

THE ANALYSIS OF THE INFLUENCE OF INTERNAL FACTORS ON OUTDOOR ADVERTISING EFFECTIVENESS

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Abstract

The aim of the research is to determine the criteria of internal factors influencing the effectiveness of outdoor advertising. The eye-tracking experiment was conducted in Lithuania in 2016. Consumers' visual attention toward specific criteria of internal factors influencing the effectiveness of outdoor advertising was measured. The chosen criteria were headline font size, the number of elements in the advertisement, and dominating elements in the advertisement (visual or textual). The main results of the research reveal that when the surface size of visual and textual outdoor advertising elements is the same, textual elements attract more visual attention than visual ones and that advertisements containing a large number of elements attract more visual attention than the ones containing a small number of elements. Moreover, when the font sizes of two headlines are both larger than the body text, but those headlines differ in font size one from another, there is no significant difference in consumers' visual attention toward those headlines. Consequently, it is recommended to create outdoor advertisements with a large number of elements, where most of them are textual, in order to attract the consumers' attention.

Key words: outdoor advertising, eye-tracking, visual attention, advertising effectiveness, internal factors.

Introduction

It is well said, 'Where the eye stops, the sale begins' (Pieters *et al.*, 2010), implying that visual attention is necessary, but not a sufficient condition in order for the visual advertisement to become effective. Such a view came out of the information processing aspects. McGuire (1976) broke down the information processing aspects into the steps, of which the most essential are: exposure, attention, comprehension, acceptance, retention, and behaviour. Retention of the advertisement or the behaviour influenced by advertisement is impossible without the exposure and attention to the advertisement. Therefore, the first necessary condition for the advertising to have a possibility to become effective is exposure to it; following exposure, a varying degree of processing capacity – attention – must be allocated to advertisement successfully passing the stage of pre-attentive screening and this step depends on many factors (Walliser, 1997). Attention to advertising then develops into advertising recall and recognition, which form consumers' attitudes, having influence on purchase intentions (see Pilelienė, Grigaliūnaitė, 2015). Furthermore, as Felix and Hinck (2015) stated 'precise knowledge of exposure time and of the exact elements that consumers may actually pay attention to is of significant importance for marketers if they wish to improve advertising effectiveness'. Consequently, consumers' visual attention to the advertising is directly associated with advertising effectiveness.

As mentioned above, there are many factors influencing attention to advertising and its effectiveness. Some authors (Pieters *et al.*, 2002; Pieters & Wedel, 2004; Boerman *et al.*, 2011; Pilelienė & Grigaliūnaitė, 2016) have analyzed the influence of message-related factors on the effectiveness of

print advertising; other authors (Cole *et al.*, 1997) have analyzed the influence of external factors on the effectiveness of outdoor advertising. All of the factors influencing outdoor advertising effectiveness can be classified in two broad categories, each containing more subcategories. The first category is external factors, containing subcategories of outdoor advertising placement and environmental factors (Walliser, 1997; Edegoh *et al.*, 2013; Franch *et al.*, 2013). Nevertheless, the analysis of the influence of external factors on the effectiveness of outdoor advertising is quite limited due to the specificities and regulations in different cities. The second category is internal factors, containing subcategories of personal factors and advertising message-related factors (Walliser, 1997; Franch *et al.*, 2013). As personal factors are hardly controlled by the organizations, the advertising message-related factors are the ones that marketers can gain advantage from, but the research regarding the influence of message-related factors on the effectiveness of outdoor advertising are scarce. Thus, the object of this research is internal factors, referring to message-related factors, which influence the effectiveness of outdoor advertising. Moreover, it is important to know not only the factors influencing the effectiveness of outdoor advertising, but the specific criteria of those factors as well. Consequently, the scientific problem analyzed in the article is formulated by a question: what criteria of internal factors influence the effectiveness of outdoor advertising? The aim of the research is to determine the criteria of internal factors influencing the effectiveness of outdoor advertising. Accordingly, this research fills the gap in scientific literature by determining the criteria of internal factors influencing the effectiveness of outdoor advertising.

Materials and Methods

It is believed (Belch & Belch, 2004; Pieters & Wedel, 2004), that the headline of print advertisement is the most, or at least one of the most important elements of print advertisement. Thus, the importance of headline is proved and the assumption can be made that whether print or outdoor advertisement, it must contain the headline. Despite this, the question rises about the font size of the headline in outdoor advertising. Belch and Belch (2004) argue: ‘Headlines are usually set in larger type’; where ‘larger’ means that the font size of the headline is usually larger than the font size of the body text. Nevertheless, it is unclear how much larger the font size of the headline should be and whether enlarging the font size of the headline leads to more consumers’ attention. Consequently, we hypothesize:

H₁: When the font sizes of two headlines are larger than the body text, but those headlines differ in font size one from another, the headline with a larger font size attracts more consumers’ visual attention than the one with smaller headline font size.

Because of the debates about the influence of pictorial and textual elements of advertisements on consumers’ attention, Pieters and Wedel (2004) analyzed latter influences regarding print advertising. These authors concluded that pictorial elements capture a substantial amount of attention, independent of their surface size, while visual attention to the text element depends on the surface size of the text – the larger surface size of the text, the larger the visual attention. Considering that outdoor advertising is usually presented in the bigger informational clutter, the assumption can be made that the same results obtained by Pieters and Wedel (2004) can be not applicable for outdoor advertising. Therefore, we hypothesize:

H₂: When the surface sizes of visual and textual outdoor advertising elements are the same, visual elements attract more visual attention than textual ones.

Pieters *et al.* (2010) confirmed that print advertising design complexity has a positive effect on the visual attention to the advertisement as a whole. Previous research (see Pilelienė, Grigaliūnaitė, 2016) substantiated these results and stated the fact that the complexity of the advertising layout has a negative influence on the visual attention to the brand presented in the print advertisement. Accordingly, in the case of outdoor advertising, we analyse only one component of advertising complexity – quantity of objects, and hypothesize:

H_{3a}: Advertisements containing a large number of elements attract more visual attention than the ones containing a small number of elements.

H_{3b}: Brand presented in the advertisement containing a large number of elements attracts less visual attention than brand presented in the advertisement containing a small number of elements.

Endeavouring to make a deeper analysis, the assumption is made that the combination of two criteria, namely, the number of elements and dominating elements, can affect consumers’ visual attention to the whole outdoor advertisement. Therefore, the following four hypotheses are made:

H_{4a}: Advertisements containing a large number of elements, where most of them are visual, attract more visual attention than those advertisements containing a large number of elements, where most of them are textual.

H_{4b}: Advertisements containing a small number of elements, where most of them are visual, attract more visual attention than those advertisements containing a small number of elements, where most of them are textual.

H_{4c}: Advertisements containing a large number of elements, where most of them are visual, attract more visual attention than those advertisements containing a small number of elements, where most of them are visual.

H_{4d}: Advertisements containing a large number of elements, where most of them are textual, attract more

Table 1

Advertisement criteria

Criteria	No. of advertisement							
Font	Large	Large	Large	Large	Small	Small	Small	Small
Number of elements	Large	Large	Small	Small	Large	Large	Small	Small
Dominating elements	Visual	Textual	Visual	Textual	Visual	Textual	Visual	Textual
Brand	Same size, same place							

visual attention than those advertisements containing a small number of elements, where most of them are textual.

Considering the hypotheses, authors made the advertisement criteria grid (see Table 1) for the creation of outdoor advertisements containing only the criteria useful for the research in order to minimize the risk of misleading results influenced by factors not analyzed in this research. As it can be seen, eight advertisements were used for the research. Convenience product category was chosen for the research, thus in all of the advertisements, different bread brands were advertised.

In order to eliminate the influence of advertisement layout on the results, all of the advertisements had to maintain the same layout system, created based on the marketing and advertising experts' comments. Latter system is presented below in Figure 1. As it can be seen, the brand is positioned in the left upper corner; in the right upper corner picture is presented only in the advertisements which contain a large number of elements, while headline is presented in the middle of the advertisement. The ratio of paper size to large headline font size is 100:9, while the ratio of paper size to small headline font size is 100:6. At the bottom of the page, visual element is presented in the advertisements, which have to contain visual elements, and the text is presented in the advertisements, which have to contain textual elements (the ratio of paper size to the font size of the body text is 100:3). Consequently, the ratio of small headline font size to body text font size is 2:1; large headline font size to body text font size ratio is 3:1. The advertisement paper size used for the research is A4 (210:297 millimetres), because the participants' walking distance from the advertisements was 1 metre (30 centimetres), due

to the narrow passing. Accordingly, with the bigger distances the advertisement paper size has to be bigger in order to capture the consumers' attention.

All of the advertisements were hung upon the university wall (in the centre of the town) in a random order, in the passing between the bus stop and the entrance to the university. Participants looked (or did not look if did not notice) at the advertisements at their own pace. The experiment was conducted using Tobii Eye-Tracking Glasses – mobile video-based eye tracker recording monocular gaze data from the right eye at a sampling rate of 30 Hz. This eye tracker has an accuracy of 0.5°. The system has a camera to record a scene video with a resolution of 640x480 pixels; maximum recording angles are 56° of visual angle in horizontal and 40° of visual angle in vertical direction.

Each of the participants put on the glasses and performed a standard nine point calibration. All of the participants were volunteers and had not been paid for the participation in the eye-tracking experiment. Before the experiment each of the participants was informed in detail about the experiment and signed the form of information and informed consent. After the experiment, each of the participants filled the advertising aided recall and recognition questionnaire. The experiment was held in Lithuania, Vytautas Magnus University, February, 2016.

Data appropriate for the analysis were obtained from 30 participants' (26 females). All of the participants were right-handed with normal or normal-to-corrected vision. All of the participants were at the age group of 18-29 years.

For the analysis of eye-tracing results Tobii Studio v.3.2.3 software was applied. Pieters *et al.* (2002) stated that consumers extract information

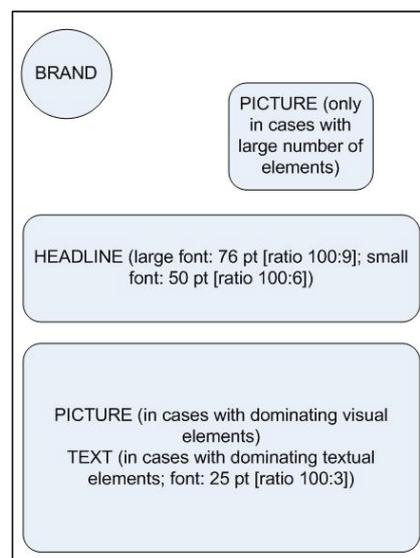


Figure 1. The system of advertisement layout.

from advertisements and their elements during eye fixations, which reflect the moments of visual attention. Meghanathan *et al.* (2015) confirmed that fixation duration is sensitive to the amount of attention deployed to a fixated location. Moreover, the frequency of fixations is a measure of the intensity of visual attention and the information in ads and ad elements (Pieters *et al.*, 2002). Thus, advertisements' and parts' of the advertisements total fixation duration (average duration of all fixations within the specific element) and fixation count (average number of times the participants fixated on the specific element) regarding different criteria were calculated. IBM SPSS

Statistics v.20 and XLSTAT 2014 software packages were applied for the statistical analysis of the results obtained from the Tobii Studio v.3.2.3 software.

Results and Discussion

Participants' total fixation duration (mean viewing time, s) and fixation count (times) are presented in Table 2. All of the results are calculated including zeros (including respondents who did not fixate on the element being analyzed). As it can be seen, the small headline attracts very similar amount and intensity of visual attention compared to the large one. When measuring the factor 'dominating elements', only the

Table 2

Mean viewing time (s) and fixation count for the advertisement elements regarding specific criteria

Criteria	Mean	S.E.	95% C.I. for Mean		Median	S.D.	Minimum	Maximum	Fixation count
			Lower bound	Upper bound					
Headline									
Large font size	3.764	0.444	2.855	4.673	3.575	2.393	0.510	6.690	115.7
Small font size	3.891	0.464	2.941	4.841	3.605	2.500	0.170	7.890	119.2
Dominating elements									
Visual	5.900	0.380	5.122	6.678	5.540	2.047	2.650	9.400	179
Textual	14.755	2.371	9.905	19.605	10.920	12.770	0.500	48.000	444.6
Number of elements									
Large	20.364	1.769	16.745	23.983	17.535	9.528	7.960	42.350	613.2
Small	16.833	1.910	12.927	20.739	15.875	10.285	6.290	45.260	506.8
Brand									
Advertisement with large number of elements	1.756	0.354	1.032	2.480	0.965	1.907	0.000	6.540	59.78
Advertisement with small number of elements	1.846	0.281	1.272	2.420	1.215	1.511	0.140	4.180	56.7
Dominating elements and number of elements									
Large number of elements, dominating visual	7.743	0.569	6.579	8.907	8.225	3.066	2.190	11.650	233.5
Large number of elements, dominating textual	14.023	1.410	11.138	16.908	14.150	7.596	5.200	32.800	422.1
Small number of elements, dominating visual	6.220	0.602	4.988	7.452	6.520	3.244	0.000	13.360	209.22
Small number of elements, dominating textual	10.164	1.502	7.091	13.237	9.275	8.090	3.110	32.480	306.3

bottom of the advertisements with textual or visual parts is analyzed. The analysis reveals that textual elements attract bigger amount and intensity of visual attention. When analyzing ‘number of elements’, the whole advertisements are analyzed and analysis reveals that advertisements with a large number of elements attract bigger amount and intensity of visual attention, though the brand attracts more attention when it is presented in the advertisement with a small number of elements (despite the fact, that the difference is minimal).

When analyzing “dominating elements and number of elements”, the whole advertisements are analyzed. The analysis reveals that advertisements containing a large / small number of elements, where most of them are textual attract more visual attention

than those containing a large / small number of elements, where most of them are visual. Moreover, advertisements containing a large number of elements, where most of them are visual / textual, attract more visual attention than advertisements containing a small number of elements, where most of them are visual / textual.

As the data of eye-tracking experiment are non-normally distributed, Wilcoxon Signed Ranks Test is applied in order to evaluate the difference between two dependent samples (see Table 3). As it can be seen, the difference in visual attention toward a large headline and visual attention toward a small headline is statistically non-significant. On the other hand, the test reveals that the dominating textual elements in outdoor advertising of convenience

Table 3

Wilcoxon Signed Ranks Test

Criteria	Statistics	
	Z	p-value
Large headline font size – Small headline font size	1.113	0.266
Dominating visual elements – Dominating textual elements	3.861	0.000*
A large number of elements – A small number of elements	2.316	0.021*
Brand presented in the advertisement with a large number of elements – Brand presented in the advertisement with a small number of elements	1.144	0.253
Advertisement with a large number of elements and dominating visual elements – Advertisement with a large number of elements and dominating textual elements	3.922	0.000*
Advertisement with a small number of elements and dominating visual elements – Advertisement with a small number of elements and dominating textual elements	2.502	0.012*
Advertisement with a large number of elements and dominating visual elements – Advertisement with a small number of elements and dominating visual elements	3.305	0.001*
Advertisement with a large number of elements and dominating textual elements – Advertisement with a small number of elements and dominating textual elements	2.843	0.004*

*p<0.05.

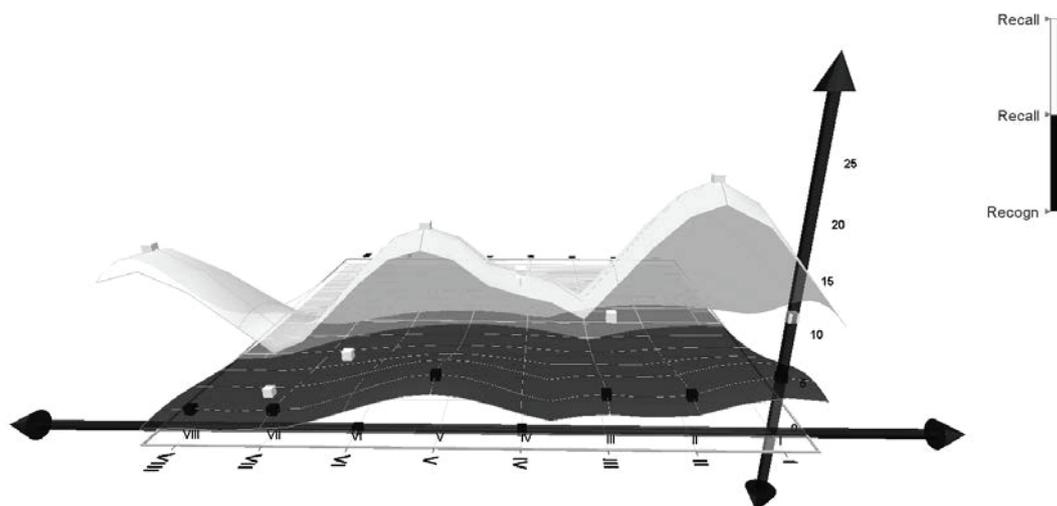


Figure 2. The levels of experiment advertisement recall and recognition, n = 30.

product category attract statistically significantly more visual attention than dominating visual ones. Advertisements containing a large number of elements attract statistically significantly more visual attention than the ones containing a small number of elements. Despite this, the difference in visual attention toward a brand presented in the advertisement with a large number of elements and a brand presented in the advertisement with a small number of elements is statistically non-significant (it is important to mention that in this research only one component of advertising complexity – quantity of objects – is analyzed). Finally, advertisement with either a large or small

number of elements and dominating textual elements attracts statistically significantly more attention than advertisement with either a large or small number of elements and dominating visual elements; moreover, advertisements, where dominating elements are respectively visual or textual, attract statistically significantly more attention when there is a large number of elements, compared to a small number of elements.

It could be stated, that a large number of elements in any case attracts more visual attention than a small number of elements in the outdoor advertisement, and that textual elements in any case attract more

Table 4

Results of hypotheses testing

No.	Hypothesis	Result	Explanation
H1	The headline with larger font size attracts more consumers' visual attention than the one with smaller headline font size	Rejected	The difference is statistically non-significant
H2	When the surface sizes of visual and textual outdoor advertising elements are the same, visual elements attract more visual attention than textual ones	Rejected	When the surface sizes of visual and textual outdoor advertising elements are the same, textual elements attract statistically significantly more visual attention than visual ones
H3a	Advertisements containing a large number of elements attract more visual attention than the ones containing a small number of elements	Supported	Advertisements containing a large number of elements attract statistically significantly more visual attention than the ones containing a small number of elements
H3b	Brand presented in the advertisement containing a large number of elements attracts less visual attention than in the advertisement containing a small number of elements	Rejected	The difference is statistically non-significant
H4a	Advertisements containing a large number of elements, where most of them are visual, attract more visual attention than those advertisements containing a large number of elements, where most of them are textual	Rejected	Advertisements containing a large number of elements, where most of them are textual, attract statistically significantly more visual attention than those advertisements containing a large number of elements, where most of them are visual
H4b	Advertisements containing a small number of elements, where most of them are visual, attract more visual attention than those advertisements containing a small number of elements, where most of them are textual	Rejected	Advertisements containing a small number of elements, where most of them are textual, attract statistically significantly more visual attention than those advertisements containing a small number of elements, where most of them are visual
H4c	Advertisements containing a large number of elements, where most of them are visual, attract more visual attention than those advertisements containing a small number of elements, where most of them are visual	Supported	Advertisements containing a large number of elements, where most of them are visual, attract statistically significantly more visual attention than those advertisements containing a small number of elements, where most of them are visual
H4b	Advertisements containing a large number of elements, where most of them are textual, attract more visual attention than those advertisements containing a small number of elements, where most of them are textual	Supported	Advertisements containing a large number of elements, where most of them are textual, attract statistically significantly more visual attention than those advertisements containing a small number of elements, where most of them are textual

visual attention than visual elements in the outdoor advertisement of convenience product.

Obtained results of eye-tracking experiment are substantiated by the results of advertising recall and recognition questionnaire. The levels of experiment advertisement recall and recognition are provided below in Figure 2. As it can be seen, the best recalled advertisement (24 out of 30 participants) is number two (large headline font size, a large number of elements, dominating textual elements).

Advertisement number eight (with dominating textual elements as well) is recalled by 18 participants; advertisement number five (with dominating visual elements) is recalled by 20 participants. In a common result, the level of advertising recall is better regarding advertisements with dominating textual elements. Nevertheless, the recognition level of the advertisements is very low. The best recognized advertisements are number one (large headline font size, a large number of elements, dominating visual elements) and five, which were recognized by six participants each and advertisement number two, recognized by four participants. These results substantiate Du Plessis (2008) idea, that recognition is an emotional task, thus it is the correct method to use for television, while recall is a logical task, thus a correct method to use for print, outdoor advertising, etc. Consequently, based on the recall test and eye-tracking experiment, a large number of elements and dominating textual elements give the highest possibility to attract consumers' attention and positively influence the effectiveness of outdoor advertising. All of the results of hypotheses testing with the summarized main findings in the explanation column are presented below in Table 4.

Testing the research hypotheses allows to determine the criteria of internal factors influencing the effectiveness of outdoor advertising: headline

larger than the body text, a large number of elements with dominating textual elements, and the emphasised brand.

Conclusions

Visual consumers' attention to outdoor advertising is necessary, but not a sufficient condition in order for advertising to become effective. Message-related factors, as a part of internal factors influencing the effectiveness of outdoor advertising, have a great impact on the consumers' visual attention. Consequently, knowing message-related factors criteria that attract consumers' attention can enhance the possibility for the advertising to become effective.

In the scientific literature, the most discussed message-related factors of print advertising are the headline, dominating elements, and the number of elements. Nevertheless, research regarding the influence of message-related factors on the effectiveness of outdoor advertising is scarce. Consequently, authors of this research analyzed the most discussed message-related factors of print advertising in the context of outdoor advertising.

The analysis of the research results lead to the determination of the internal factors criteria influencing the effectiveness of outdoor advertising: headline larger than the body text, a large number of elements with dominating textual elements, and the emphasised brand. By following these criteria, organizations can improve their advertising campaigns by enhancing advertising effectiveness possibility. Directions for future research are the analysis of the influence of personal factors and external factors on the effectiveness of outdoor advertising.

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References

1. Belch, G.E., & Belch, M.A. (2004). Advertising and Promotion. An Integrated Marketing Communications Perspective. McGraw-Hill/Irwin; 6 edition.
2. Boerman, S.C., Smit, E.G., & van Meurs, L. (2011). Attention Battle; the Abilities of Brand, Visual, and Text Characteristics of the Ad to Draw Attention versus the Diverting Power of the Direct Magazine Context. *Advances in Advertising Research*, 2, pp. 295-310. DOI: 10.1007/978-3-8349-6854-8_19.
3. Cole, D.N., Hammond, T.P., & McCool, S.F. (1997). Information Quantity and Communication Effectiveness: Low-Impact Messages on Wilderness Trailside Bulletin Boards. *Leisure Sciences*, 19(1), pp. 59-72. DOI: 10.1080/01490409709512239.
4. Du Plessis, E. (2008). *The Advertised Mind: Groundbreaking Insights into How Our Brains Respond to Advertising*. London: Kogan Page. p. 256.
5. Edegoh, L.O.N., Nwanolue, I.M., & Ezeh, N.C. (2013). Audience Assessment of the Use of Models in Billboard Advertising: A Study of Consumers of Amstel Malt in Onitsha, Nigeria. *International Review of Social Sciences and Humanities*, 6(1), pp. 217-227.
6. Felix, R., & Hinck, W. (2015). Attention to Print Advertising: An Eye Tracking Study in the Context of Airline Advertisements. *Thriving in a New World Economy*, Part of the series Developments in Marketing

- Science: Proceedings of the Academy of Marketing Science, pp. 252-255. DOI: 10.1007/978-3-319-24148-7_76.
7. Franch, E.B., Albiol, C.B., & Rutherford, (2013). Messages with Impact: Creativity in Traditional Outdoor Advertising Platforms in Castellón (Spain) and Warrington (UK). *Online Journal of Communication and Media Technologies*, 3(2), pp. 94-111.
 8. Meghanathan, R.N., van Leeuwen, C., & Nikolaev, A.R. (2015). Fixation duration surpasses pupil size as a measure of memory load in free viewing. *Frontiers in Human Neuroscience*, 8(1063). DOI: 10.3389/fnhum.2014.01063.
 9. Pilelienė, L., & Grigaliūnaitė, V. (2016). Influence of print advertising layout complexity on visual attention. *Eurasian Business Review*, pp. 1-15. DOI: 10.1007/s40821-015-0040-2.
 10. Pilelienė, L., & Grigaliūnaitė, V. (2015). Modeling of the impact of advertising source on advertising effectiveness: theoretical insights. *Management of Organizations: Systematic Research*, 73, pp. 49-61. DOI: 10.7220/MOSR.2335.8750.2015.73.3.
 11. McGuire, W.J. (1976). Some Internal Psychological Factors Influencing Consumer Choice. *Journal of Consumer Research*, 2, pp. 302-319. DOI: <http://dx.doi.org/10.1086/208643>.
 12. Pieters, R., Warlop, L., & Wedel, M. (2002). Breaking Through the Clutter: Benefits of Advertisement Originality and Familiarity for Brand Attention and Memory. *Management Science*, 48(6), pp. 765-781.
 13. Pieters, R., & Wedel, M. (2004). Attention Capture and Transfer in Advertising: Brand, Pictorial, and Text-Size Effects. *Journal of Marketing*, 68, pp. 36-50. DOI: 10.1509/jmkg.68.2.36.27794.
 14. Pieters, R., Wedel, M., & Batra, R. (2010). The Stopping Power of Advertising: Measures and Effects of Visual Complexity. *Journal of Marketing*, 74(5), pp. 48-60. DOI: 10.1509/jmkg.74.5.48.
 15. Walliser, B. (1997). A Comparison of the Effectiveness of Perimeter and Outdoor Advertising: What Sponsorship can Learn from Outdoor Advertising. *Asia-Australia Marketing Journal*, 5(1), pp. 21-31. DOI: 10.1016/S1320-1646(97)70255-7.