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Discovering banner blindness for different banner formats: An eye-tracking study

Farklı banner formatları için banner körlüğünü keşfetmek: Bir göz izleme çalışması

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Abstract

Banner blindness is ignoring the ads on internet websites either consciously or unconsciously, and it has been recently used as one of the new terms in the digital world. Advertisers struggle to overcome this blindness and get the audience to notice banners. Moreover, they work on creative advertisement ideas. As banner blindness increases, brands have to be more attentive and careful about where and how to use their banners. Therefore, advertisements must primarily be remarkable.

In this study, measurements for banner blindness and attention variables were made by an eye-tracking device. In the 4x2 factorial experimental study, a news website was designed, and banners were created and placed on the website. 160 students took part in the experiment in an isolated room individually. According to the results, left-side banners and top-side banners got more fixation. The participants fixated at least once on horizontal banners more than vertical banners. The free surfing group found online ads more informative and believable than the focused group. If users focus on the website content, they cannot remember ad names and do not look at the banners. Therefore, the free surfing group remembered more ads than the focusing group. Banner type (visual or text-based) was not significantly effective on fixation.

Keywords: Banners, banner blindness, eye-tracking, online advertisement, ad avoidance

Öz

Banner körlüğü, internet sitelerindeki reklamların bilinçli veya bilinçsiz olarak göz ardı edilmesidir ve son zamanlarda dijital dünyanın yeni terimlerinden biri olarak kullanılmaya başlanmıştır. Reklamcılar bu körlüğün üstesinden gelmek ve izleyicilere bannerları fark ettirmek için mücadele etmektedir. Ayrıca reklamcılar daha yaratıcı reklam fikirleri üzerinde çalışmaktadırlar. Banner körlüğü arttıkça, markaların bannerlarını nerede ve nasıl kullanacakları konusunda daha özenli ve dikkatli olmaları gerekmektedir. Bu nedenle, reklamlar öncelikle dikkat çekici olmalıdır.

Bu çalışmada, göz izleme (eye-tracking) cihazı ile banner körlüğü ve dikkat değişkenlerine yönelik ölçümler yapılmıştır. 4x2 faktöriyel tasarım çalışmasında, bir haber sitesi tasarlanmış ve bannerlar oluşturularak siteye yerleştirilmiştir. Deneye izole bir odada 160 öğrenci bireysel olarak katılmıştır. Araştırmanın sonuçlara göre, sol taraftaki bannerlara ve üst taraftaki bannerlara daha fazla sabitlenme olmuştur. Katılımcılar en az bir kez yatay bannerlara, dikey bannerlara göre daha fazla odaklanmışlardır. İnternet sitesinde serbest gezinen grup çevrimiçi reklamları, odaklanan gruba göre daha bilgilendirici ve inandırıcı bulmuştur. Kullanıcılar web sitesi içeriğine odaklanırsa, reklam adlarını hatırlayamamakta ve bannerlara bakmamaktadır. Bu nedenle serbest gezinen grup, odak grubundan daha fazla reklamı hatırlamıştır. Banner türü (görsel veya metin tabanlı) sabitleme üzerinde önemli ölçüde etkili değildir.

Anahtar Kelimeler: Banner, banner körlüğü, göz takibi, çevrimiçi reklam, reklamdan kaçınma

Introduction

In all forms of advertisement, the prior condition to success is exposure to the advertisement. However, exposure by itself is not enough. Many factors determine the effectiveness of an advertisement. The very first condition of the effectiveness of advertisement is attention. Besides, the audience uses avoidance of advertisements as a defense mechanism. Among all formats of advertisement, internet advertisements have perceived by consumers as the most annoying (Wolin, Korgaonkar, & Lund, 2002). In particular, avoiding advertisements on the internet ranks high.

The basic reason why rates of avoiding advertisements on the internet are high, and the attitude towards internet advertisements is negative is that the internet has been shown as target-oriented (Cho & Cheon, 2004). Users generally visit a certain web page to meet their definite information needs, and some internet advertisement formats interrupt users' goal-oriented actions. Therefore, users are annoyed, and as a result of an advertisement being more annoying, avoidance behavior occurs. Two main types of advertisement avoidance behavior are defined: physical avoidance and cognitive avoidance (Speck & Elliott, 1997). Another way to avoid advertisement in the internet world is named "banner blindness". Banner blindness is defined as the users' not "paying attention" to or "avoiding looking" at banners (Hervet, Guerard, Tremblay, & Chtourou, 2011).

The purpose of this study originating from attention to advertisement and the term avoidance is to understand the attention to banners on the internet and the term banner blindness. For this purpose, data were collected and analyzed with eye-tracking technology in a 4x2 factorial experimental design. The results showed that the majority of the participants fixated on banners at least once during their visit to the websites.

It is important to understand the phenomenon of banner blindness in consumers' online use by marketers. This study tries to understand banner blindness. Banner blindness studies usually have one dependent variable for example banner type, website content, banner position, etc. To understand banner blindness, this study used two dependent variables. These are banner type and web page usage motivation. This study provides both professionals and academics with valuable information on how banner blindness works through banner type and web page usage motivation.

Banners as online advertisement application

The interest towards social network websites indirectly caused advertisement applications to move from traditional settings to new-age electronic settings, and new-age applications are preferred and used by both small and large-scale companies (Özdemir, Özdemir, Polat, & Aksoy, 2014). In 2021, the advertisement investments in Turkey were 16 billion Turkish liras. The percentages of investments were 42.4% for television, 2.6% for print, 46.7% for digital, 5.6% for open-air, 2.5% for radio, and 0.2% for cinema (Reklamcılar Derneği, 2022).

On the internet, the basic advertisement format is banners. There are different types of banner formats. Mostly preferred ones are tower (120x600 pixels), square (250x250 pixels), wide rectangle (336x280 pixels), and vertical rectangle (240x400 pixels) banners (IAB, nd.).

Banner ads are placed in two basic approaches. Behavioral advertising practices and contextual advertising practices. Behavioral advertising is a practice of collecting data about an individual's online activities for use in selecting which ad to display (McDonald & Cranor, 2010, p. 2). Behavioral advertising creates profiles for Internet users based on a variety of different types of data and inferences from that data. Third-party cookies are one of several mechanisms used to enable behavioral advertising. Advertisers create profiles of an individual's characteristics and possible interests by correlating which sites a person visits, the ads they click, inferences about age and gender, and the approximate physical location based on the computer's IP address (McDonald & Cranor, 2010). Online behavioral advertising (OBA) can be considered a type of personalized or customized advertising. OBA refers only to advertising that is based on people's online behavior (Boerman, Kruikemeier, & Borgesius, 2017, p. 364). The goal is to deliver targeted ads to the behavioral market segments most likely to be found interesting.

Contextual advertising has been defined as the practice of placing ads on pages based on matches to their relevant content, obtained through a relatively simple keyword analysis (Broder & Fontoura, 2010). Contextual advertising, as opposed to brand advertising, usually falls under the category of direct marketing and is "direct response" ads whose purpose is to measure the impact of a campaign by user reaction (Broder & Fontoura, 2010). Contextual advertising refers to the practice of placing ads on web pages based on the content of those pages. For example, this could be baby food ads in a baby care news article or tablet ads on a tech e-commerce site.

Because contextual advertising refers to the practice of placing ads on web pages based on the content of those pages, the effects of contextual influences on online banner advertising influencing behavior, it is reasonable to assume that the sympathy of brands placing banners depends, among other things, on the context in which the banner is placed (Schöber & Kindermann, 2020).

To attract the consumer's attention, it is common to use colorful animations and dynamic visuals in banners. Banners, a common form of advertisement, appeared in 1994 as a method to attract users' attention and trigger the desired reaction. Predominantly, the desired reaction is the users' clicking on the banner to visit the advertised website. This is commonly known as banners' "click rate" and is calculated by dividing the number of banners clicking by the number of page screenings (Lapa, 2007). The size of a banner helps users ignore it easily, and the form limits the number of rich media that advertisers could use to attract users. Web advertising is an area where banners are most commonly used on websites. Advertisers pay the owner of the website which shows the banner and expect web users to click on the banner and visit the advertisers' web address for more information (Benway, 1999). Today, banners are considered a source of income by many websites.

Internet banners share the same area with the editorial content and cover only a small part of the screen. However, internet users carry out some goal-oriented missions like reading the news, searching for information, and socializing. Consequently, it is considered that internet banners are the classic examples of unconsciously processed messages, and internet users most likely will show a tendency to be persuaded with a low participation rate (Meyers-Levy & Malaviya, 1999). Web page banners are an important type of advertisement for companies who want to increase their product and service sales or send messages to their users. Users want to surf the website and

find the information they are searching for without being distracted by irrelevant or annoying advertisements. Conflicting results about the effectiveness of banners on websites have been presented (Lapa, 2007). According to the results of a study conducted by the IAB, online advertising has tremendous communication power. According to The Internet Advertising Bureau, a single exposure (to banner ads) can generate an increase in advertisement awareness (Lapa, 2007).

In a study conducted by the digital advertising company DoubleClick in 1996, it was found that most banners did not attract users' attention at all. According to their study, the idea that banners include information that was irrelevant to the task at hand was supported. This reinforced situation, therefore, causes users to avoid this advertisement area. According to the results of DoubleClick, the possibility of a user clicking on an advertisement area on a website decreased when they were exposed to it over and over again (Lapa, 2007). In addition to the number of exposures, to increase the rate that banners are noticed, variety in message components (with or without graphic items, stable, animated, etc.), dominant colors, dimension, position, and similar factors were suggested and tested as solutions. In this context, the overlap/consistency between the subject of the banner and the context of the web page was considered to overcome users' distrust as a potential method (Porta, Ravarelli, & Spaghi, 2013). The current study focused on message content and position variables.

According to the Sajjacholapunt and Ball (2014) study, in online advertisement content, because of the due to the model looking at the picture of the product, the attention is drawn to the text and the product information, and this increases the possibility for the audience to understand the brand that is advertised and its messages (and potentially internalize). The analysis of the average time of looking at each word related to the advertisement showed the interaction between the banner format and face position, at the same time. Especially, in cases where faces were not used, compared to vertical banners, horizontal banners' texts had more watch time, while in cases where glances were away, and faces were used, it was just the opposite (Sajjacholapunt & Ball, 2014).

Internet-mediated advertising is a new term and quite variable. Moreover, compared to traditional advertisements, online advertisements are more active and enable more interaction. Therefore, the attitude of avoiding online advertisements may happen in a variety of ways. For example, the question "when the consumer rolls down the web

page in order not to see the advertisement, should this behavior of avoiding advertisement be categorized as mechanical or behavioral?" flashes (Lo, Hsieh, & Chiu, 2014).

Attention, advertising avoidance, and banner blindness

Advertisements are designed to attract attention. Marketers and web designers spend plenty of time creating online advertisements to draw users' attention. However, these messages do not reach some consumers. Savvy internet users have adapted to visually blinding themselves when it comes to ads (Djamasbi, Hall-Phillips, & Yang, 2013). Attention by itself is not enough for an advertisement to persuade consumers, but they need to be able to process what they see. However, if there is no attention, no further processing can occur to influence subsequent consumer decision-making. Depending on this for more attention, decoding the messages and keeping in mind more opportunities arise (Lee & Ahn, 2012). Attention and recall are related variables. Goodrich (2011) found that attention and aided recall are correlated with each other. Pieters, Warlop, and Wedel (2002) suggested that attention increases the information available to memory, which improves brand recall.

Placing a banner that changes the form of the website, whether the advertisement is suitable for the content or not, is a powerful tool to increase the time spent while looking at the advertisement and attract the attention of users. However, it does not guarantee notice of the content of the advertisement, because the participants could only remember the advertisement's content when it was coherent with the editorial content (Hervet et al., 2011). Users want a site that offers a clean interface and is free of irrelevant information or distracting advertisements. Maximizing the effectiveness of banners for both companies and site visitors requires an understanding of the design and placement of these banners on the website better (Lapa, 2007).

Speck and Elliott (1997) proposed three strategies for advertising avoidance. These are cognitive, behavioral, and mechanical strategies. For example, for TV ads, the audience can remove attention from advertising by ignoring it (cognitive strategy), leaving the room (behavioral strategy), or switching channels (mechanical strategy). Alternatively, when they look at magazines and newspapers, readers can remove a newspaper or magazine ad from their attention by ignoring it (cognitive) or turning the page (behavioral). Cho and Cheon (2004) presented three types of avoidance strategies, such as Speck and Elliott (1997): cognitive, affective, and behavioral. However,

Chatterjee (2008) defined two types of avoidance: cognitive and physical. Cognitive ad avoidance is an automatic process, involves visual screening out of ad stimuli embedded within content, and does not need any conscious decision or behavioral action by the consumer. Physical ad avoidance involves a conscious decision to take action to avoid advertising, and accordingly, it generally induces a different level of resistance response. Avoiding advertisements cognitively is an automatic method in which consumers become blind to the advertisements placed in the media and therefore do not need to make conscious decision-making using advertisements for or act. In other words, there is no other conscious behavior apart from ignoring the advertisement (Lo, Hsieh, & Chiu, 2014).

A special type of ad avoidance that applies to online advertising is banner blindness. Banner blindness is the behavior of visitors of a website to ignore banners consciously or unconsciously. This phenomenon happens because web users are exposed to many banners every day, and before they decide if the banner is useful or not, their brains automatically ignore them (Resnick & Albert, 2014). The term banner blindness caught the attention of the study "Banner Blindness: Web Searchers Often Miss Obvious Links" published in 1998 by Benway and Lane. Many studies measure banner blindness to understand what types of banners on websites are effective or not.

When commercials are broadcast on traditional media such as television or radio, the existing space is used to attract the attention of the audience. However, banners cover about 10% of a typical website (Muñoz-Leiva et al., 2019). The phenomenon of banner blindness lowers the effectiveness of banners, and advertisers try hard to find effective strategies for online marketing. Therefore, it is a basic principle for website designers to understand banners and users' relationships with them (Porta et al., 2013). Being exposed to advertisements all the time can make them a "background noise" for internet users, and this can reduce the effectiveness of advertisements.

If banner blindness is defined as not being fixed on banners, according to the results of the study conducted by Hervet et al. (2011), banner blindness is not valid for online advertisements. Hervet et al. (2011) conducted an eye-tracking study. They used four advertisement banners, two of them are congruent with the editorial content and two of them are incongruent. According to their study, 82% of the participants fixated on at least one of the four banners during the web page visit.

Burke et al. (2005) revealed that, in eye-tracking experiments, people seldom looked at banners and did not remember the banner content. They also claimed that banners placed at the top of the screen are catchier, but this could be the result of the specific screen layout of existing experiments. Banners, browser address bars, and standard site navigation areas appear roughly in the same screen region in their layout. According to the result of their study, there was a surprising difference between animated and static banners, which was that animations make advertisements less catchy.

Studies considering the overlap/consistency between the subject of a banner and the content of the web page have also been conducted. Some studies explored the relationship between the subject of the banner and the content of the website, when there was a banner that was incompatible with the content, the users were interested more, and they showed a higher rate of recall (Moore, Stammerjohan, & Coulter, 2005). A study carried out by Hershberger and Costea (2009) evaluated the correlation between advertisement recall, consistency, and task orientation. According to this, in the case of task-oriented surfing, ad avoidance behavior was more apparent. However, it was claimed that this effect could be reduced thanks to consistency.

In a study by Lee and Ahn (2012), the goal was to research entire banner processing and its efficiency. First, how much attention was given while being exposed to the message was measured. Then, the conscious and unconscious effects of attention were analyzed. By using a modern eye-tracking device in a natural environment, where the participants were surfing the internet at their own pace, instant attention data were collected. Especially in a low participation advertising example like banners, the data obtained from environments people are automatically exposed to are more reliable than the ones achieved by force. Third, cases were found in which banners were interested in but not recalled, and the users were affected unconsciously. Eye-tracking data showed that, in natural advertising areas, many internet users pay less attention to banners. This means that banners are placed in a definite area that opposes the advertiser's demands. However, when repeated, very short fixations (being exposed to them was hardly recalled) changed users' attitudes. As a result, in the context of banners, a definite exposition effect was confirmed. These findings were especially significant for most internet users to pay less attention to banners or none and not distinguish their cognitive sources.

Djamasbi et al. (2013) collected eye-tracking data with an eye tracker in their study, and each participant was asked to do two web-based searches using the Google search

engine. The study examined whether or not there were any differences between mobile phone users and desktop computer users while looking at the Search Engine Results Page (SERP). One of the studies was carried out using a desktop computer, and the other was conducted using a mobile phone. In both studies, real-time Google search engine web pages were used. The initial analysis of the data showed that the advertisements in the mobile SERP could be more effective than their desktop computer equivalents. A majority of people looked at advertisements on mobile phones (90%) more than those on desktop computers (77%). Besides, in the mobile phone study on the subjects' viewing patterns, it was seen that advertisements had a minimal effect. Whether the advertisements were shown or not, the mobile phone SERPs were in a similar scope. This was different for desktop computers. The subjects here scanned the page in more detail when the advertisements were not displayed.

Porta et al. (2013) conducted a survey on the effects of online news and banner consistency, and when the participants read freely, consistency increased both the number of fixations on the banner and the total fixation period. Consistency also increased memory, but it did not affect recognition distinguishably. In the same study, it was revealed that nonmatching banners could be recalled more easily in the case of exposed reading.

A recent study carried out by Barreto (2013) tested if Facebook users looked at the advertisements displayed; in short, whether the phenomenon called "banner blindness" existed or not. In the study, eye-tracking technology and a survey were applied to the subject. The results showed that online advertisements were less salient than their friends' suggestions, so, this resulted in banner blindness.

Owens, Palmer, and Chaparro (2014) tried to explore the impact of web page layout (standard and nonstandard) conventions on text advertising blindness. Their study showed that text advertising blindness was prevalent regardless of the website layout. Users adapted to the reversed layout rapidly.

Resnick and Albert (2014) tried to explore the emergence of ad banner blindness in the viewing of e-commerce home pages. Their study assessed the gaze path of users in goal-directed and free-viewing tasks when viewing pages with advertising banners on the right side of the page and the top of the page above the main navigation menu. Using an eye-tracking methodology, their results identify significant differences in

visual attention for banner ad location and task type. Banner blindness is strongest for advertising banners on the right side of the page and goal-directed tasks.

The study of Zouharová, Zouhar, and Smutný (2016) showed that appropriate banner placement can significantly increase banner efficiency. They revealed that the results depended significantly on the indication of exposure effects for particular page sequences. It is therefore very important to specify these exposure effects correctly.

Vangelov's study (2019) analyzed the two main ad formats on Facebook – image, and carousel. Both were analyzed within the context and placement of the news feed, which could prove to be a more lucrative placement than the right-hand position, according to the theory based on banner blindness. Facebook users often have little time to devote to advertisements and perceive them as distractors. Therefore, ads should be as succinct as possible to attract more attention. In terms of banner blindness, it was concluded that the news feed could be a more effective ad placement on Facebook, as users are accustomed to seeing ads on the right side of the webpage.

Kaspar, Weber, and Wilbers (2019) aimed in their study to understand whether demographic targeting attracts visual attention and to exploratively examine whether it also affects brand attitude and website evaluation. Their Eye-tracking data revealed that demographic targeting can have medium- to large-sized effects on several eye movement parameters when internet users are in a free-viewing mode.

Aim and Methodology

It is important to understand the phenomenon of banner blindness in consumers' online use by marketers. The main aim of this study was to understand whether web users avoid looking at banners. While there are publications in the international literature on banner blindness, there are hardly any studies in this area in Turkey. It is thought that this study will fill the gap in the field.

A 4x2 factorial design was used in the study. Two dependent variables were banner type and web page usage motivation. Four banner types were used: text-based vertical, text-based horizontal, visual-based vertical, and visual-based horizontal banners. Two web page usage motivations were used: free surfing and focused.

Time to first fixation, total fixation duration, first fixation duration, and visit count were used as the independent variables.

Four different news web pages were created for the study. Advertising banners are of great importance for online newspapers because they are used as the main revenue source. Each web page had the same news but four different banners (text-based vertical, text-based horizontal, visual-based vertical, and visual-based horizontal banners). Advertisements of GAP, Çiçek Sepeti, Arçelik, and Spotify brands were selected. The brands in the banner advertisements are the advertisements that were published and exposed at the time of the study. Since brand recall was not measured in this study, the advertisements of these brands, which have text-based and visual-based advertisements, were chosen for the purpose of the study. The banners were inserted on the right and left sides and at the top and bottom sides of the web pages.

Three Areas of Interest (AOI) were defined. Every web page included two banners. So, the banners were defined as AOI. Examples are seen on web pages with banners in Figure 1. The figure banner was indicated with a red rectangle.

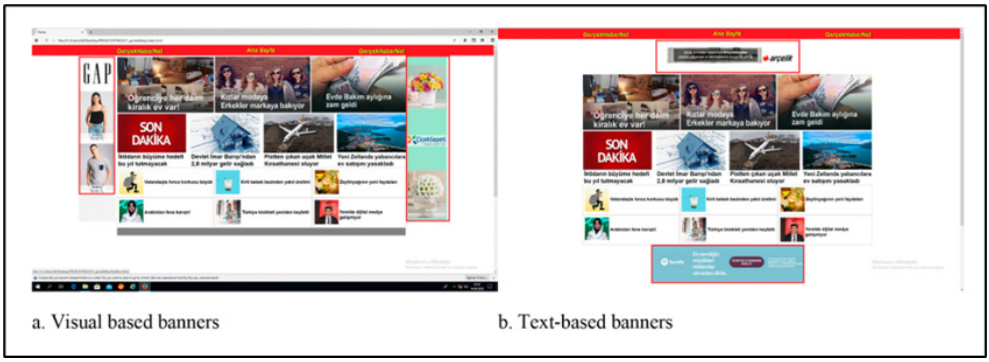

Figure 1: Examples of web page and banner stimulus (banner was indicated with a red rectangle for readers)

When the correlation between eye movement and attention is taken into account, measuring eye movements is an inevitable tool when visiting a website if it is the focus of an advertisement or not and examining how long has it been processed (Hervet et al., 2011). Lee and Ahn (2012) claimed that advertisers have to know when users do not identify a banner -or do not recognize it - these advertisements can affect users' future attitudes by unconscious influence.

Thanks to eye-tracking technology, it is possible to understand where users expect to find an item (such as a link to an exact part) on a website, so, the design goals at the beginning are recognized (Mosconi, Porta, & Ravarelli, 2008). Eye-tracking lets us track how a user interacts with only a web page using a mouse, and at the same time, the movements they track. It shows us how users use the content provided. We can test advertisement recall, determine the best content and position, and reach the best page design and order with eye-tracking (Evoc Insights, 2009).

The experiment was controlled by a desktop computer with a screen resolution of 1920x1080 pixels. Eye movements were recorded with a Tobii eye tracker X3 120 desktop device. The sampling rate was 50 Hz. Eye movement was captured with the Tobii device at the bottom of a 24" computer screen that was located 60 cm from the participant. Anadolu University Ethics Committee approval was obtained for this study.

The study was carried out at Anadolu University in May 2019. The sample consisted of 160 participants. Students were chosen with convenience sampling. Their ages ranged between 18 and 33 years. Half of the participants were male, and half were female. Participating students took part in the experiment one by one in an isolated room. The participants were randomly assigned to eight groups. The participants were invited to take part in a study and instructed that their eye movements would be recorded. Each participant was exposed to the web page that they were assigned for three minutes. 80 free surfing motivation group participants surfed freely for three minutes. 80 focused motivation group participants were asked questions about the news, and they were asked to find out the answer to questions from news content for three minutes. With these questions, it was assumed that the participants were focused on the web page content. Before the beginning, for recording, the eye tracker system was calibrated with nine red calibration dots. At the end of the experiment, the Attitude towards Online Advertising Scale (Ducoffe, 1996; Brackett & Carr, 2001; Tsang, Ho, & Liang, 2004) (seven-point Semantic type) was administrated to all participants who were also asked to write the names of advertisements that they remembered.

The main aim of this study was to understand whether web users avoid looking at banners and how this behavior was moderated by web usage motivation and banner type. The following hypotheses have been defined for the experiment designed for this purpose.

H1: Left side banners and top side banners receive more fixation than right side banners and bottom banners.

H2: Visual based banners receive more fixation than text-based banner.

H3: Free surfing group members recall more ads than focused group members.

Findings

In the first section, heat maps were created by using the Tobii Studio software v3.4.8. In the second section, ANOVA test was performed. Heat maps for free surfing motivation groups are seen in Figure 2 and heat maps for focused motivation groups are seen in Figure 3.

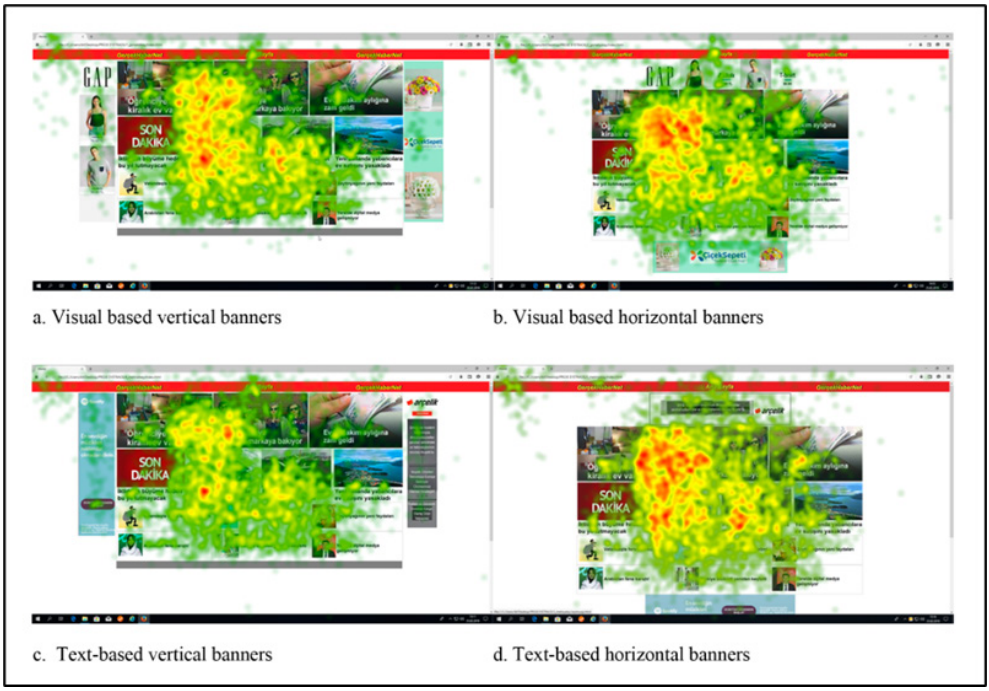

Figure 2: Free surfing motivation group's heat maps

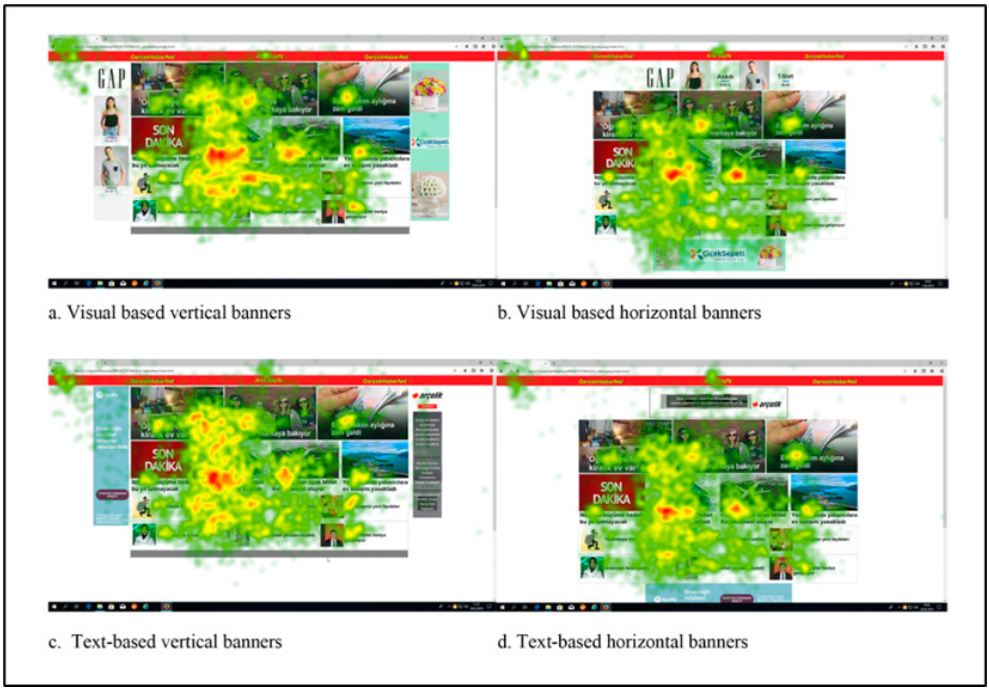

Figure 3: Focused motivation groups' heat maps

Percentage fixated

Percentage fixated measurement is a percentage of participants that fixated at least once within an AOI. Table 1 shows the fixation percentages of all groups.

Table 1: Percentage fixated

Motivation groups	Banner type							
	Visual Vertical		Visual Horizontal		Text Vertical		Text Horizontal	
	Left	Right	Top	Bottom	Left	Right	Top	Bottom
Free surfing	0.85	0.70	100.0	0.80	0.85	0.80	0.95	0.50
Focused	0.60	0.15	100.0	0.95	0.80	0.65	0.95	0.70
Total	0.26	0.22	0.50	0.44	0.41	0.36	0.48	0.30

The participants fixated at least once on the left vertical banners more than the right banners. The participants also fixated at least once on the top banners more than

the bottom banners. In total, almost half of the participants did not fixate on banners even once.

Fixation duration

The fixation duration was measured in seconds. Table 2 shows the mean and standard deviation scores for all banners.

Table 2: Total fixation duration

Banner type							
Left		Right		Top		Bottom	
Mean	sd	Mean	sd	Mean	sd	Mean	sd
1.3339	1.48	1.3507	1.75	2.7388	3.41	3.5719	4.17

A two-way ANOVA was performed to explore the impact of motivation group and banner type on the total fixation durations. The subjects were divided into two groups according to their motivation (group 1: free surfing; group 2: focused) and two groups according to banner type (group 1: visual vertical; visual horizontal, group 2: text vertical; text horizontal).

The first ANOVA test was performed for the right vertical banners (visual and text-based). The interaction effect between motivation and banner type was not statistically significant. $F_{(1)}$=0.134 p=0.71. There was no statistically significant main effect for both motivation ($F_{(1)}$=2.095 p=0.15) and banner type ($F_{(1)}$=2.142 p=0.15). Figure 4 shows mean plots for the right banner's total fixation duration.

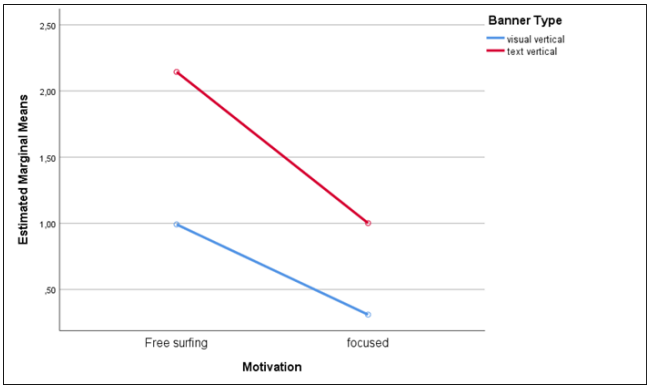

Figure 4: Mean plots for right vertical banner total fixation duration

The second ANOVA test was performed for left vertical banners (visual and text-based). The interaction effect between motivation and banner type was not statistically significant $F_{(1)}$=0.096 p=0.758. There was a statistically significant main effect for motivation $F_{(1)}$=15.498 p=0.00, and the effect size was large (partial eta squared=0.21). The free surfing group (M=1.94, SD=1.75) was fixated more than the focused group (M=0.59 SD=0.40). There was no statistically significant effect for banner type $F_{(1)}$=0.406 p=0.52. Figure 5 shows mean plots for the left banner total fixation duration.

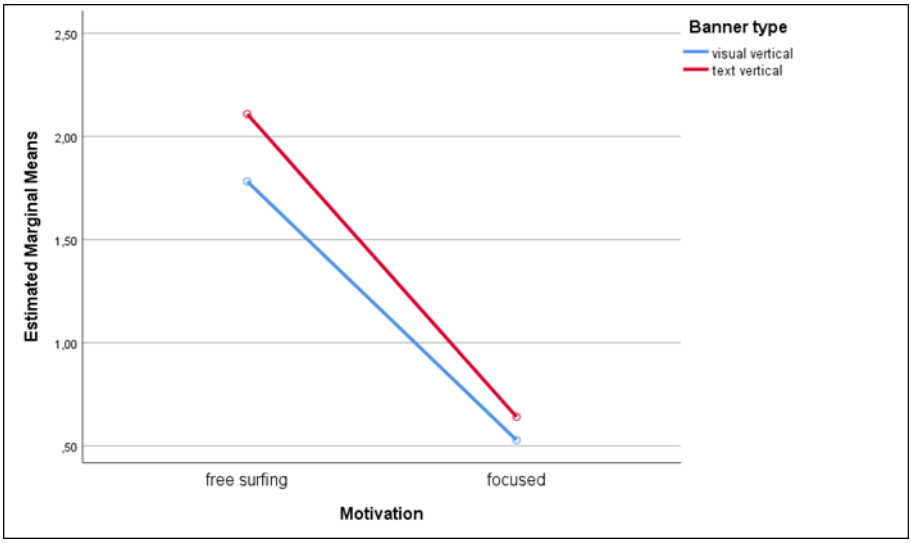

Figure 5: Mean plots for left vertical banner total fixation duration

The third ANOVA test was performed for top horizontal banners (visual and text-based). The interaction effect between motivation and banner type was not statistically significant $F_{(1)}$=0.765 p=0.38. There was a statistically significant main effect for motivation $F_{(1)}$=17.838 p=0.00, and the effect size was large (partial eta squared=0.19). The free surfing group (M=4.21 SD=4.24) was fixated more than the focused group (M=1.26 SSD=1.09). There was no statistically significant effect for banner type $F_{(1)}$=1.336 p=0.25. Figure 6 shows mean plots for top horizontal banner total fixation duration.

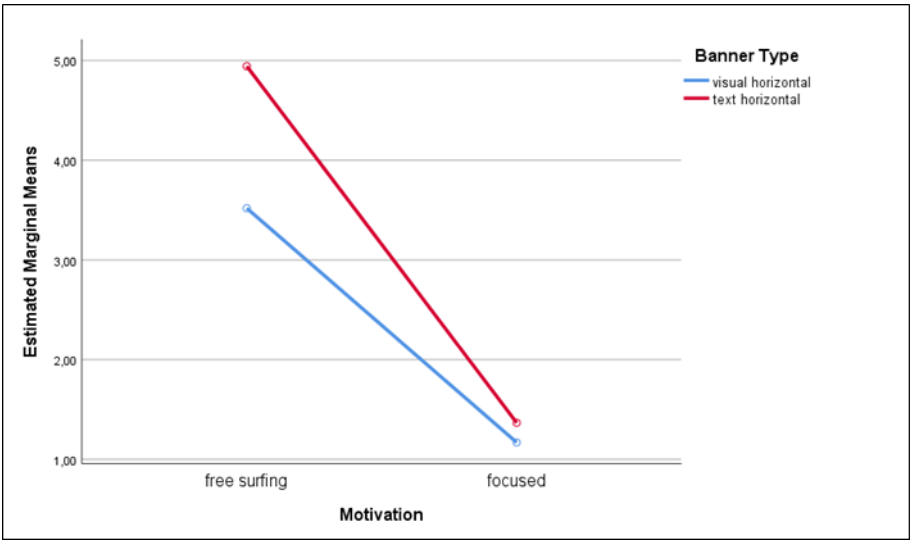

Figure 6: Mean plots for top horizontal banner total fixation duration

The fourth ANOVA test was performed for bottom horizontal banners (visual and text-based). The interaction effect between motivation and banner type was statistically significant $F_{(1)}$=6.347 p=0.01. Therefore, the data were split by banner type, and an independent-samples t-test was performed to compare the total fixation durations for the motivation groups. According to the t-test results, there were statistically significant differences between the free surfing group (M=1.68 SD=2.07) and the focused group (M=5.05 SD=4.79); $t_{(33)}$=-3.916 p=0.000.

Attitude toward online ads and ad recall

At the end of the experiment, the respondents answered a seven-point Semantic type attitude towards online ads scale (Ducoffe, 1996, Brackett & Carr, 2001, Tsang, Ho, & Liang 2004) and were asked to write down the names of the advertisements they remembered.

The scale includes seven bipolar adjectives such as entertained-not entertained, useable-not useable. An independent sample t-test was performed to compare the attitude scores between the motivation groups. According to the t-test results, there were statistically significant differences between the free surfing group (M=3.26 SD=1.83) and the focused group (M=2.93 SD=1.61); $t_{(158)}$=2.340 p=0.02 in the informative

dimension. The free surfing group found online ads more informative than the focused group did. There were also statistically significant differences between the free surfing group (M=3.11 SD=1.72) and the focused group (M=2.55 SD=1.38); $t_{(158)}$=2.283 p=0.02 in the believable dimension. The free surfing group found online ads more believable than the focused group did. Table 3 shows the attitude towards online ads t-test results.

Table 3: Attitude toward online ads t-test results

Attitude	Motivation	N	Mean	Std. Deviation	t	df	p
Interesting	Free surfing	80	3.65	1.71	1.233	158	0.219
	Focused	80	3.31	1.75			
Entertaining	Free surfing	80	2.83	1.51	0.051	158	0.959
	Focused	80	2.81	1.57			
Informative	Free surfing	80	3.56	1.83	2.340	158	0.02*
	Focused	80	2.93	1.61			
Believable	Free surfing	80	3.11	1.72	2.283	158	0.02*
	Focused	80	2.55	1.38			
Useable	Free surfing	80	3.69	1.82	1.646	158	0.102
	Focused	80	3.21	1.83			
Irritating	Free surfing	80	3.39	2.02	0.551	158	0.582
	Focused	80	3.21	1.99			
Time wasting	Free surfing	80	4.23	1.87	0.338	158	0.736
	Focused	80	4.13	1.88			

*p<0,05

Recall of ad names was coded in three categories: 0=none, 1=one ad, and 2=two ads. A chi-squared test for independence indicated significant relationships between ad recall and motivation groups. $x^2_{(1, n=160)}$=59.444 p=0.000 phi=0.61. It may be stated that the free surfing group recalled more ad names than the focused group (see Table 4).

Table 4: Ad recall-motivation group cross tabulation

Motivation groups	Ad recall			
	none	One ad	Two ads	Total
Free surfing	30	24	26	80
	37.5%	30.0%	32.5%	100.0%
Focused	76	3	1	80
	95.0%	3.8%	1.3%	100.0%

Discussion and Conclusion

To summarize the results of our study, left-side banners and top-side banners received more fixation. The participants fixated at least once on horizontal banners more than vertical banners. The free surfing group found online ads more informative and believable than the focused group. If users focused on the website content, they could not remember ad names and did not look at the banners. So, the free surfing group remembered more ads than the focusing group. Banner type (visual or text-based) was not important for fixation. Focusing on web content prevented recalling ad names and caused banner blindness. Attention was required for the recall. Banner type and position were important factors for attention and recall.

The main aim of this study was to understand whether web users avoid looking at banners and how this behavior was moderated by web usage motivation and banner type. The results showed that the majority of the participants fixated on banners at least once during their visit to the websites. It may be stated that banner type (visual or text-based) was not significantly effective on fixation. This study showed that all types of banners received the same amount of fixation percentages. However, the banner position was important. Left side banners and top side banners received more fixation. This result supports Resnick and Albert's (2014) and Burke et al. (2005) findings. If banner blindness could be defined as fever fixation on banners, the results showed that banner blindness may differ based on banner position. The participants fixated at least once on horizontal banners more than they did on vertical banners.

The results showed that if users focused on the website content, they could not remember ad names and did not look at the banners. This result shows parallelism with Hershberger and Costea's (2009) finding. Hershberger and Costea (2009) evaluated the correlation between advertisement recall, consistency, and task orientation. According to this, in the case of a task-oriented surfing advertisement, avoidance behavior was more apparent. Our study showed that attention was required for the recall. Pieters, Warlop, and Wedel (2002) suggested that attention increases the information available to memory, which improves brand recall. The results also showed that banner type and position were important factors for attention and recall. Previous studies have also shown that banners draw less attention from users in task-oriented or free-surfing information research. According to Resnick and Albert (2014), banner blindness is strongest for advertising banners on the right side of the page and goal-directed tasks.

The findings of Muñoz-Leiva et al. (2021) eye-tracking study support our study. Their study shows that placing a banner at specific locations on a web page can lead to better recall. This appears to be due, in part, to the visual attention such locations attract. The mediation analysis in the study showed that lower-right and lower-left positions had a negative impact on banner recall, in part due to shorter attention spans and fewer fixations caused by these positions (Muñoz-Leiva et al., 2021).

Advertising banners are of great importance for online newspapers because they are used as the main revenue source. To avoid banner blindness, advertisers need to find effective strategies for online marketing. Therefore, it is an important requirement for them to learn users' attitudes and interests towards banners. Advertisements are designed to attract attention, but internet users have focused on blinding themselves to advertisements. Therefore, it is not enough to draw attention to convince, but users are also expected to remember the ad. In this process, the size of the banner, position, and elements such as compliance with the content gain importance.

A recommendation for future studies may be the selection of banners with animation, color, and moving images as stimuli. The presence of moving images can attract users' attention and prevent banner blindness. It is also a remarkable element to use celebrities in banners. This will make them easier to remember. Another research proposal is to insert banners that are congruent with the content of the web page. The effect of content-compatible banners on remembering ads and banner blindness may be investigated.

Endnotes

1. Çiçek Sepeti is leading online retail company in Turkey.
2. Arçelik is leading household appliances brand in Turkey.
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