

Eye Tracking Analysis: Application in a Case Study of a Fast Moving Consumer Goods Product

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ABSTRACT

The usage of eye gaze tracking is a new and fast developing field of marketing research. Our case study is considering the effectiveness of point of sale outplacements, and the shelf appliances of a specific men's cosmetic product. We invited a total of 50 male Hungarian subjects ranging in age from 18 to 24 to participate in the study. Areas of interest (AOI) and fixation duration have been recorded with Tobii X 120 eye tracker. For the purpose of the analysis iMotions' Attention Tool 3.0 software was applied. The eye tracking data have been combined pre- and post interviews in order to analyze consumer behavior and identify outplacement and shelf appliance design.

Author Keywords

Eye tracking, fast moving consumer goods (FMCG), consumer behavior, shelf display, point of sale.

ACM Classification Keywords

H.5.1. Evaluation/ Methodology, H.5.m Miscellaneous

INTRODUCTION

'Our sense of vision allows perceiving the world in images, motion and color. We use information from the visual sense, in order to move around and interact with objects and environment.' [2]

Objective studies of human eye movements date from around the turn of the twentieth century, although methods involving the use of after-images (direct observation) go back to the 18th century.

In 1898, Delaberre made the first eye movement recordings, using a mechanical lever attached to the eye. Dodge and Cline in 1901 introduced a method for photographing

movements of reflection of a light source from the cornea, which remained a standard method of recordings for the next 50 years [6]. The method required the head to be kept as still as possible, which meant that studies concerning eye movements made during active tasks (of everyday life) were excluded.

The major innovation by Mackworth and Thomas in 1962 made it possible to record eye movements during relatively unconstrained activity [6]. They used a camera mounted on the head, which simultaneously filmed the view ahead and the corneal reflection. Their device was successfully used to study diving and flying.

For a time, another method seemed promising, the electro-oculography tracking technique. It is based on the fact that an electrostatic field exists when eyes rotate. By recording small differences in the skin potential around the eye, the position of the eye can be estimated. Since it requires the close contact of electrodes to the user, the technique is rather troublesome and not well-suited for everyday use.

By the end of the 1980s when video cameras had become much smaller and lighter, a number of commercial eye trackers began to become available. They were usually based on pupil position, made it visible by illuminating the eye with infrared light to produce a 'white' pupil (also called 'Bright Pupil'), which can be tracked electronically. It gives a pictorial display of foveal gaze direction, or 'point of regard' [1,3]. This technique is still used by a number of eye trackers. Additionally, technological advancements, such as increased processor speed and digital video processing have both lowered the cost and dramatically increased the efficiency of eye tracker equipments. The computer eased the data collection and analysis; brought a whole new era for eye movement research [4,6].

In the first years of the decade, the increasing sophistication and accessibility of eye tracking technologies have generated a great deal of interest in the commercial sector. Generally, commercial eye tracking studies function by presenting a target stimulus to a sample of consumers while an eye tracker is used to record the activity of the eye. Examples of target stimulus can include commercials,

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package designs, shelf displays, television programs, movie films, sport events and most recently web-based advertisements. The resulting data can be statistically analyzed and graphically rendered to provide evidence of specific visual patterns. By examining fixations, fixation durations, saccades and eye blink also the effectiveness of a given medium or product can be determined.

Current research assigns eye tracking as a small window what the consumer is thinking [5].

METHOD

The aim of our research project is to apply the eye tracking measurement as a tool in point of sale marketing (POS), and product development. We analyze the eye movement data in order to evaluate the store outplacement and the shelf appliances of a men's cosmetic product (an FMCG product). Our study included 54 male participants from an age group of 18-24 years (university students). The product's target group is the 18-25 years old male population so the research aimed to test this specific population by the recruited sample. Subjects participated individually and they received a product specimen after the measurement. The session lasted approximately from 6 to 8 minutes including the calibration of the eye tracker device.

We used Tobii X120 eye tracker with Imotions' Attention Tool 3.0 software. Due to the hardware's feature we could use projected picture stimuli, what is larger and more life-like than a computer display view (this may contribute to the ecological validity of the test setting).

The session started with introduction, and with general information, than continued with a demographic data questionnaire (including questions about possible eye related diseases, consumption of coffee). After successful calibration we started the testing.

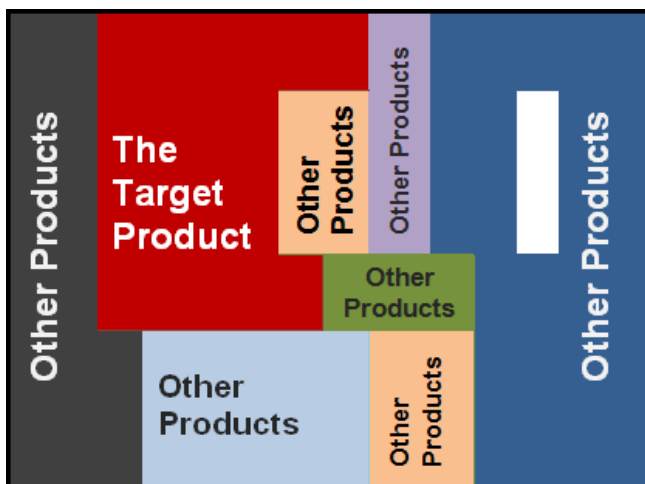


Figure 1. The schematic arrangement of the store outplacement presented of the target product and other competitor products as a stimulus in different variations of shelf appliance, and without shelf appliance.



Figure 2. An example of a shelf appliance presented as a stimulus.

We have shown two types of test stimuli for the participants. (1) The test stimuli contained store outplacements with three variations of shelf appliances of the tested FMCG product; and for baseline comparison, a store outplacement picture without any shelf appliance. Figure 1 shows the schematic view of the shelf outplacement of the target product and the other products surrounding it. (2) Than the other part of stimulus pictures were three variations of shelf appliances of the same product, without store scene, in a larger size, and with a black background (see Figure 2). Each stimuli picture was visible for the participants for six seconds. We have shown the two types of stimuli slides randomly mixed, and we placed interstimuli slides between the test pictures: these were noise pictures, consisted of black and white points mixed random, and they covered the same size as the following test stimulus. These interstimuli were visible for only two seconds.

After finishing the eye tracking measurement participants completed a questionnaire about their own consumer behavior and brand preferences. Finally an interview was conducted about the presented store outplacement designs, and shelf appliance variations.

Our results suggest the most effective outplacement design and shelf appliance of an FMCG product along with an analysis of recognition and brand preference among men's deodorant product.

Ethical Statement

All the participants agreed personally to participate in the research. The information provided, and the test design is fitting the ethical regulations (Ethical Codex) of the Hungarian Psychologists' Association. The producer of the tested men's cosmetic product approved to publish the pictures tested in the studies, including the product's name.

CONCLUSION

On the grounds of our post-questionnaire we have formed different consumer groups by their brand preference. We expect that we can explore numerous relationships concerning these consumer groups and their eye movement pattern. Our results also can orient display designers to choose the most attractive Point of Sale (POS) marketing tool [5].

This is a presentation of a consumer behavior measurement method by eye tracking. In our case study, we give an example for the application of this method for the store outplacement, and the shelf appliance of a specific men's cosmetic product.

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