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Introduction

The past few years have witnessed a rapid growth in the number of businesses engaged in electronic commerce, especially in the utilization of the Internet as a business tool. However, little is known about consumers' general attitudes toward this new medium. Much of the uncertainty comes from a lack of valid measurement of latent variables, such as "attitude", in the Internet context. While a great amount of literature on the Internet and the World Wide Web (WWW) has focused on the impact of advertising through this new medium, there is a relative dearth of basic research to explore methodological issues in assessing the effectiveness of advertising in the new medium. Thus this paper aims to develop a valid scale to appraise consumer's perceptions of advertising on the Internet and the WWW. Issues regarding the merit of measurement scales and the clarity of such scales to measure the impact of advertising in the WWW are also discussed.

It has been most common in advertising research to examine the effectiveness of the advertising by means of the attitude concept. The widely used Fishbein model and its variants (Fishbein 1967; Fishbein and Ajzen 1975) posit that the *cognitive structure toward the object* is the determinant of the *evaluation* of an object. Initially, Fishbein model (1967) focused upon attitudes towards a specific object. Subsequently, the model has been extended to explore how attitudes towards object determine *behavior* (Fishbein and Ajzen, 1975). This particular theory is called the theory of reasoned action (TRA). The theory postulates that a person's *intention to perform* a specific behavior based on one's attitude toward a particular object is the immediate determinant of *behavior*. Other variables may influence intentions and behavior only by influencing attitude construct.

The relationships among cognitive structure, evaluation, intention, and behavior as outlined in the theory have been demonstrated in various studies. Of most relevance to this study includes the previous use of the theory to predict various aspects of Web impact (e.g. Madox and Mehta 1997; and Briggs and Hollis 1997; and Ducoff 1996). Maddox and Mehta's (1997) studied the value of including a Web address in a traditional mass media advertisement. Briggs and Hollis (1997) focused on banner advertising on the Web and its impact on consumes' attitudes and behavioral response. Finally, Ducoff (1996) conducted a study on consumers' perceived value of advertising on the World Wide Web. The findings showed that there were a strong association between advertising value and attitude toward Web advertising.

In the study of Ducoff (1996), the construct of attitude toward Web advertising is measured by only one item scale: "How would you describe your overall attitude toward advertising on the World Wide Web?" However, most constructs, including attitude, by definition are too complicated to be assessed by a single item effectively (Peter 1979). Therefore, multi-item scales are more suitable and more recommended. Hence, the authors propose the following sub-constructs that reflect the attitude toward Web advertising.

The Proposed Measurement Model

Figure 1 depicts the proposed measurement model of the effectiveness of Web advertising. Using concepts from Fishbein model and the theory of reasoned action (TRA), the authors propose that the effectiveness of Web advertising should be measured based on three dimensions: *Awareness, Preference, and Intended Behavior*. This notion is also conformed to Lavidge and Steiner (1961)'s dimensions of the objectives of advertising which comprises cognitive, affective, and conative function. Web advertising's cognitive function refers to information and facts for the purpose of making consumers aware and knowledgeable about the sponsored brand. Web adver-tising's affective function generates liking and preference for the sponsored brand- preference presumably refers to more favorable attitudes. Thus, affective function means persuasive of the advertising. Lastly, Web advertising's conative function is considered as a desire to buy the sponsored brand.
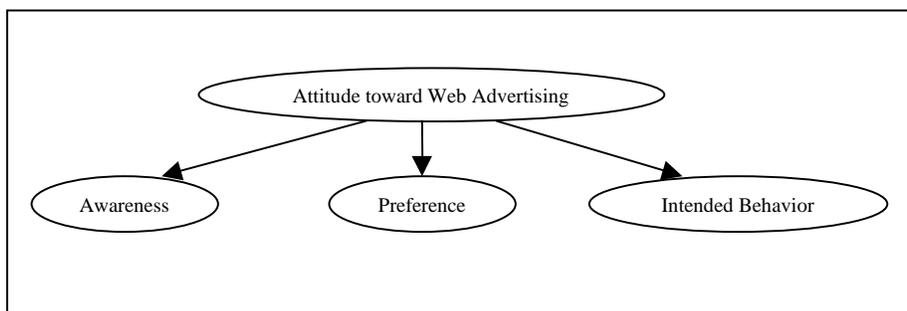

Figure 1. Proposed Measurement Model of the Effectiveness of the Web Advertising

Awareness (Cognitive)

Awareness is a crucial measure of the overall attitude. The *awareness* of the Internet advertisement can be partially measured by asking the

respondents whether they have ever noticed any advertisement on the Internet. However, the result from this direct approach is not sufficient to determine the degree of awareness, thus it is not able to produce a complete awareness score for the respondent. *Memory* is defined as the retention of the information over a period of time, and it is closely correlated with brand/product awareness. Previous research has used memory in the same domain with awareness (Moriarty, 1996); therefore, it would be valid to measure the retention of the information in order to detect the missing part of the awareness score. Led by this reasoning, the authors included items that measure the degree to which Internet advertisements are recalled by the respondent in the questionnaire.

Preference (Affective)

The versatility of the Internet allows businesses to convey messages to the viewers in different forms to achieve the visual and audio effectiveness that other advertising mediums offer. It also allows organizations to attend to their audiences' needs and respond to what they want to know and not what you want to tell them in a timely manner (Hoke, Ray, and Galenskas 1997). Therefore, it is agreed that the Internet, as an advertising medium, offers some apparent advantages over the traditional mediums (e.g. newspaper, magazines, radio, and TV). A comparison of the Internet with the traditional medium is useful in determining the degree of users' preference of the Web advertisements.

Characterized by the ease and low cost of establishment, the Internet has provided essentially equal access opportunity for all business players, regardless of their size. At the same time, the credibility of the information distributed over the Internet is seriously questioned (Maignan and Lukas, 1997). The incredibility of the information on the Internet is believed to discourage consumers' preference of the medium; therefore, it would be an important measure of consumers' preference of the Internet.

Intended Behavior (Conative)

Viewers' actions towards the advertisement are the ultimate concerns of the organization. The three potential actions are identified: learning, information dissemination, and buying. As a source of information, the Internet facilitates social learning (Hoffman and Novak 1996). The *ongoing learning experience* can be defined as a set of activities involving the gathering of information independently of specific purchase needs or decisions (Bloch, Sherrell, and Ridgway, 1986). Learning more about a product is considered an important action after seeing an advertisement because it expresses consumers' interest towards the product, which might lead to purchase. *Information dissemination* refers to the situation in which the viewer tells or recommends others about the product from the advertisement. *Buying* is the action that brings the sales to the organization, and it is a direct measure of the effectiveness of the advertisement. Studying how Internet advertisements stimulate these potential actions provides great insights about consumers' general attitude toward this new medium.

Methodology

A literature review in the discipline of marketing and MIS was conducted to ensure the comprehensiveness of the list of the items used in measuring the three constructs. Based on the review and the researchers' interpretation of them in the Internet context, 15 items were generated. Pretest was conducted to ensure the content validity of the research items. The list of items was incorporated into a preliminary questionnaire, which was distributed to a number of academics and practitioners in the field for review. The respondents were asked to rate the relevance of the items to the measured constructs. Comments were obtained on the writing and suitability of the items, as well as the need to add, delete, or modify items. The questionnaire was refined and finalized based on the results from the pretest. The final version consisted of 10 research items. Questionnaires including the ten research items were distributed among undergraduate and graduate students with a wide range of demographic characteristics. Among all the returned questionnaires, eighty-four were found to be useable.

Analysis and Results

Confirmatory Factor Analysis was used to examine the validity of 10 items and the 3 underlying dimensions of the effectiveness of web advertising. To perform a confirmatory analysis to evaluate the scale of the effectiveness of web advertising, a tentative test model was adopted to delineate an effectiveness of web advertising model. It had 3 dimensions: awareness (3 items), preference (4 items), and action (3 items). These scales were subjected to a confirmatory factor analysis. Table 1 summarizes the correlation matrix of the 10 research items.

Using a correlation matrix as input, the initial test of the measurement model produced strong measures of fit between the data and the proposed measurement model (Chi-square = 22.21, df = 32, p = 0.90, GFI = 0.95, NFI = 0.94). However, the Lamda-X result showed that item A1 has a relatively low loading on the Awareness construct (Lamda-X = 0.43, p = 0.11), and the item produces higher Modification Index for Theta-Delta compared with other items. Hence, another confirmatory factor analysis was undertaken by discarding item A1 to further refine the scale of the effectiveness of web advertising.

Table 1. Correlation Matrix

	A2	A3	B1	B2	B3	B4	C1	C2	C3
A2	1.00								
A3	0.72	1.00							
B1	0.19	0.22	1.00						
B2	0.13	0.13	0.60	1.00					
B3	0.12	0.18	0.60	0.58	1.00				
B4	0.15	0.19	0.61	0.62	0.67	1.00			
C1	0.49	0.46	0.32	0.23	0.29	0.33	1.00		
C2	0.36	0.37	0.21	0.17	0.25	0.17	0.47	1.00	
C3	0.37	0.36	0.36	0.30	0.41	0.39	0.67	0.58	1.00

The second confirmatory analysis significantly improved the goodness of fit between the data and the measurement model. The Chi-square reduced to 13.63 (p = 0.95), and Goodness of Fit Index (GFI) and Normed Fit Index (NFI) increased to 0.97 and 0.96, respectively. To assess the reliability of the scale, experts have suggested examining several criteria, including composite reliability and average variance extracted (Bagozzi and Yi, 1988). The composite reliability for awareness, preference, and action were calculated to be 0.84, 0.86, and 0.81, respectively. They were all higher than the benchmark of 0.6 recommended by Bagozzi and Yi (1988). They suggested a high internal reliability of the data exist. The average variance extracted for awareness, preference, and action were calculated to be 0.72, 0.62, and 0.59, respectively. They were all higher than the benchmark of 0.5 recommended by Bagozzi and Yi (1988). Overall, the measures suggest high reliability of the scale of effectiveness of Web advertising. Also, from the correlation matrix, the authors found that all of the items were adequately correlated within each construct. This evidence suggested the presence of convergent validity. Furthermore, the correlation matrix indicated that most of the items have low correlation with items of other constructs. Therefore, the discriminant validity is clearly evident in the scale of the effectiveness of Web advertising.

Practical and Theoretical Application of the Instrument

The major contribution of this article is the 9-item instrument measuring the three constructs of the effectiveness of Web advertising – Awareness, Preference, and Action. The empirical and literature support suggested that the effectiveness of Web advertising should be measured as the attitude of consumers. The instrument has both practical and theoretical implications.

For business managers, the scale can be used to evaluate the potential success of a Web advertisement before fully implementing it. Focus group is a commonly used method in marketing research to obtain customer data, and the proposed instrument is easily applicable for this particular method. On the same token, this scale can also be used as an ad hoc method to evaluate the success of a company's Web advertising campaign. Thus, the campaign can be further refined to better achieve the business objectives.

For researchers who are interested in the WWW phenomena, this scale can be used as a helpful resource to test hypotheses and generate future research questions. As early mentioned, this scale incorporates the notion of Awareness, Preference, and Action, which can be utilized as the basis for further exploration of electronic purchasing behavior on the Internet. One of the most intriguing questions is the relationship between the Web advertisement and online purchasing. It is expected that the Internet users' involvement in online purchasing may be closely associated with the effectiveness of the Web advertising.

Conclusion

This article developed an instrument for measuring the effectiveness of Web advertising. Confirmatory factor analysis was conducted to validate the measurement for the three constructs of the effectiveness of Web advertising – Awareness, Preference, and Action. The results suggested a 9-item instrument. The instrument appears to have adequate reliability and validity. It is parsimonious yet represents various aspects of the effectiveness of Web advertising, hence it is recommended for both practical and research purposes.

References

References available upon request from first author (nsukpnch@memphis.edu).