The Expediency of Eye-Tracking Technology in Assessment of Tourism Online Advertisement Effectiveness

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Abstract

In the era of e-Tourism and marketing, the tourism marketers use digital marketing systems on manifold web locations such as logos, pop-up ads, banners on multiple websites to motivate the users to click on the banner and provide them direct access to the advertisement company. The attention paid to the ad, stimulates their attitude towards the company and behavioral intentions. Eye-tracking technology facilitates the researchers and marketers to examine the effectiveness of the online advertisement in real time and conclude various effective insights about advertisement elements. The objective of this study is to explore the effectiveness of online advertisement in the field of tourism and investigate the use of eye-tracking technology in determining tourism advertisement effectiveness. It can be concluded that eye-tracking methodology is a useful alteration in the investigation of advertisement effectiveness. It was found that block ads were more effective than text, and presence of text, the known language of the text, expertise in using tourism websites, the objective behind navigation, website design etc are key factors influencing effectiveness on online tourism advertisement.

Keywords: Online Tourism Advertisement Effectiveness, Eye-tracking Technology, Banner Blindness, Banner Recall, Fixation, Attention

Introduction

'e-Tourism', 'Travel 2.0', 'eWOM', 'web 2.0' etc emerged due to development in Information and Communication Technology (ICT) and have improved communication with all the concerned stakeholders in tourism and hospitality industry (Buhalis and Deimezi, 2004). Innovation and development in Web 2.0 Websites (W2W) have lead to more active, connected and intense participation in information creation and sharing. Tourism marketers use digital marketing systems on manifold web locations such as logos, pop-up ads, banners or videos etc (Hernández M.D.,2017). To know effectiveness of advertisement strategies and consumers' process of evaluation of marketable massages, a number of methodologies are adopted by marketing researchers. These innovative methodologies used for the purpose are mentioned as "neuromarketing" approach by F. Muñoz-Leiva et al.(2018) which is helpful in analyzing consumer attention and other cues provided by body language and facial expressions. Eye-tracking (X. Drèze, F.-X. Hussherr, 2003) Biofeedback gauges and facial coding (D. Hill, 2003) are basic tactics used for this. The equipments and devices used in Eye-tracking were very expensive, lengthy and bulky but recent developments in this area have introduced new devices which are economical, wearable and the data generated by these can be analyzed easily (N.Scott et al.2017). Eye-tracking is a helpful in analyzing effectiveness of online ad and banners by measuring eye fixation on various components of the banner, duration and quantity of fixations, and attention etc. User information processing which comprises of attention to the advertisement, recognition and recall, user behavior and finally communication attributes are regarded as measurement of effectiveness of advertisement (V. Naidoo, L.D. Hollebeek, 2016). The purpose behind showing ad or banners on the website is to let the users notice the ad and get direct to the marketing company and know their products or services (Margarida, 2013). For e -Tourism websites for being more helpful and for improving the interactivity, the web designers need to pay significant attention to the design features like customization, surfing and structure (Muhtaseb, Lakiotaki and Matsatsinis, 2012). Traditional and online advertisement are both corresponding to each other (Margarida, 2013) but online advertisement is applied currently due to its perceived benefits such as economical, less time consuming, easy access, viewers segmentation and availability of software to analyze the effects. The objective of this study is to explore the effectiveness of online advertisement in the field of tourism and investigate the use of eye-tracking technology in determining tourism advertisement effectiveness.

Eye-tracking Technology

Eye-tracking methodologies are being used in tourism for various purposes. This technique enables the researcher to study the effectiveness of online advertisement presented on the Web Page of websites. The effectiveness in terms of eye gaze, remembrance, recognition of ad can be evaluated in laboratories. The color, text, image, font, block etc. can be examined by collecting data from participants by showing them advertisement. Fixed and Mobile data are two basic types of eye-tracking data collection equipments (N.Scott et al.2017). The sensors and light sources are fixed at a position like a computer screen in Fixed data collection equipment while Mobile data equipment is used in the natural and uncontrolled environment where moments of participants are high (N.Scott et al.2017). Glasses-mounted devices or lightweight mobile head are used in the data collection. Mobile

eye-tracking equipment is used to quantify eye movements in real time and is capable of being used with skin conductance. Laboratory and Non-laboratory both types of settings can be used for data collection. In a laboratory setting, there are many points to consider i.e. noise, lighting, temperature, and disturbance etc. 96 dpi,17" monitor with resolution position of 1024*(MULTIPLY) 768 pixels fixed to a computer is used for the eye-tracking system (N.Scott et al.2017). In order to amalgamate the mobile data of all participants in a heatmap there are softwares available for researchers.

Period of fixation, saccades and location can be measured by using Eye-tracking equipment. Fixations are defined as a "relatively stable eye-in-head position within some threshold of dispersion (typically ∼2°) over some minimum duration (typically 200-300 ms), and with a velocity below some threshold (typically 15-100 degrees per second)" (Jacob & Karn, 2003, p. 581). The projected position of the eye gazes at a particular moment in time is known as fixation. Fixations are generally short and recorded by the devices at the particular moment. For data collection and analysis, fixations are studied as dependent variables. Fixations are studies to gain insights into focus and attention of users to the particular features of the ad or banner.

An area of interest (AOI)

"An area of interest (AOI) is part of the visual stimuli that is of interest to the researcher and is defined by them." (N. Scott et al. 2017) In the eye-tracking analysis, it is necessary to draw larger boundaries than the required estimated visual features in order to include all the possible fixations for the study and identify inconsistency in fixation positions in various participants. Time to the first fixation on an AOI points out its comparative salience, first total gaze duration indicates attention in the stimulus, and its influence on attention and interest is estimated by the frequently gazing at an AOI (Bebko, Sciulli, & Bhagat, 2014). To differentiate areas more or less intensively observed a color-coded heatmap is used. (Lai et al. 2013). This heatmap is used by researchers to conclude the investigation results more precisely.

Eye-tracking Measures

Area of interest (AOI)	A specific delineated area analysed and compared in eye-tracking software
First fixation duration (seconds)	Measures the duration of the first fixation on an AOI or an AOI group
Fixation duration (seconds)	Measures the duration of each individual fixation within an AOI
Total fixation duration (seconds)	Sum of the duration for all fixations within an AOI
Fixation count	The number of times the participant fixates on an AOI or an AOI group
Saccade count	The number of times the participant saccade on an AOI or an AOI group. A saccade is defined as the interval of time between the first fixation on the AOI and the next fixation outside the AOI
Saccade duration (seconds)	Measures the duration of each individual saccade within an AOI

Table-1 Noel Scott, Christine Green & Sheranne Fairley (2015)

Banner Blindness

While surfing or navigating a website, the advertisement banners or content in ad distract the users' attention to a website. They tend to avoid these unnecessary banners showing on the webpage (X. Drèze, F.-X. Hussherr, 2003) and prefer to focus on the required content on a website (Y.C. Hsieh, K.H. Chen, 2011). This condition is acknowledged as Banner Blindness where users ignore the banner content on websites and the text, graphics presentation of an ad is unable to attract their attention (J.P. Benway, D.M. Lane, 1998; A.M. Barreto, 2013). Banner Blindness occurs due to user's peripheral vision capacity that makes it easy for the user to scan the website content according to the needs and ignore the advertisement banners (de Ybarra, J. L. L. S. (2009). The half banner visible on the webpage is ignored generally by users and results in banner blindness (X. Drèze, F.-X. Hussherr, 2003). In the literature, a few explanations are specified concerning banner blindness. Presence of similar design in an advertisement, website and advertisement banner share alike content influence banner blindness. Navigation being time-consuming process (M. Burke, et al. 2005), banner and advertisement don't present major objective behind search and surfing (M. Burke, et al. 2005; A.M. Barreto, 2013). However, a few studies specified positive results indicating 50% of participants paid visual attention to at least 75% of banners focus to as a minimum one banner on a webpage from 82 % of respondents (G. Hervet, et al.2011).

Banner Recognition Memory

For effectiveness in online advertisement paying "attention" is not the only key element, but keeping the information in memory and recalling it whenever required also plays a significant function in determining effectiveness (W. Brazil, B. Caulfield, 2017). The information provided in an ad can be processed with the internal knowledge presented in memory along with external information (H.C.M. Van Trijp, 2009). From these external information, Brand is most recalled component of the banner (M. Köster, we al. 2015). There are some investigations on banner recognition and recall. The studies suggest that time spent on a website positively influence banner recall (P.J. Danaher, G.W. Mullarkey, 2003). The purpose of navigation affects ad recall and general navigation is likely to enhance recall banners (I. Yaveroglu, D. Naveen, 2008). Banner repetition on website and location of the banner on screen enhances banner recall. Specifically, banners shown on the top of the screen are recalled more frequently (W. Gong, L.M. Maddox, 2003). Besides attention to aspects of a website such as ads, logos, text, heads etc are more influential factors in information and banner recall (J. Simola, et al. 2013). Some advertisement design and features, for instance, text, animation, price, color, orientation etc are influential in awareness generation and recall (Herna´ndez-Me´ndez J and Munoz-Leiva F,2015; Kuisma J et al. 2010). The study conducted by F. Muñoz-Leiva et al., (2018) on W2W investigated advertisement effectiveness in different social media platforms and found that Facebook advertisement was more effective than advertisement on Blogs and lastly Trip Advisor was least effective. The first fixation on the ad banner removed the banner blindness, but much time was not devoted to these ads. The self-reported study conveyed that more than 50% of the respondents didn't recall the brand in the banner (F. Muñoz-Leiva et al., 2018).

Attention

Eye-tracking is a new technique developed to study visual attention and discernment in tourism and hospitality research. Attention is defined as "focused mental engagement on a particular item of information. Items come into our awareness, we attend to a particular item, and then we decide whether to act"(Davenport and Beck 2001, p. 20). Visual attention refers to "applying cognitive resources to relevant information in a visual environment" (Carraasco,M, 2011) Viewers interest can be measured from attention devoted to the advertisement. Amount and quality of attention depend on the motivation and intention of users to follow advertisement (Kuisma et al.,2010; Yantis,S 1998). It is not necessary that viewers will recall the information when attention was high as some elements of advertisement may be stored in memory unconsciously and can remember the information without fixations (Brockmole and Henderson, 2005; William et al., 2005).

Tourism Advertisement Effectiveness

In the field of tourism, for measurement of advertisement effectiveness cumulative approaches are used with the questionnaire, self-reported studies, primary gathered data and intuitively documented responses because of their easy interpretability, huge information and absolute practicality (Paulhus & Vazire.2009). The self-reported instrument studies deem the role of memory in decision making besides the advertisement effectiveness and at the same time it becomes difficult to determine the processing, encoding, and storage of information in memory and recalling it (H.S. Krishnan, D. Chakravarti, 1999). This approach now has been transformed in an alternate approach. Customer conversion study, advertisement awareness, financial /response, brand development and website usage are major approaches used to investigate advertisement effectiveness (Morgan et al. 2012). Banners, floating ads, rectangles, pop-ups, interstitials, and skyscrapers are most familiar advertisement formats (Burns and Lutz, 2006). There are some diagnostic studies that used the alternative approaches in the investigation of the effectiveness of destination brochures (Chnag. Wall,& Lai,2005; Ven der Veen & Song, 2014), to inspect multi-destination and mono-destination format promotional items (McKinney, Hazeladine, & Chawla, 2009). The research studies of tourists' visual processing behavior investigated perceived effectiveness of various destination marketing materials, purchase intentions and attitude inclusion of photos in advertisement generate a favorable image of the product offered (Watlers et al.2007) and more positive brand attitude (Jun & Holland 2011).

Based on the hierarchy model of effect the tourism advertisement effectiveness is inspected by Kong et al (2018) through eye-tracking technique and self-reported recall method and drew some below mentioned major findings:

- Advertisement with text, price and image was recalled more than the advertisement with price and text while advertisement with only image and price was found to be least favorable in attention seeking and recalling ability.
- Male respondents recalled tourism advertisement with the absence of images better.
- Viewers seeking specific or task-oriented information paid more attention to the ad and engendered more recall.

- Expertise in using tourism websites is also found to be influential in attention, memory and ad recall. An advertisement containing text was more memorable and thoughtful element for expert users while images are a better option to notice and recognize for new users.
- In tourism advertisement price imparts no significant difference in consumer's attention and memory.

The diagnostic study carried out by N. Scott et al. (2015) in a laboratory setting with 25 respondents examined effectively of tourism advertisement using eye-tracking technique and self-reported measures and both methods shored up same results. It was concluded that block ad was more effective than text and short lines in the text and large print significantly attracted users' attention. In an eye-tracking study the visual attention to photographs with text was investigated and indicated some characteristics on the landscape of photographs that draw viewer's visual attention such as the presence of text, known language of text, single textual message etc. that affect the higher perceived advertisement effectiveness (Q. Li et al.2016). The self-reported studies, however, give the similar results of the effectiveness of online advertisement in many studies to eye-tracking evaluations. But the later give more details from the various components of the banner such as text, language, image, style etc and provide scientific results.

Conclusion

Advertisements are being used for marketing of services and products in the tourism industry and online marketing is a new phenomenon that enables the marketers to present their ideas and products directly to the end users to evaluate and make final decisions. Eye-tracking technology is being used to appraise the various dimensions of online ads, banners, pop-ups etc showing on the WebPages. These investigations in this area can be useful for marketers to design the marketing strategies and various elements of ad or banners. By analyzing the effectiveness of the text, images, price, etc on the attention and recall of the viewers, the banner blindness can be avoided. Improving banner content, navigation devices, website usefulness etc can be major measurements for enhancing attention, securing more fixations, banner recognition and banner recall. The more attention and banner recall insure positive attitude towards the brand and company and influence users to make purchase decisions. Thus the marketers and service providers can plan their advertisement approaches by analyzing the users' using patterns, needs, trends and future advancements in the area.

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