Computers in Human Behavior 46 (2015) 202–209

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

The effect of repetition in Internet banner ads and the moderating role of animation

Joowon Lee [a], Jae-Hyeon Ahn [b,*], Byungho Park [b]

[a] McCombs School of Business, The University of Texas at Austin, University of Texas at Austin, 2100 Speedway, Austin, TX 78712, United States[1]
[b] KAIST Business School, 207-43, 87 Hoegiro, Chengrangri-2-Dong, Dongdaemun-Gu, Seoul, Republic of Korea

ARTICLE INFO

Article history:
Available online 6 February 2015

Keywords:
Banner ads
Advertising repetition
Wear-out effect
Eye-tracking

ABSTRACT

Many advertising repetition studies have demonstrated wear-out effects, and found several moderating variables. In the context of Internet banner ads, this study examines the effects of repetition on attention, memory, and attitude, and identifies the moderating role of animation. By analyzing data on users' actual visual attention, we found attention wear-out occurs with static but not with animated banner ads, which consequently influences the downstream effects: Compared to a static banner ad, an animated ad barely attracts consumers' attention initially, resulting in worse memory performance and attitude in the beginning. However, with repeated brief exposures, animated banner ads eventually catch up with the static ads on memory and generate even better performance in terms of attitude. To summarize, animations signal the users the existence of ads and lead to ad avoidance behavior, but after repetitive exposures they induce positive user attitude through the mere exposure effect. Both the theoretical and practical implications are explored for using animation on the banner ads.

1. Introduction

As more products become available in the market, consumers are exposed to more advertising. Yankelovich, market research firm, estimated that a consumer living in a city saw up to 5000 ad messages a day in 2007, compared with up to 2000 ad messages 30 years ago (Story, 2007). In this information-overloaded environment, the scarcest resource is people's attention (Davenport & Beck, 2001). To attract consumers' attention, advertisers try various methods, such as repetitive exposure of ads (Pechmann & Stewart, 1989) or the use of animation in ads (Kuisma, Simola, Uusitalo, & Oorni, 2010). A significant amount of the literature has addressed the effect of repetition in advertising, especially in the context of television commercials. Most studies argue that advertising repetition is essential for optimal effectiveness but that excessive repetition ultimately has negative effects, the wear-out effect. However, when viewers control the duration of their exposure to an advertisement, such as in the case of print advertising and Internet banner ads, a different response to advertising repetition can be seen (Pieters, Rosbergen, & Wedel, 1999); attention duration decreases significantly with advertising repetition and thus the expected negative effects on attitude do not appear.

Animation (simple Flash or GIF format) is one of the most popular attention-grabbing tools. In 2009, among all banner ad formats served via the DoubleClick platform, simple flash ads accounted for 54% whereas static ads accounted for 28% (DoubleClick, 2010). However, with accumulated Internet experience, people tend to develop a habit of avoiding animation, assuming that all are advertisements (Lapa, 2007). In the same vein, a number of recent studies have shown the negative effects of animation in banner ads on advertising effectiveness (e.g. Burke, Hornof, Nilsen, & Gorman, 2005; Day, Shyi, & Wang, 2006; Hong, Thong, & Tam, 2004; Hsieh, Chen, & Ma, 2012; Kuisma et al., 2010; Lee & Ahn, 2012). Then, do these results imply that we should not use or reduce animation in banner ads? For static and animated banner ads, how will the effectiveness of banner ads be different and change with the advertising repetition?

To address these issues, this study adopts the eye-tracking approach to investigate the effect of animation in banner ads on attention and its downstream effects across advertising repetition. In particular, for the three types of wear-out effects (Pieters et al., 1999), the following questions are addressed and their implications are explored in this paper:

1. Attention wear-out effect: Does attention decrease with banner ad repetition for static and animated banner ads?

* Corresponding author. Tel.: +82 2 958 3677.
E-mail addresses: jwlee1015@gmail.com (J. Lee), jahn@business.kaist.ac.kr (J.-H. Ahn), mediapark@business.kaist.ac.kr (B. Park).
[1] Present address.

http://dx.doi.org/10.1016/j.chb.2015.01.008
0747-5632/

2. Learning wear-out effect: Does memory performance reach plateau due to banner ad repetition for static and animated banner ads?
3. Acceptance wear-out effect: How does attitude toward the advertised brand change with banner ad repetition for static and animated banner ads?

This paper is organized as follows. Section 2 examines the theoretical background and presents the research hypotheses. Section 3 describes the research method and experimental procedure, and Section 4 discusses the results. Finally, Section 5 concludes with a summary of the research, contributions, limitations, and suggestions for future research.

2. Theoretical background and hypotheses

2.1. Advertising repetition and wear-out effect

Previous research on advertising repetition has found an inverted U-shaped relationship between the number of exposures and advertising effectiveness (Berlyne, 1987; Cacioppo & Petty, 1979): Ads' effectiveness increases during the initial phase of advertising repetition (wear-in) and then decreases with more repetition (wear-out). The second phase, wear-out, begins mostly with the fourth exposure (Pechmann & Stewart, 1989); in this phase, additional exposure has no significant effect on users and can even have a negative effect. Wear-out of advertising effectiveness has been found in relation to attention (Pieters et al., 1999), recall (Burke et al., 2005; Cacioppo & Petty, 1980; Ray & Sawyer, 1971), and attitude and purchase intention (Calder & Sternthal, 1980; Haugtvedt, Schumann, Schneier, & Warren, 1994), which are labeled as attention wear-out, learning wear-out, and acceptance wear-out, respectively.

In many studies, mostly in the context of TV commercials, wear-out is explained from an information processing viewpoint, which suggests that effectiveness begins to decrease because of tedium due to boredom and irritation. Cacioppo and Petty (1979) devised a two-stage argument elaboration model that states moderate repetition increases agreement with a persuasive message, whereas high levels of repetition result in tedium or psychological reactance. Calder and Sternthal (1980) suggested that repeated exposure to an advertisement produces more negative evaluative reactions to the advertisements. Similarly, Belch (1982) showed that cognitive responses become more negative with repetition and negative thoughts surpass positive thoughts after three exposures. These cognitive responses generated by message repetition ultimately affect users' attitudinal changes, that is, advertising effectiveness (Cacioppo & Petty, 1979). Besides the information processing viewpoint, inattention is also known to cause wear-out (Calder & Sternthal, 1980), especially when consumers can control the duration of exposure to the advertisements. This means that consumers can pay less attention to certain areas if they so choose, which leads to decreased attention (attention wear-out), which afterwards may affect learning and acceptance wear-out (Pieters et al., 1999).

2.2. Attention wear-out for static vs. animation banner ads

Attention wear-out occurs immediately after the first advertising repetition when consumers can control the amount of attention they give to the advertisements (Pieters et al., 1999) as in the case of Internet banner ads. And it is remarkable that the findings of recent studies are more often against animated banner ads. For example, Internet users are found to avoid animated banner ads in embedded editorial content and pay the least possible attention to them (Lee & Ahn, 2012). Tavassoli (2008) argued that this is because users are trained to ignore and devalue salient online ads after repeated experience. Then, what will happen when an animated banner ad is repeatedly exposed? How would Internet users' tendency to avoid an animated banner ad affect their attention behavior?

In the light of the preceding discussion, it can be conjectured that static banner ads, to which users initially pay attention, are expected to have an immediate attention wear-out effect across repetition. However, because Internet users pay little attention to animated banner ads even at the first exposure, advertising repetition may not decrease the amount of attention paid to them (floor-effect). Therefore, the following hypothesis concerning banner ad repetition and the attention wear-out effect is proposed.

H1. Attention decreases across repetition with static banner ads, but not with animated banner ads.

2.3. Learning wear-out for static vs. animated banner ads

As consumers' exposures to an advertisement become more prevalent, they are more likely to look at, process, and store the advertising message. Many studies have shown the positive relation between ad repetition and memory performance. Batra and Ray (1986) found ad recall rose from 8% for one exposure to 26% for two exposures and 88% for four exposures. Similarly, Burke and Srull (1988) stated that advertising repetition had a significant impact on the ability of subjects to engage in cued recall of brand information correctly and that the relation between ad exposure frequency and cued recall depended on the level of competitive advertising.

The positive relation between the number of repetition and memory, however, is not infinite. That is, the increase in memory reaches a plateau after a certain amount of repetition. Craig, Sternthal, and Leavitt (1976) showed that brand name recall rate declined when advertising repetition increased beyond a certain threshold and proved that decrease in attention (i.e. attention wear-out) accounted for this learning wear-out. Gorn and Goldberg (1982) found that three exposures had positive effects on recognition, whereas further exposures had little effect; Schumann, Petty, and Clemons (1990) found it took four to eight exposures to reach maximum recall, depending on ad variation and personal product-relevance. After reviewing a large number of studies on advertising repetition, Pechmann and Stewart (1989) suggested that memory performance may peak at the sixth exposure.

The same applies to banner ads. Advertising repetition is expected to have positive effects on memory, to some extent. However, exposure does not always mean that the consumer has paid attention to the advertisement, especially when consumers control their attention to the messages. Therefore, memory performance would show different patterns, depending on the amount of attention the consumer has paid. If hypothesis 1 holds true, learning wear-out is expected to happen in the case of static banner ads as a consequence of attention wear-out, but more repetition would be necessary to reach the maximum level of memorization in the case of animated banner ads. On the basis of the above discussion, animation in banner ads is expected to moderate the effect of advertising repetition on memory, leading to the following hypothesis.

H2. Across repetition, learning wear-out occurs more quickly for static banner ads than for animated banner ads.