

# HOW DIFFERENT BROWSING CONTENTS AFFECT VIEWER'S ATTENTION ON INTERNET ADVERTISING

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## ABSTRACT

The effect of internet advertising has been a controversial issue, especially on the topic of how to effectively draw more attention from internet users. According to traditional attention theory, we know people pay lesser attention on other objects if the main browsing contents occupy more of the viewer's mental resources. Therefore, we know different browsing contents should have different influences on users' attention. On the other hand, the "Banner Blindness" effect makes viewers naturally overlook the advertising based on their previous experience. In view of these complicated factors for internet advertising, verifying the different influences of the browsing contents on advertising attention is the main goal of this study.

Great amounts of previous studies relevant to internet advertising focused on the advertisement itself, like the form, color, size and location. However, this study put focus on how the browsing contents and the webpage structure influence the viewer's attention on banner advertising. This research tested four common types of browsing contents on the Internet: (1) text-based webpage; (2) text-picture mixed webpage; (3) picture-based webpage; and (4) video-based webpage. This study hopes to provide valuable information for matching advertising with viewing tasks that will stimulate the most user attention.

**Keywords:** *Attention, Internet Advertising, Banner Blindness, viewing tasks*

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## 1. INTRODUCTION

According to previous researches on advertising, if the advertising tone differs greatly from that of the webpage's main content, consumers will pay more attention to the advertising because of the novelty and salience. Therefore diversity enhances recognition and recall (Mandler, 1982). Although researches have validated that the distinctiveness of the advertising contents could gain customer's attention, "Banner Blindness" phenomenon is making today's internet advertising a severe challenge. Back in 1998, Benway and Lane confirmed "Banner Blindness" phenomenon by their experiments that no matter how the advertising information was changed—grouping, color or size of the texts, or animation—the viewer continued overlooking the advertising banners. Internet users had learned from their plentiful experiences, to ignore the less important information—advertising. The traditional web design principle, for example, the American web design guideline that suggested magnifying the size, strengthening the visibility, and placing the information on the upper part of the page, claimed to attract users' attention (Detweiler & Omanson, 1996). All of these methods probably have little effect on today's internet advertising market. According to Benway's report, strengthening the visual distinction of the advertising may actually weaken its attraction. On the other hand, some researchers like Stewart and Pavlou criticized past studies of internet advertising as just simple discussions about independent variables' influence on users in mutual communication, ignoring those variables from a sequential relation communication. Wang and Day also commented that most researches on web banners unconsciously considers it from a traditional advertising point of view that often discusses the ad effectiveness based on a single copy of ad, and therefore neglects the important fact that a web ad resides among other objects within the same webpage and submerges in a continuous flow of webpages chronically (Wang & Day, 2007). Based on the above arguments, this study was devised in a structural perspective to observe a user's attention change when browsing internet advertising on a structured website containing many pages.

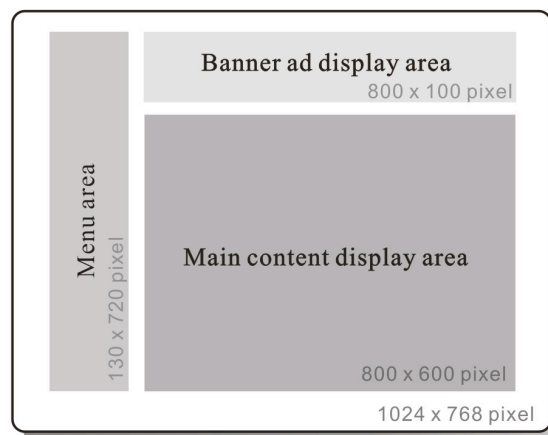
## 2. METHOD AND PROCESS

This study tried to verify the intensity of the user's attention on internet advertising by using four common web-browsing contents: (1) text-based webpage; (2) text-picture mixed webpage; (3) picture-based webpage; and, (4) video-based webpage. Subjects were asked to browse through assigned webpages that have different types of information, and the times and intensity of attention on ads were measured. "Digital photography" was selected as the theme for the simulated website, because of its popularity and it always contains the four information types that were intended to be investigated in this study.

### 2.1. Format of the simulated banner ads and the webpage

The size of the tested banner ad was 468 x 60 pixels recommended by the 2009 guideline of the Interactive Advertising Bureau. 115 banner advertisements were collected from the websites relevant to digital photography, then eliminated those famous company names or product names on them to reduce any impressions made from viewers' previous experience. Then, 30 subjects were asked to give points from 0-5 to each banner advertisement based on how they felt about its visibility and attraction. 88 banner ads having the same median noticeability and attraction were retained after removing the

highest and lowest groups based on the average points for the final experiments. Finally, 100 additional banner advertisements collected on the internet were added as dummy ads to the 88 banner ads during the attention verification process. The testing webpage was designed based on the most common screen size 1024 x 768 pixels. Each format of the information display area on the simulated webpage is showed as Figure 1.



**Figure 1:** The format for the testing webpage

The contents for the simulated webpage are described as follows: **(1) Text-based webpage:** The content was totally presented in text format. Each page had a simple description about digital photography facts (like the basic functions of the digital camera, how to select the right digital camera for your own need, etc.) with about 300 words using a 12-point font that filled the content area; **(2) Text-picture mixed webpage:** The left side of the main information display area was a text-format description about how to take a good photo under certain conditions, like taking a shot during a sunset scene, a night scene, etc, and the right side presented a photo that illustrated the left side's description; **(3) Picture-based webpage:** On each page was placed a photo of landscape of Taiwan 680 x 453 pixels in size. There was no text content with the photo, and there had no relationship to photo on other page's; **(4) Video-based webpage:** On each page was placed a 30 second-long video that was made with 10 photos with some simple dynamic visual effects, like zooming in, fading in, etc. Each dynamic photo album had a theme like "The Beauty of Flowers", "The Beauty of Mountains", etc. All the contents of each group of webpages were independent of others. After a few pre-tests, ten-page was decided as the limit for browsing in the final experiment according to the subjects' endurance limits.



Figure 2: Samples of the four simulated webpages

## 2.2. Measurements of the attention on the ads

88 banner advertisements were assigned randomly to the testing pages to avoid any biased result. After the subjects finished browsing the 10-page viewing task, an advertisement verification file was immediately showed to the subject on the computer screen. The advertisement verification file consisted of 10 pages; each page had 3 banner advertisements, including one that the subject had just seen. Each subject then, was asked to recall if he/she had seen any one of the three advertisements during the prior browsing task. If the subject thought he/she had seen one of them, then he/she could proceed to the next question, which would verify his/her attention intensity as: maybe, but not sure (one point); seemed to have seen (2 points); definitely had seen (3 points). However if the subject thought he/she had seen one of the advertisements but did not check the right one, the test result would be considered as “no attention was paid to that page’s advertisement.”, and the attention intensity would be marked as level 0. This verifying process then derived two results: (1) The amount of the advertising attention (how many people noticed the advertising) on a certain page; (2) The intensity of the advertising attention (how much they paid attention to that one ad).

## 2.3. The experiment process

Total of 120 subjects were invited for the experiment (30 subjects per each type of browsing content), aged 18-22 years of age, (all college students), half male and half female, and all had over three years’ experience in using internet. Experiments were executed in a bright and quiet laboratory. The simulated websites were shown on a 17-inch LCD screen. To keep the subjects from knowing the intention of the experiment, subjects were told that a new digital photography website was going to be published, and the researcher would like to know each subject’s appraisal for the new website. Subjects were directed to browse the assigned pages in a relaxed manner with no limitation on viewing time, and were assured they would not be asked any question about the viewing contents after the browsing session. After finishing the browsing task, subjects were then immediately verified with attention numbers and attention intensity level by the advertisement-verification file.

### 3. RESULTS

#### 3.1. Attention number difference

At this stage, how many people in each group were aware of the advertising was the major concern(not the attention intensity). Figure 3 shows the attention number that 30 subjects accumulated for each testing webpage. Subjects' attention number and average number of advertising noticed on each page of the four testing groups were counted as Fig.4 and Table 1.

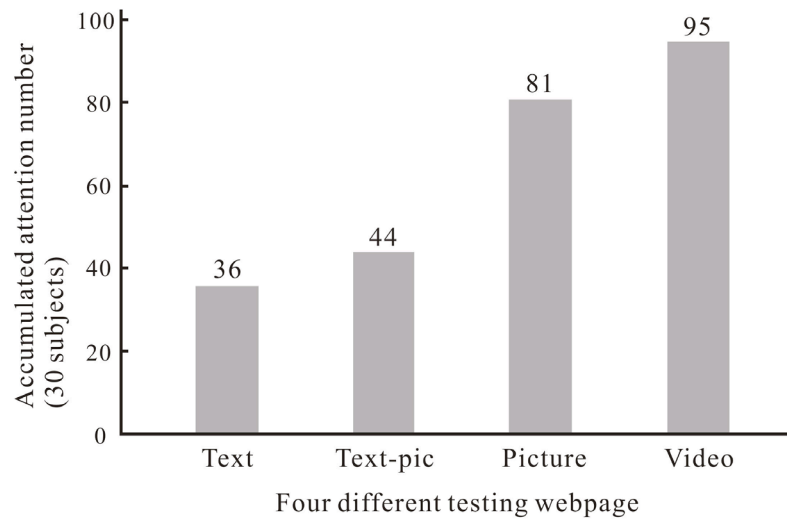


Figure 3: The accumulated attention number(how many times people noticed ad)

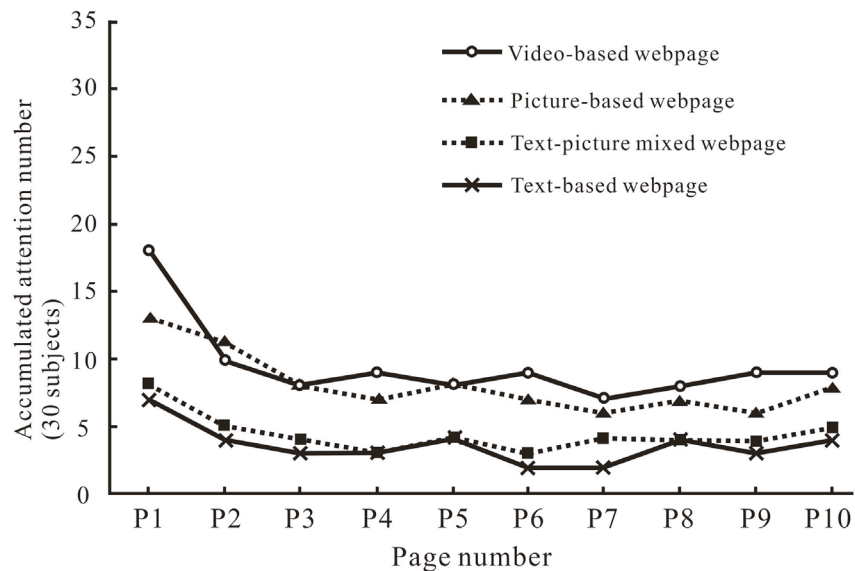


Figure 4: Accumulated attention number for each page

Table 1: Average attention number of times per person per page

	Page number										Total	Avg attn number
	0	0	0	0	0	0	0	0	0	1		
Text	0	0	0	0	0	0	0	0	0	0	1.2	0.12
Text-	0	0	0	0	0	0	0	0	0	0	1.4	0.15
Pictu	0	0	0	0	0	0	0	0	0	0	2.7	0.27
Vide	0	0	0	0	0	0	0	0	0	0	3.1	0.32

### 3.2. Advertising attention intensity comparison

Comparing the curves of attention number and attention intensity (Figure 4, 5), the curves of the attention intensity appear increased in value during the first few pages. From this comparison, we can assume that as the attention number on ads increases, the attention intensity grows stronger as well for the first few pages. Followed by ANOVA (performed with  $\alpha=0.05$ ) analysis to verify each page's difference in advertising attention intensity. The ANOVA analysis results indicated that the advertising attention intensity of four different browsing contents had significant variation on the first page. After executing post hoc analysis (using the Boferroni method), the result indicated that "video-based webpage" had significantly higher attention intensity than the "text-based webpage" and the "text-picture mixed webpage" on the first page.

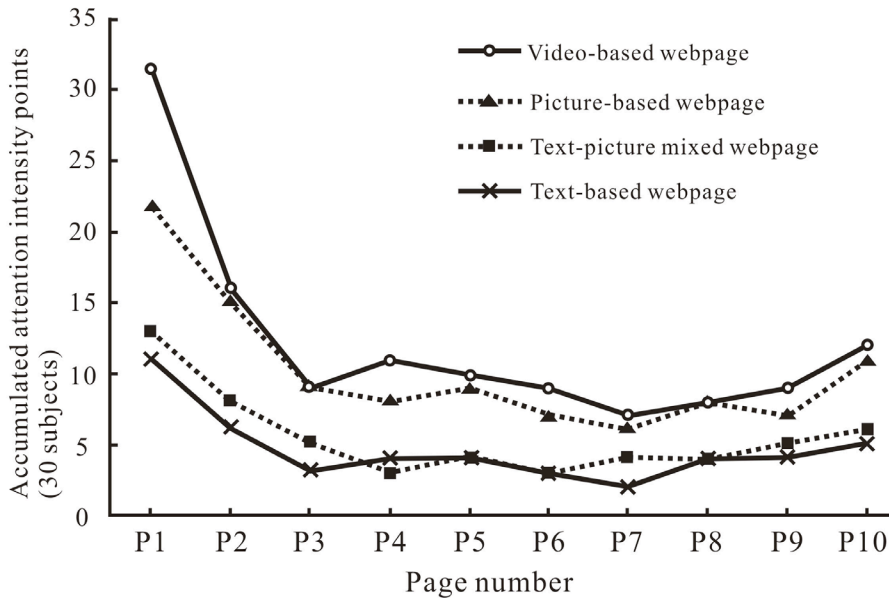


Figure 5: Accumulated attention intensity points(How much subjects paid attention to one ad)

**Table 2:** ANOVA analysis result for comparing the attention intensity difference for four testing groups

Attn	P0	P0	P0	P0	P0	P0	P0	P0	P0	P1
<b>F value</b>	3.79	1.73	1.36	1.95	1.53	1.82	1.22	0.99	0.75	1.21
<b>Sig</b>	*0.0	0.16	0.25	0.12	0.21	0.14	0.30	0.39	0.52	0.30

**Note:** Attention intensity difference is significant on the first page

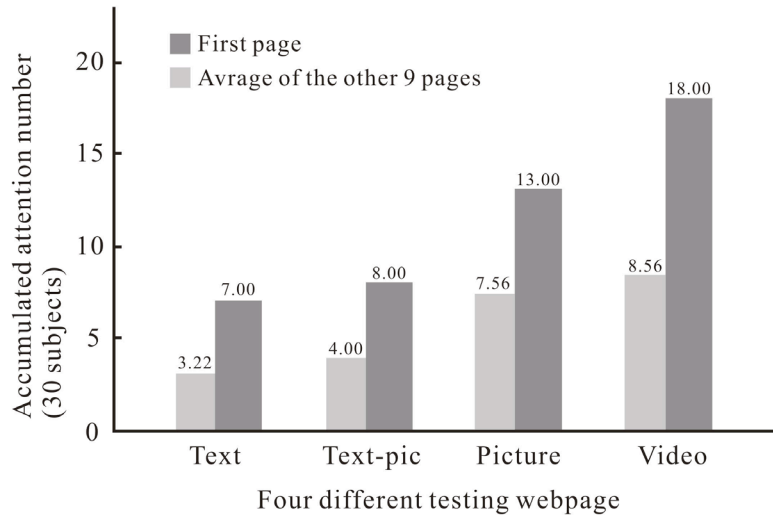
## 4. DISCUSSIONS

### 4.1. Different browsing contents vs. advertising attention

According to the experiment results, we could assume that different browsing contents did indeed affect the viewer’s attention number and attention intensity on advertising. Observing the results from Fig.3 and Table 1, the browsing contents drawing better advertising attention from the strongest to the weakest were in such order: Video-based > Picture-based > Text-picture mixed > Text-based. After reading 10 web pages, the subjects for the “video-based” could recall an average of 3.17 advertisements per person, and “picture-based” about 2.7 advertisements per person. However, the subjects for the “text-based” and “text-picture mixed” could only recall an average of 1.2 ads and 1.46 ads respectively. “Picture-based” and “video-based” webpages can be considered as the better level, and “text-based” and “text-picture mixed” webpages the lower level. Why do “video-based” and “picture-based” webpage contents had better effect on advertising attention? This could be inferred according to the information process theory. Text reading is a task engaging much more mental loads compared to pictures and video viewing; hence, people have to allocate more mental resources to text-relevant tasks and thus are not able to pay much attention to advertising.

### 4.2. Advertising attention on each page

Even though the distribution of the curves for advertising attention and attention intensity was slightly different in shape and position, one could still discover the high positions on the curves all clustered in the beginning of the curves. Further analysis from ANOVA, revealed the main difference of advertising attention for the four browsing contents occurred on the first page. To demonstrate the unique advantage of the first page for drawing advertising attention, Figure 6 shows the accumulated user attention number of the first page and the average user attention number of the other 9 pages (an accumulation of all 30 subjects). Based on Figure 6, the study discovered that the advertising attention to the first page was affected by the browsing contents greatly. Thus a conclusion could be inferred from the experiment results that when the browsing contents provided better advertising attention on a structural website (in our case a certain number of pages), the first page would always be dramatically much more influential than the other pages. Another interesting phenomenon worthy to be noted is that, from the experiment results, the first page was the best page for advertising on all types of browsing contents; however, one must be reminded that the average user attention numbers of the first page on the “text-based” and the “text-picture mixed” both were much worse than those on “picture-based” and “video-based” websites.



**Figure 6:** Comparison of the average attention number for each page

### 4.3. Advertising advantage of the first page

Based on the ANOVA analysis result, it was found that a significant variation of attention intensity occurred mainly on the first page of the four browsing contents. The results confirmed the advantage of the first page in advertising. Taking “video-based” and “text-based” contents as examples, excluding the first page, the average ad attention number per person on the other 9 pages was 0.285 and 0.107 respectively. The difference is 0.178 times per person. However, comparing with the first page, where the average ad attention times per person was 0.6 and 0.233 times per person respectively. Then the difference 0.367 was much greater than that of the other nine pages (0.178). The result explains that in the aspect of drawing user’s attention to advertising, the first page is more sensitive for the effect of viewing information than that of other pages is.

**Table 3:** Average attention number comparison

	Text	Text-picture	Picture	Video
<b>1<sup>st</sup> page</b>	0.233	0.267	0.433	0.6
<b>Other 9 page</b>	0.107	0.133	0.252	0.285

## 5. CONCLUSIONS AND SUGGESTIONS

Based upon the above discussions, some conclusions and recommendations are summarized as follows: (1) Choose a webpage that has picture or video media as the main browsing contents to gain better attention for your advertisement, rather than choosing a webpage with text-based or text-picture mixed content; (2) The first page is always the best page for your advertising; however, better still, choose a webpage that has image and video media as the main browsing contents as they always provide overpowering advertising attention; (3) Different browsing contents do affect viewer’s total advertising attention number and intensity for the entire viewing flow, however, the first page is more



sensitive and obvious to the effect of the content type than that for any other page. To sum up, this study provides a different angle on promotion for relevant internet advertising companies. According to this study, a company manager can consider establishing variable cost standards based on the website contents and utilizing a differing cost margin between the first page and other pages according to the information type.

## 6. LIMITATION AND FUTURE RESEARCH

The main goal of this research was intended to give reader some useful insights for internet advertising study. But as interpreting this research, the reader should be aware of some limitations in this study. First, this research attempted to explore viewer's attention tendency on internet advertising by an efficient and simplified method. However, the final data could only present subjects' awareness for the advertising, not the exact advertising effect that advertising industry requires in business, since this study didn't discuss those issues of viewer's precise recall and attitude toward the advertising. If considering the memory and attitude on advertising, the actual advertising effect will be much complicated and difficult to evaluate. Second, our subjects were limited to a small group of college students and may not represent the real internet users' attributes and behaviors, a large-scale user research in the future would be recommended. Also, further research on verifying the influence of other web content types (for instance: interactive format webpage) on internet advertising will be worthy to explore.

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