The impact of context on display ad effectiveness: Automatic attitude activation and applicability

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A B S T R A C T

Display and search ads are the most popular Internet ad formats. Instead of being placed on search engine result pages, display ads are placed on webpages that include more actual content. In order to improve online contextual advertising, the effects of webpage content on embedded display ads must be understood. This study investigates how viewers' attitudes toward content and the applicability of that content to the adjacent display ads impact the effectiveness of those ads. The moderating effects of viewers' attention and need for cognition are also examined. The experimental results show that webpage content automatically activates ad evaluations, and that this effect increases when viewers pay less attention to the ad or have a high need for cognition. If the webpage content is highly applicable to the ad, improvements are seen in the attitude toward the ad and the attitude toward the brand.

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1. Introduction

Online advertising revenues continue to increase at a high rate. The IAB's Internet Advertising Revenue Report showed that Internet advertising revenues in the United States totaled $42.8 billion in 2013, an increase of 17% over 2012. According to Nielsen's Global AdView Pulse Report, although the majority of global ad dollars were spent on television ads in 2013, Internet ad spending grew faster than that of any other media. The market research company eMarketer reported that search and display ads are the most popular Internet ad formats, making up roughly 90% of online ad spending. While search ads placed on the results pages of search engines are selected by matching the key search terms entered by users, display ads are placed on webpages that include more actual content. Internet users spend the majority of their time online on content page views. Search page views make up only 3–5% of all page views on the Web (Geddes, 2012). In most cases, however, webpage display ads are selected either randomly or based on correlations with keywords in the page content. In order to improve the effectiveness of display ads, the effects of webpage content on embedded display ads must be more deeply investigated and understood.

Internet advertising services such as Google AdWords, Yahoo! Search Marketing, and Bing Ads use ad delivery systems a.k.a. ad servers to place advertisements on websites and search engine

results pages. Geddes (2012) described how Google AdWords matches display ads with webpages in its display network. First, Google scans a page and assigns a theme to that page. Next, Google scans the advertiser's ad group (a collection of closely related keywords) and assigns a theme for that ad group based on the keywords chosen by the advertiser. Finally, Google places the display ad on a page when the webpage content and the advertiser's ad group contain the same theme. Existing Internet advertising services have not considered concept-level congruence between webpage content and ads and the effect of viewers' attitudes toward webpage content on display ads for online advertisement delivery.

Little research has been done to investigate the effects of webpage content on embedded ads. Huang and Chen (2012) found that mood states induced by webpage content impact viewers' attitudes (toward the products advertised by banner ads), purchase intentions and ad clicks. Induced positive mood states have favorable impacts. Attitude, emotion and mood are basic affective concepts (Zhang, 2013). *Attitude* is a summative evaluation of a stimulus (Cacioppo and Berntson, 1994; Crites et al., 1994). *Emotion* is an affective state induced by or attributed to a specific stimulus (Barrett et al., 2007; Clore and Schnall, 2005; Russell, 2003). Attitudes and emotions are a person's responses to a stimulus. Emotions are ephemeral and cannot be stored in memory. They exist only as long as the supporting cognition, perceptions or other elicitors are active. In contrast, attitudes are evaluative tendencies that do not necessarily vanish when one stops thinking about the object of the attitude (Clore and Schnall, 2005). *Moods*

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are low-intensity, diffuse, and relatively enduring affective states without a specific stimulus and with little cognitive content (Forgas, 2001). Context-induced moods and attitudes have more potential influence on individuals' judgments because moods and attitudes are relatively longer lived than emotions.

Prior studies on the effects of context on ad effectiveness focus mainly on context-induced moods rather than context-activated attitudes (Gardner, 1985; Huang and Chen, 2012; Luomala and Laaksonen, 2000; Poels and Dewitte, 2006). Though consumers' *mood states* are difficult to detect, particularly on the Web, several techniques like recommender systems (Adomavicius and Tuzhilin, 2005; Bobadilla et al., 2013; Huang, 2011) and opinion mining (Liu, 2011; Pang and Lee, 2008) can be used to detect or predict consumers' *attitudes* toward webpage content. The present study aims to investigate how a viewer's attitude toward the content of a webpage impacts the effectiveness of the embedded display ads.

In order to improve ad effectiveness, Internet advertising service providers ensure that the display ads they embed have the same themes or product categories as the webpages on which the ads are embedded. Prior studies have found that consumer responses to banner ads are enhanced when the product category of the advertised product is congruent with that of the website (Choi and Rifon, 2002; Moore et al., 2005). However, advertisers might want to increase viewers' impressions of certain display ads by allowing those ads to appear on a variety of websites or webpages. Is it appropriate to place a mobile-phone ad on a travel website? The important issue is how to determine the kinds of webpages on which ads can be appropriately placed even when the ads and webpage content are not theme-congruent. Thus, another aim of this study is to examine the effects of the applicability of webpage content to display ads. Applicability is the degree to which features of contextual primes and presented target stimuli overlap or fit (Shen and Chen, 2007). High applicability of the webpage content to the ads means that the concepts primed by the webpage content significantly overlap the attended features of the embedded ads (concept-level congruence). In contrast, high theme-congruence between webpage content and ads means that the webpage content and the ad focus on similar product categories. Content-ad theme congruence (e.g., placing a mobile-phone ad on a mobile-phone website) implies a high level of applicability; nevertheless, a high level of applicability may also occur when the webpage content and the ads are theme incongruent (e.g., placing a mobile-phone ad on a travel website that primes the concept "mobility"). The relevance between the features of webpage content and the features of display ads (or their landing pages) can be calculated using the techniques of information retrieval and document classification (Liu, 2011; Manning et al., 2008).

This study focuses on the contextual priming effects of web-page-content attitude and applicability because they can be detected and manipulated by information systems. Thus, the research findings can be used to improve ad delivery systems and, subsequently, enhance ad effectiveness. Furthermore, viewers may rely on contextual cues to process ad information and form their attitudes toward the ad if their elaboration levels are low (Petty and Cacioppo, 1986a,b). This study also investigates the moderating effects of both the attention viewers paid to the ad and their need for cognition on the influences of webpage content on ad effectiveness. To summarize, this study would like to answer the following research questions:

- RQ1: How does the viewer's attitude toward the webpage content impact the effectiveness of the embedded display ads?
- RQ2: How does concept-level congruence between the webpage content and the embedded display ads impact the effectiveness of the ads?

- RQ3: How do viewers' elaboration levels, particularly the attention they pay to the display ads and their need for cognition, moderate the context effect on ad effectiveness?

The remainder of this paper is organized as follows. The next section reviews relevant literature and proposes research hypotheses based on priming theory. The third section develops the research framework. The research methodology and experimental procedure are described in the fourth section. Data analysis results are described and discussed in the fifth and sixth sections. The paper concludes with theoretical and practical implications.

2. Literature review and hypothesis development

Interpretation of information often depends on the particular knowledge structures (e.g., concepts and schemas) that are currently active (Higgins and King, 1981; Wyer and Srull, 1981). Active or accessible concepts serve to direct attention to selective aspects of information and are likely to be used in subsequent interpretations. Priming refers to the process of activating parts of particular representations or associations in memory just before carrying out an action or task (Higgins and King, 1981). Individuals do not draw upon all cognitive schemata to guide information processing; rather, they tend to rely on the schema that is most accessible at the decision point (Higgins et al., 1985; Higgins and King, 1981). Priming could be applied to activate a user's previously stored schema (preexisting constellations of implicit knowledge, beliefs and expectations) and bring it to the working memory, which then becomes accessible for guiding information processing and judgment formation (Dou et al., 2010; Mandel and Johnson, 2002; Wyer and Srull, 1981). Priming works in implicit memory, a non-conscious form of human memory; it does not involve explicit or conscious recollection of previous experiences (Tulving and Schacter, 1990).

Priming effects can be explained via a spreading-activation model (Collins and Loftus, 1975; Klauer and Musch, 2003). The model views memory search as activation spreading from the node of the primed concept to the nodes linked to it in a semantic network, down to some depth. When another concept is subsequently presented, it makes contact with an activated node to find an intersection. The semantic network is organized along the lines of semantic similarity. The more properties two concepts have in common, the more closely related are the concepts. The priming of a concept increases its excitation level, and a concept's excitation level must reach a certain minimal threshold for that concept to be used in stimulus processing (Collins and Loftus, 1975; Higgins et al., 1985).

Environmental events or contexts can trigger both cognitive and affective reactions (Yi, 1990a). The advertising context can prime recipients with certain concepts or attributes and guide their interpretations of the information in the ad. In addition to cognitive priming, advertising context is often negatively or positively valenced, it can trigger overall affective reactions and, thus, affective priming occurs. In order to fully understand the impact of online context on display ad effectiveness, both cognitive and affective priming effects need to be examined.

Prior studies on affective priming in the context of advertising focus mainly on the effects of context-induced moods on ad effectiveness. Generally, consumers in context-induced positive moods have a more positive attitude toward the advertisement (Goldberg and Gorn, 1987; Huang and Chen, 2012; Yi, 1990a), a more positive attitude toward the brand (Gardner and Wilhelm, 1987) and a higher level of purchase intention (Huang and Chen, 2012; Yi, 1990a) than those in context-induced negative moods. However, how attitude toward the context (itself) affects ad effectiveness