewart, 1992).

Cybershopping and the Effect of Interactive Advertising? Although most of the respondents agreed or strongly agreed with the convenience (See Table 11), timesaving (See Table 12), and innovativeness (See Table 13) of on-line shopping, these factors are likely to play peripheral roles in affecting consumers' purchase intention. Other factors such as product type, consumers' characteristics and resources availability seemed to play more decisive roles in subjects' purchase intention (Engel, Blackwell, and Miniard 1990). In addition, consumers may perceive a higher risk when shopping in the virtual stores. This can be attributed to the inability to touch or feel the merchandise, the need to provide credit card information, impersonal shopping environment, and the uncertainty of retailers' guarantee and reputation. Furthermore, consumers' decision to purchase products may depend more on their need, environmental influences (e.g., culture, social class, personal influence, family, and situation), presence of alternative products, and individual differences (e.g., resources, knowledge, attitudes, personality, lifestyles, etc.) (Engel, Blackwell, and Miniard 1990). Future research should continue to work on retail environment, or store atmospherics, and to examine how these properties of "virtual stores" affect how consumers will respond to interactive advertising.

Surprisingly, interactivity turned out to have a negative effect on how much time that subjects are willing to spend watching the advertisements. It seems that subjects spent more time with non-interactive ads for low-involvement products because they had little choice but to view the ads at a controlled pace. Furthermore, subjects' lack of interest in products advertised may also be the major reason

subjects did not spend time on each interactive advertisement. Bruck's (1990) study suggested that subjects' familiarity and interest in products can affect the time spent on advertisements. Low to medium involvement products such as a battery and a floppy disk may be too familiar to consumers to arouse their interest in seeking more product information. It is also possible that the risk of losing money for buying a wrong battery or floppy disk is so small that viewers would rather lose money than time. So, they quit any advertisement as soon as possible, especially in an experiment circumstance.

Due to the lack of personal involvement with advertised products, subjects' interest in advertising stimuli is limited in this study. As a result, their external search for product information in a purchase situation may be small. Beatty and Smith (1987) pointed out that search behavior is affected by perceived benefits of the search. Engel, Blackwell, and Miniard (1990) also proposed that time spent on an external search depends on the decision-making process of consumers. If subjects in this study perceive the advertised products to be of no personal relevance, they may decide not to spend time interacting with the advertisement no matter whether it is interactive or not. Therefore, it would be interesting if future research using highly-involved products would trigger viewers' personal involvement and, as a result, enhance the evaluation of the product and interactive advertising, purchase intention, and time.

Implications and Directions for Future Research

The present data did not support that interactive advertising is more effective than non-interactive advertising. However, the lack of effect may be due to the context where the advertising stimuli were received by subjects, rather than the characteristics of messages per se. In other words, interactive advertising is not effective because subjects are not interested in cybershopping in spite of their exposure to the advertising messages. Looking from this perspective, the present study then opens new avenues for future research.

First, as industry proponents have admitted, interactivity will affect how advertisements will be produced and consumed in the future (Yovovich, 1994). In addition to interactivity, invitational cues that arouse consumers'/viewers' curiosity about the featured products or those that offer economic incentives (e.g., instant re-

bate and stake, or on-line coupons) may be a few elements that may increase the probabilities that users will view these interactive advertising. Interactivity as one of the executional factors in an advertisement cannot be singled out as a sole panacea for increasing advertising effectiveness. Attention-getting strategies can be similarly important for attracting viewers' interests to maximize the interactivity of advertising messages. It will be a challenge for advertising copywriters as well as researchers to figure out the "killer match" for all executional factors in interactive advertising.

Second, although advocates of interactive advertising have been very optimistic about the potential, the success of interactive advertising depends on more than incorporating interactivity into advertising messages. The understanding of consumers in terms of their preference of information and product, on-line and computer experiences, and the design of user-friendly interfaces are equally important. The relationships between interactivity and other marketing communication variables need further research.

Results from this experiment showed that advertisers thinking of incorporating interactivity into their commercial messages should be cautious. Increasing control of the viewers/users may lead to their complete avoidance of commercial messages. Prodigy's advertising strategy is to force commercial messages upon viewers by occupying the lower part of the screen. However, such obtrusion has caused a lot of complaints from users and may lead to users' dislike of the advertised products. Therefore, advertisers who are interested in adding interactive advertising to their campaign plan should conduct empirical research on the effects of voluntary and compulsory exposure to interactive advertising.

Finally, this study also raised an important question: Are traditional measures of advertising effectiveness appropriate and adequate to test interactive advertising? If traditional measures are inadequate, no significant effects of interactivity on advertising effectiveness can be attributed to the invalidity of traditional measures. The findings of no significant effects show academicians and professionals that old measures need to be transformed to better fit the new advertising environment and possibly that new copytesting and advertising effectiveness measures need be developed to better validate the effectiveness of interactive advertising in the future.

To take time spent on the advertising message for example. Although tra-

ditional mass media and advertising research assumed that longer exposure to messages would contribute to better effects, it is also possible that consumers' sense of control over interactive advertising may create a higher involvement and attention level during this interactive communication process. As a result, interactive advertising is better comprehended and more powerful than their non-interactive counterparts even if less time is spent. Therefore, it is likely that shorter exposure to advertising messages may be as effective as, if not more, than longer exposure.

Furthermore, demographic and lifestyle research of on-line information service users has also suggested that this group of consumers have many economic, but few temporal, resources. Interactive advertising would allow them to go through many brands and products in a short time. The sense of control over time may outweigh many other factors in consumers' decision-making process. Given the potential purchase power of this group, the amount of time spent on advertisements may become less relevant to marketers if the percentage of sale ends up increasing. In other words, time of exposure may be not as adequate and appropriate as sales for evaluating the effectiveness of interactive advertising. Therefore, future researchers should take consumer characteristics into consideration while developing or employing new measures to test the effectiveness of interactive advertising.

Interactive advertising has brought in new opportunities for the advertising industry. Industry proponents have supported that interactivity will increase audience involvement and result in better advertising effect (Levin, 1993). Furthermore, O'Connor (1989) suggested that the success of future advertising will depend on the ability to expand and use the number of new communications vehicles to carry persuasive messages to consumers. The consumer focus of interactive advertising has shifted the emphasis of advertising agencies. Ira Carlin, Media Director of McCann-Erickson Worldwide, claimed that, unless the nature of advertising is changed dramatically, there is no straightforward answer to the question: "How to make advertising attractive, so consumers will select it?" (Landler and Zinn, 1993). This study suggests that the success of interactive advertising depends on more than how to best design advertisements. It relies on how people view advertising and advertising effectiveness in an interactive age. What measures should be developed? More research needs to be done before interactive media and advertising can be applied to marketing and advertising communication.

Figure 1: Interaction of Interactivity and Product Type on the Time Spent on Ads

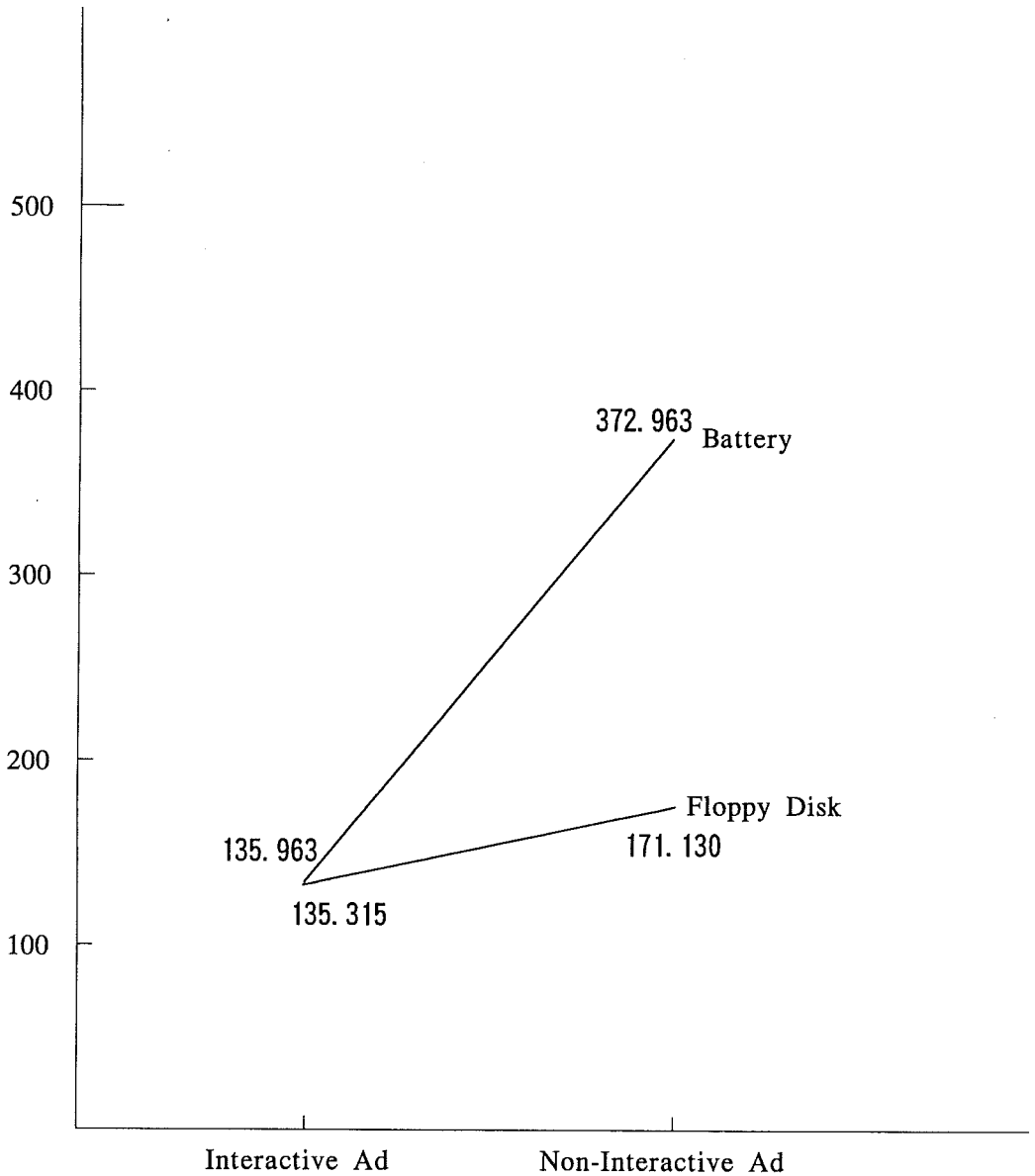

Table 1: Four Experiment Conditions

Experiment Condition	First Advertisement	Second Advertisement
1	Non-interactive Battery	Interactive Floppy Disk
2	Interactive Floppy Disk	Non-interactive Battery
3	Interactive Battery	Non-interactive Floppy Disk
4	Non-interactive Floppy Disk	Interactive Battery

Table 2: Manipulation of Interactivity in Test Advertisements

Source	d.f.	SS	MS	F	Pr>F
Model	119	317.59	2.67	2.62	<.01
Error	96	97.67	1.02		
Total	215	415.26	1.93		
Product	1	1.50	1.50	1.47	.23
Interactivity	1	11.57	11.57	11.38	<.01*
Nationality	2	14.79	7.39	2.96	.06
Order	1	0.46	0.46	0.46	.50
Prod*Inter	1	2.67	2.67	1.07	.30
Nat*Prod	2	2.69	1.35	1.32	.27
Prod*Order	1	2.67	2.67	1.07	.30
Nat*Inter	2	0.12	0.06	0.06	.94
Inter*Order	1	0.00	0.00	0.00	1.00
Nat*Order	2	0.95	0.48	0.47	.63
Nat*Prod*Inter	2	9.36	4.68	1.87	.16
Prod*Inter* Order	1	13.50	13.50	13.27	<.01*
Nat*Prod*Order	2	1.08	0.54	0.22	.81
Nat*Inter*Order	2	4.69	2.35	0.94	.39
Nat*Prod*Inter* Order	2	11.86	5.93	5.83	<.01*
Id(Nat)	96	239.67	2.50	2.45	<.01*

* significant at 0.05 level.

Notations for Reading This Table:

Prod:Product Involvement Levels

Inter: Interactivity of Advertisements

Nat: Nationality of Subjects

Order: Order of Advertisement Presentation

Id: Identification Number of Each Subject

Inter*Order: Interaction Effect between Interactivity and Order Effect

Table 3: Attitude toward Advertisements

Source	d.f.	SS	MS	F	Pr>F
Model	119	68.61	0.58	2.57	<.01
Error	96	21.55	0.22		
Total	215	90.16	0.42		
Product	1	0.02	0.02	0.10	.76
Interactivity	1	0.43	0.43	1.90	.17
Nationality	2	3.12	1.57	2.57	.08
Order	1	0.01	0.01	0.03	.86
Prod*Inter	1	0.20	0.20	0.34	.56
Nat*Prod	2	0.59	0.30	1.32	.27
Prod*Order	1	1.10	1.10	1.82	.18
Nat*Inter	2	0.42	0.21	0.94	.39
Inter*Order	1	0.18	0.18	0.30	.58
Nat*Order	2	1.16	0.58	2.59	.08
Nat*Prod*Inter	2	1.04	0.52	0.86	.43
Prod*Inter* Order	1	0.56	0.56	2.48	.12
Nat*Prod*Order	2	0.27	0.14	0.23	.80
Nat*Inter*Order	2	1.19	0.59	0.98	.38
Nat*Prod*Inter* Order	2	0.06	0.03	0.13	.88
Id(Nat)	96	58.25	0.60	2.70	<.01

* significant at 0.05 level.

Notations for Reading This Table:

Prod:Product Involvement Levels

Inter: Interactivity of Advertisements

Nat: Nationality of Subjects

Order: Order of Advertisement Presentation

Id: Identification Number of Each Subject

Inter*Order: Interaction Effect between Interactivity and Order Effect

Table 4: Attitude toward Advertised Products

Source	d.f.	SS	MS	F	Pr>F
Model	119	166.42	1.40	4.34	<.01
Error	96	30.94	0.32		
Total	215	197.36	0.92		
Product	1	3.65	3.65	11.34	<.01*
Interactivity	1	0.05	0.05	0.15	.70
Nationality	2	1.00	0.50	0.33	.72
Order	1	0.26	0.26	0.82	.37
Prod*Inter	1	2.77	2.77	1.82	.18
Nat*Prod	2	0.83	0.41	1.28	.28
Prod*Order	1	0.16	0.16	0.11	.75
Nat*Inter	2	1.71	0.86	2.65	.08
Inter*Order	1	0.01	0.01	0.00	1.00
Nat*Order	2	0.70	0.35	1.08	.34
Nat*Prod*Inter	2	0.30	0.15	0.10	.91
Prod*Inter* Order	1	0.06	0.06	0.20	.66
Nat*Prod*Order	2	1.44	0.72	0.47	.63
Nat*Inter*Order	2	0.72	0.36	0.24	.79
Nat*Prod*Inter* Order	2	7.00	3.50	10.79	<.01*
Id(Nat)	96	145.81	1.52	4.71	.01

* significant at 0.05 level.

Notations for Reading This Table:

Prod: Product Involvement Levels

Inter: Interactivity of Advertisements

Nat: Nationality of Subjects

Order: Order of Advertisement Presentation

Id: Identification Number of Each Subject

Inter*Order: Interaction Effect between Interactivity and Order Effect

Table 5: Purchase Intention of Advertised Products

Source	d.f.	SS	MS	F	Pr>F
Model	119	124583	1047	2.87	<.01
Error	96	35072	365		
Total	215	159655	743		
Product	1	1606	1606	4.40	.04*
Interactivity	1	234	234	0.64	.43
Nationality	2	3439	1719	1.53	.22
Order	1	730	365	2.00	.16
Prod*Inter	1	1125	1125	1.00	.32
Nat*Prod	2	988	988	1.35	.26
Prod*Order	1	3259	3259	2.89	.09
Nat*Inter	2	134	67	0.18	.83
Inter*Order	1	306	306	0.27	.60
Nat*Order	2	2785	1392	3.81	.03*
Nat*Prod*Inter	2	292	146	0.13	.88
Prod*Inter*Order	1	0.01	0.01	0.00	1.00
Nat*Prod*Order	2	235	178	0.10	.90
Nat*Inter*Order	2	49	25	0.02	.98
Nat*Prod*Inter*Order	2	1302	651	1.78	.17
Id(Nat)	96	108100	1126	3.08	<.01

* significant at 0.05 level.

Notations for Reading This Table:

Prod: Product Involvement Levels

Inter: Interactivity of Advertisements

Nat: Nationality of Subjects

Order: Order of Advertisement Presentation

Id: Identification Number of Each Subject

Inter*Order: Interaction Effect between Interactivity and Order Effect

Table 6: Total Amount of Time (in Seconds) Spent on Advertisements

Source	d.f.	SS	MS	F	Pr>F
Model	119	8828787	74191	1.27	.11
Error	96	5600719	58341		
Total	215	14429507	67114		
Product	1	553483	553483	9.49	<.01*
Interactivity	1	1004777	1004777	17.22	<.01*
Nationality	2	173190	86595	1.45	.24
Order	1	96689	48345	1.66	.20
Prod*Inter	1	546419	546419	9.13	<.01*
Nat*Prod	2	7575	3788	0.06	.94
Prod*Order	1	117507	117507	1.96	.16
Nat*Inter	2	60841	30420	0.52	.60
Inter*Order	1	16783	16783	0.28	.60
Nat*Order	2	125128	62564	1.07	.35
Nat*Prod*Inter	2	73135	36567	0.61	.55
Prod*Inter* Order	1	62969	62969	1.08	.30
Nat*Prod*Order	2	143663	7182	1.20	.31
Nat*Inter*Order	2	64285	32143	0.54	.59
Nat*Prod*Inter* Order	2	37780	18890	0.32	.72
Id(Nat)	96	5744563	59839	1.03	.45

* significant at 0.05 level.

Notations for Reading This Table:

Prod: Product Involvement Levels

Inter: Interactivity of Advertisements

Nat: Nationality of Subjects

Order: Order of Advertisement Presentation

Id: Identification Number of Each Subject

Inter*Order: Interaction Effect between Interactivity and Order Effect

Table 7: Respondents' Interest in Shopping Through Computers

	Interested	Not Interested	Total
U.S.	26	10	36
	72.2%	27.8%	100%
Taiwan	17	19	36
	47.2%	52.8%	100%
China	17	19	36
	47.2%	52.8%	100%
	60	48	108
	55.6%	44.4%	100%

Table 8: Subjects' Interest in Shopping Through Computer and Their Attitude toward Advertisements

Source	d.f.	SS	MS	F	Pr>F
Model	23	8.48	0.37	1.66	.05
Error	84	18.71	0.22		
Total	107	27.19	0.25		
Product	1	0.09	0.09	0.39	.53
Interactivity	1	0.77	0.77	3.47	.07
Nationality	2	1.92	0.96	4.31	.02*
Online	1	1.01	1.01	4.55	.04*
Prod*Inter	1	0.18	0.18	0.79	.38
Nat*Prod	2	0.74	0.37	1.66	.20
Prod*Online	1	0.00	0.00	0.01	.93
Nat*Inter	2	0.16	0.08	0.37	.69
Inter*Online	1	0.02	0.02	0.09	.77
Nat*Online	2	0.80	0.40	1.79	.17
Nat*Prod*Inter	2	0.01	0.00	0.01	.99
Prod*Inter *Online	1	0.59	0.59	2.64	.11
Nat*Prod*Online	2	0.33	0.17	0.73	.48
Nat*Inter*Online	2	1.27	0.64	2.86	.06
Nat*Prod*Inter *Online	2	0.32	0.16	0.71	.50

* significant at 0.05 level.

Notations for Reading This Table:

Prod: Product Involvement Levels

Inter: Interactivity of Advertisements

Nat: Nationality of Subjects

Order: Order of Advertisement Presentation

Online: Interest in On-line Shopping

Id: Identification Number of Each Subject

Inter*Order: Interaction Effect between Interactivity and Order Effect

Table 9: Subjects' Interest in Shopping Through Computer and Their Purchase Intention of Advertised Products

Source	d.f.	SS	MS	F	Pr>F
Model	23	15572	677	0.97	.52
Error	84	58886	701		
Total	107	74458	696		
Product	1	162	162	0.23	.63
Interactivity	1	48	48	0.07	.79
Nationality	2	3347	1674	2.39	.10
Online	1	3798	3798	5.42	.02*
Prod*Inter	1	646	646	0.92	.34
Nat*Prod	2	2651	1326	1.89	.16
Prod*Online	1	3212	3212	4.58	.04*
Nat*Inter	2	338	169	0.24	.79
Inter*Online	1	218	218	0.31	.58
Nat*Online	2	379	190	0.27	.76
Nat*Prod*Inter	2	36	18	0.03	.98
Prod*Inter *Online	1	172	172	0.25	.62
Nat*Prod*Online	2	968	484	0.69	.50
Nat*Inter*Online	2	1065	533	0.76	.47
Nat*Prod*Inter *Online	2	14	7	0.01	.99

* significant at 0.05 level.

Notations for Reading This Table:

Prod: Product Involvement Levels

Inter: Interactivity of Advertisements

Nat: Nationality of Subjects

Order: Order of Advertisement Presentation

Online: Interest in On-line Shopping

Id: Identification Number of Each Subject

Inter*Order: Interaction Effect between Interactivity and Order Effect

Table 10: I will buy something form this shopping service only if I find just what I need.

	Neutral/ Undecided	Agree	Strongly Agree	Total
U.S.	1 4%	12 48%	12 48%	25 100%
Taiwan	5 29.4%	4 23.5%	8 47.1%	17 100%
China	0 0%	11 64.7%	6 35.3%	17 100%
	6 10.2%	27 45.8%	26 44.1%	59 100%

Table 11: I am interested in this shopping service because of its convenience.

	Disagree to Neutral or Undecided	Agree	Strongly Agree	Total
U.S.	2 7.7%	12 46.2%	12 46.2%	26 100%
Taiwan	3 17.6%	8 47.1%	6 35.3%	17 100%
China	3 17.6%	4 23.5%	10 58.8%	17 100%
	8 13.3%	24 40%	28 46.7%	60 100%

Table 12: I think shopping through computer is time-saving.

	Neutral/ Undecided	Agree	Strongly Agree	Total
U.S.	9 36%	10 40%	6 24%	25 100%
Taiwan	3 17.6%	5 29.4%	9 52.9%	17 100%
China	3 17.6%	7 41.2%	7 41.2%	17 100%
	15 25.4%	22 37.3%	22 37.3%	59 100%

Table 13: I am interested in this shopping service because it is innovative.

	Disagree to Neutral or Undecided	Strongly Agree to Agree	Total
U.S.	9 34.6%	17 65.4%	26 100%
Taiwan	0 0%	17 100%	17 100%
China	8 47.1%	9 52.9%	17 100%
	17 28.3%	43 71.1%	60 100%

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互動式廣告有效性先探研究：以跨國電腦使用者爲研究對象

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《本文摘要》

隨著互動式媒體的風行，互動式廣告已變成廣告行銷界最熱門的話題。自從1993年10月起，專業雜誌『廣告年代』就在其刊物中開始了一系列互動式媒體的專欄。隨著最近網際網路、全球資訊網以及國家資訊基礎建設的熱潮，更將互動式廣告的高潮向前推進一大步。

雖然業者普遍對互動式廣告的前景，持有樂觀的看法。但是，不管學界或業界一直缺乏對互動式廣告有效性的研究。相對於傳統媒體而言，互動式廣告到底會不會更有效，本篇論文即對此一重要問題加以探討。

本研究採實驗法。108位來自臺灣、大陸與美國的研究生參與這一項研究。廣告訊息分爲互動及非互動兩類，廣告產品爲中、低涉入度的乾電池與磁碟片。並利用以下四個因變數來測試廣告效果：1.受測者對廣告商的態度；2.受測者對廣告商品的態度；3.受測者購買廣告商品之意願；4.受測者花在看廣告時間之多寡。

本研究發現互動式廣告並不會比非互動式廣告來得有效。其他廣告傳播的變數反而會影響互動式廣告能否有效地達成行銷目標。除此之外，消費者對線上購物的興趣、虛擬商店的特質，也會影響互動式廣告的效果。