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THE WINE MARKET – AN EMPICRICAL EXAMINATION OF IN-STORE CONSUMER BEHAVIOUR

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ABSTRACT

Business success in the current highly competitive environment determines primarily the ability to understand the customer and his needs and identify the factors that influence consumer behavior. Therefore, the examination of consumer behavior and obtaining feedback on the development and state of the market as well as identifying current trends is an essential part of any successful business. Producers and traders are increasingly forced to adapt to the rapid development and changes in the market. This is especially important with food products, given the wide range of assortment, substitutability of particular groceries and strengthening competitive pressure of manufacturers and retailers. In general, consumer decision-making related to food is influenced by a number of different factors that are changing under the influence of new trends (greater emphasis on quality, country of origin etc.). Even more specific category is the wine market, which is subject to specific criteria of consumer choice, since from a consumer perspective, it is not a product of daily consumption. The world wine market is increasing; new producers as well as new groups of customers are emerging on the market. The distribution channels are becoming more diversified and wine is offered in both specialty stores and self-service outlets; hypermarkets, supermarkets and discount stores. Due to this trend the investigation of in-store consumer behavior becomes crucial. The aim of the paper is to discuss the usefulness of eye tracking based research for examining perceptions of people shelf displays. The research integrates measurements with a mobile eye camera (Eye tracker glasses) in real conditions of a wine shop in order to reveal the impact of merchandising (display of domestic and foreign wines) on the visual attention of the consumer. The results of qualitative research carried out in March 2015 will be presented.

Keywords: in-store behaviour; eye tracking; merchandising; wine market

INTRODUCTION

As the importance of self-service retail increases, so does the interest in research on the behaviour of customers in self-service stores. This also applies to the customers' perception of in-store merchandise displays because it has a significant impact on the level of sales for the products concerned. Perceptual studies are based on non-participant observation methods using recording tools, in particular eye trackers. The aim of this article is to present the results of studies on the perception of wine shelf displays within stores conducted using an eye tracker.

I. The Polish and Slovak wine markets

The Polish and Slovak wine markets have a relatively short history and are in the early stages of development. Under a communist economy, the wine producing industry was virtually non-existent in these countries. The very small demand for this beverage was satisfied primarily by imported wines, produced mainly in Bulgaria, Romania and Hungary. In view of the fact that the most commonly consumed alcoholic drinks were vodka and beer, the requirements regarding wine quality were very low. The small quantities of wine that were consumed were mostly young wines of high acidity and unsophisticated taste **(Rekowski 2013)**. The fall of communism and the resultant opening of their economies to free trade created the foundations for a transformation of the Polish and Slovak wine markets, which involved the wide availability of wines imported from European countries (mainly Italy and France) and from the so-called New World producers (Australia, USA, Chile and Argentina).

It must be noted, however, that despite a similar history and similar geographical location the wine markets in Poland and Slovakia are different in several important aspects. First of all, unlike in Slovakia, wine production in Poland is at a marginal level and is conducted primarily as a hobby. As a result, the demand for wine is met almost entirely through imports. The vineyards which exist in Poland produce wines that are of no commercial significance. Their production is the result of the not very profitable passion of the vineyard owners. Polish wines are distributed mainly through hotels and restaurants. In

Slovakia, on the other hand, the production and consumption of wine are an important part of the national market. For example, in 2014 the low supply of Slovak wines due to bad harvests had a negative impact on overall wine sales in Slovakia. This is probably connected with the fact that, according to estimates, approximately half of the total supply of wine comes from domestic producers **(Horská et al. 2016).** Moreover, the production of wine is so high that some of it is exported. The main direction for exports is the market of the neighbouring Czech Republic **(Euromonitor International, 2015)**.

Another noticeable difference between the Polish and Slovak wine markets is the consumption of wine. In absolute terms, the consumption in Poland is about twice as high as in Slovakia (Figure 1). However, considering the populations of the two countries (about 38.4 million in Poland and about 5.4 million in Slovakia), the consumption of wine *per capita* in Slovakia is about five times higher than in Poland (Figure 2).

Data analysis also points to different dynamics for changes in wine consumption. While in the period analysed the Slovak market remained unchanged, the Polish market recorded a clear increase in wine consumption (by 21% between 2009 and 2014). This is connected mainly with certain economic and social changes in Poland. The former include the increased availability of wines of relatively high quality offered at very attractive prices. This trend is driven by discount stores, which are a leader in wine sales in Poland (Figure 3). As a result of competitive pressure, a similar range of wines is increasingly being offered by hypermarkets and supermarkets as well as specialty stores. The availability of wines is complemented by an ongoing social transformation, manifested in the changing preferences of customers, who consume less and less vodka and mass-produced lager beer and more and more whisky and wine. However, this does not change the fact that in Poland wine is often regarded as a luxury and elitist beverage. This is because it is consumed mainly by people with above-average earnings and higher education. Due to its relatively low alcohol content, wine consumers are predominantly women **(Euromonitor International, 2015)**. In Slovakia, on the other hand, due to its higher consumption and hence greater popularity, wine has a much more democratic appeal. Its consumption is not noticeably correlated with, among others, age or gender. In addition, high price elasticity of demand is evident, as reflected by a considerable growth in purchases as a result of promotional price reductions **(Kubicová & Kádeková, 2011; Kozelová et al. 2012; Euromonitor International, 2015)**.

Despite some significant differences, the wine markets in Poland and Slovakia also exhibit some similarities. The most significant one concerns the places where consumers from both countries frequently purchase wine. Generally it can be concluded that these are self-service stores (see Figures 3 and 4).

In Poland, self-service type stores sell 80% of wine (discount stores, hypermarkets and supermarkets), while in Slovakia it is 70% (hyper- and supermarkets as well as convenience stores). Although the above figures are not entirely consistent (no category of convenience stores for the Polish market and no discount stores for the Slovak market), they clearly show that customers usually make decisions relating to wine purchases alone (without the help of qualified staff). This fact, combined with the relatively low knowledge and culture of drinking wine in these countries, means that in self-service stores the main factor that customers take into consideration when buying wine is the price. This is the case not only in the markets under discussion, but also in countries with an incomparably longer wine-drinking tradition, for example Italy **(Riviezzo *et.al*., 2014; Vietoris et al. 2016)**. In addition, issues related to merchandising are becoming increasingly important, for example those relating to the organization of the entire wine shelf. A retailer has to decide on the criterion according to which the wines will be grouped (e.g. country of origin, type, or colour). Moreover, from the point of view of the suppliers of wines, the matter of the appropriate presentation of their products is very important, which involves, for example, placing the bottles on appropriate shelves, proper lighting, etc. **(Barborová et al. 2013; Nagyová, Berčík & Horská, 2014)**.

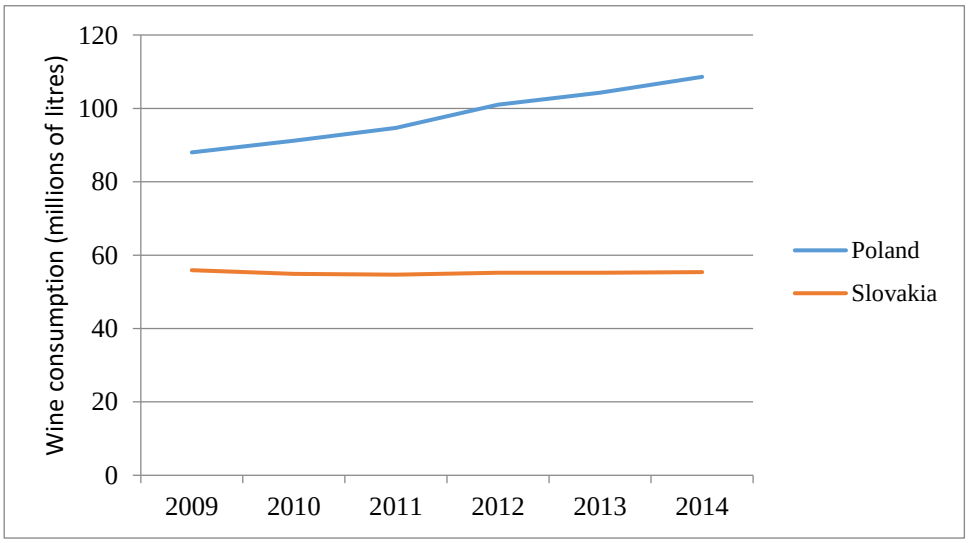


Figure 1 Wine consumption in Poland and Slovakia (in millions of litres) for the years 2009-2014.
Source: own compilation based on: Euromonitor International, July 2015 and August 2015.

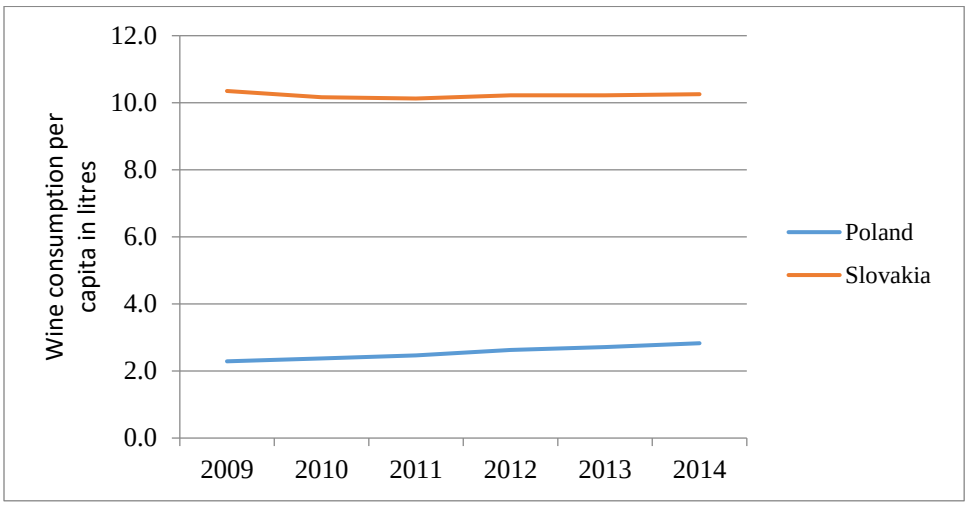


Figure 2 Wine consumption per capita in Poland and Slovakia (in litres) for the years 2009-2014.
Source: own compilation based on: Euromonitor International, July 2015 and August 2015.

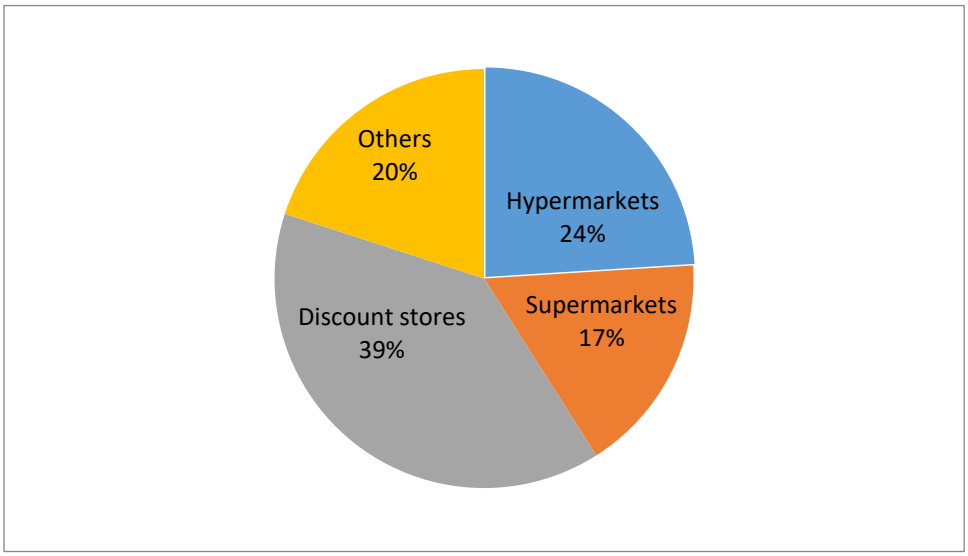
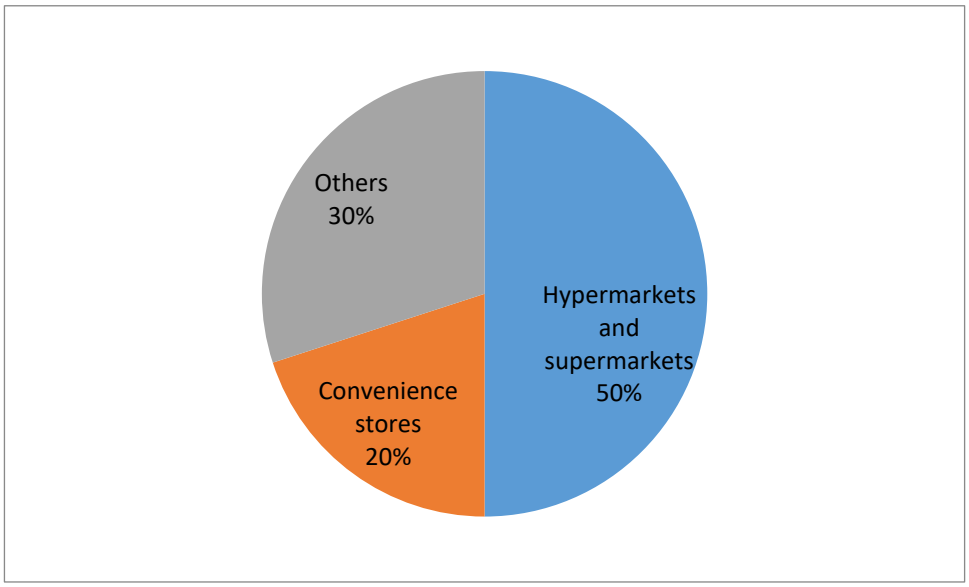


Figure 3 Places where wine purchases are made in Poland.
Source: own compilation based on www.dlahandlu.pl.

II. Consumer perception of shelf displays

The display and the placement on the shelf become particularly important in affecting the perception of quality and the level of involvement before and during the purchase **(Marchini et al. 2015; Berčík et al. 2016)**. Creating a plan of how products are placed on retail shelves, i.e. constructing a planogram, is one of the techniques of merchandising **(Buttle 1985; Borusiak 2009; Berčík, 2016)**. This can be regarded as a set of activities undertaken by the retailer with the aim of organising the store area, or as part of manufacturers' promotional activities. The importance of designing a planogram for the level of sales of a particular category of products is directly proportional to the share of self-service stores in the distribution of these products, i.e. stores where customers select a product (in this case wine) on their own. This is closely connected with the different productivity of specific parts of each shelf, resulting from differences in the perception of shelf displays. Research on visual perception using an eye tracker indicates that the preferred viewing line is approximately 15 degrees below the line of sight (see Fig. 5). As regards the perception of objects, the visual field is important, which is the area that can be seen when the eyes are focused on a central point. Generally, the visual field is species-specific **(Maggs, Miller and Ofri 2009; Berčík et al. 2015, Mokrý et al. 2016)**. In humans it is somewhat narrower than in the case of many birds, fish and other mammals, being approximately 150 degrees in the horizontal plane (with the partial overlapping of the fields of vision it is 200 degrees for both eyes) and 120 degrees in the vertical plane. In the case of close-up views, however, the visual field is much smaller: it is an area defined by the angle between lines running approximately 25 degrees above the line of sight, and 30-35 degrees below eye level **(Hendrickson and Ailawadi, 2014)**.

The best perception and the highest productivity of a shelf pertain to the area within the range of the customer's sight: the goods displayed there are in a place that the customer notices first. The productivity of the shelves situated within an arm's reach is slightly lower. The least productive are shelves located just above the floor as well as the topmost ones, i.e. those above the line of sight. However, the visibility of products placed on the top shelf depends on the distance between the customer and the



Picture 1 Research on visual attention when checking wines under real conditions.
Source: Individual processing by the author based on his research in 2015.

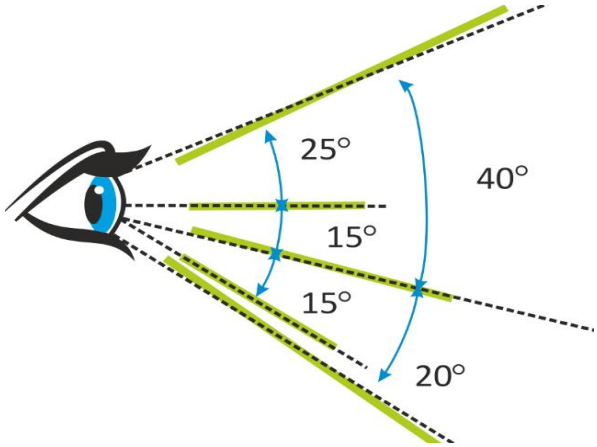


Figure 5 The natural angle of a person's gaze when standing.
Source: Hendrickson & Ailawadi, 2014.

shelf **(Borusiak 2009; Berčík 2013)**. If the shopper is close to the shelf, their field of vision may not include the highest place (though this also depends on the customer's height).

MATERIAL AND METHODOLOGY

Neuromarketing research on visual attention when people looked at Slovak and foreign wines on display was conducted under real conditions of a wine shop in Nitra, Slovakia. During the study, care was taken to ensure such conditions in which consumers usually buy wine. The participants independently made decisions with regard to choosing wine, thus a self-service environment was simulated. The visual attention measurement was executed using a biometric method (eye movement measurement with a Tobii mobile eye tracker, see Picture 1).

Ten respondents aged between 22 and 50 years took part in the test; 6 of them were Polish and 4 Slovak; with distribution according to gender being shown in Table 1. The neuromarketing research sample is already relevant with 6 participants **(Nagel, 2014; Berčík, 2016; Rybanská, Nagyová and Košičiarová, 2016)**.

Special glasses – mobile eye tracker glasses by the company *Tobii* – were used to monitor eye movements. This device uses eye tracking Pupil Centred Corneal Reflection, dark pupil technology, and in this case it was a monocular system focused on the right eye with a sampling rate of 30 Hz. We located IR Markers fixed to IR Marker Holders in the tested area (specific display shelves) in a way that the IR sensor built into the front part of the eye tracking glasses was able to differentiate signals transmitted from these miniature sensors to analyse the attraction of the merchandising display in detail at the point of purchase. The initial phase of the eye tracking tested in simulated, but also under real conditions, was an individual calibration of every participant with a system guide (9 point calibration).

Processing of the acquired primary data was conducted using software developed by the Tobii Studio, in which the following statistical indicators were generated to increase clarity.

Heat maps

Heat maps are two-dimensional graphic representations of data where the values of a variable are depicted in colours. The first step in heat map creation is the division of looks based on stimuli. This is executed via all fixations from all selected records one by one following completion

Picture 1 Research on visual attention when checking wines under real conditions.
Source: Individual processing by the author based on his research in 2015.

Table 1 Research sample.

	Absolute frequency	Relative frequency
Male	7	70%
Female	3	30%
Total	**10**	**100.00%**

Source: Individual processing by the authors.

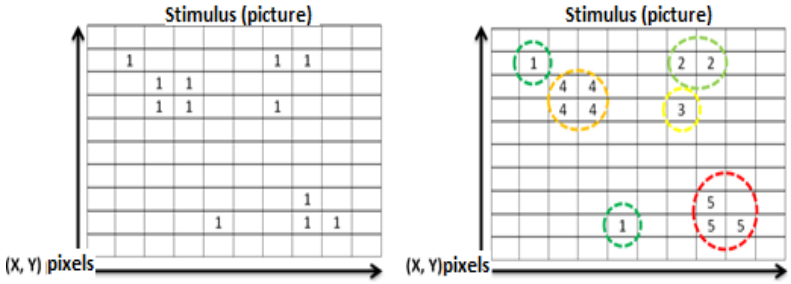


Figure 6 The creation of heat maps.
Source: Individual processing by the author based on the Tobii software manual.

of their values in the fixation which shares the same X and Y pixel location as the others. When we choose a number, we add the number of fixations in the same position. In the case of the absolute time of duration, the length of every fixation is added. Along with the relative time duration, first the length of every fixation is divided according to the display time of the presented media (video, picture), and after that it is added **(Wilkinson 2008)**. According to the companies Tobii and Sensomotoric Instruments, heat maps are relevant statistical tools **(Tobii Studio, 2013; SMI, 2016)**.

Immediately after all the fixation values are assigned, colour values are assigned to all places with the warmest colour representing the highest values.

Fixation points

Visualisation of the fixation points represents the successive position of views (circles) on a static or dynamic medium. The size of the circle indicates the length of the view and the number within it means the order and average duration of a view. This visualisation is suitable for use with a smaller number of participants over a short time interval **(Tobii Studio, 2013)**.

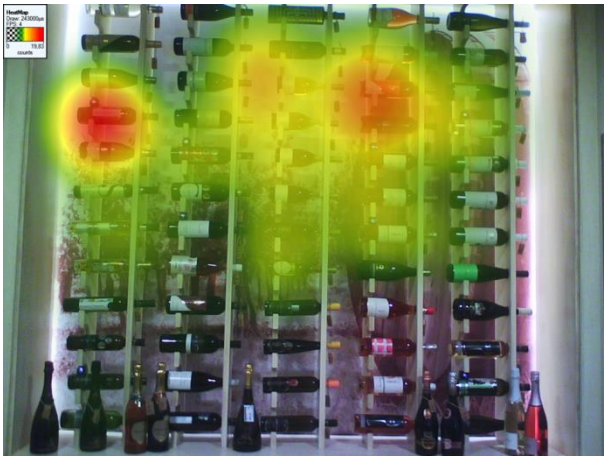
Clusters

A series of polygons display those areas with the highest concentration of gaze points recorded during the test, showing the percentage of respondents who were interested in each cluster. The displayed clusters may easily be transformed into areas of interest (AOIs) **(Bojko 2009)**.

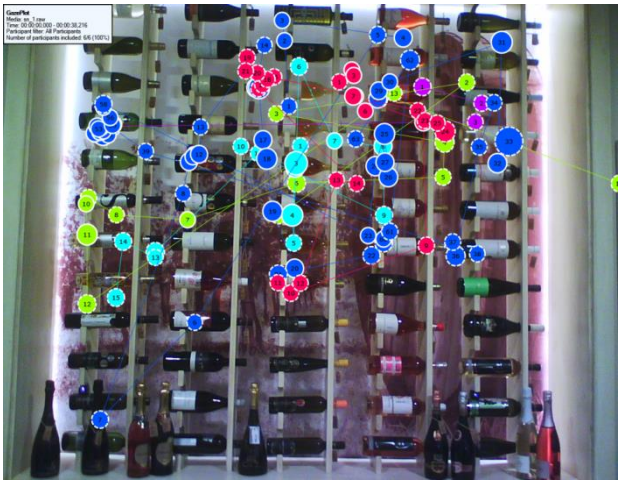
RESULTS AND DISCUSSION

Data gained in modern neuromarketing research using biometric methods in the form of a heat map (see Fig. 6) has made it possible to identify key aspects of customers' visual attention when looking at a specialised display of Slovak and foreign wines in close proximity to the entrance of a specialist shop. The heat map showed that most of the respondents looked for the longest time and the most often at the wines which were displayed in the left-hand and central part of the display equipment. Attention was concentrated primarily on the brands and types of the individually displayed wines. As the price of the wines was displayed in only a few cases and was not clearly readable, the respondents paid only minimum of attention to it.

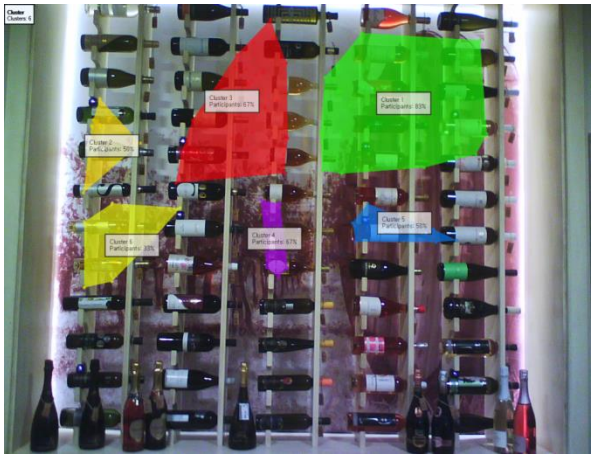
The heat map made it possible to ascertain the real preferences of customers and this indicated that those



Picture 2 Heat map of visual attention when looking at the wine shelf.
Source: Individual processing by the author using Tobii software.



Picture 3 Fixation points of attention when looking at the wine shelf.
Source: Individual processing by the author using Tobii software.



Picture 4 Clusters of visual attention when looking at the wine shelf.
Source: Individual processing by the author using Tobii software.

types of wine which were placed higher were considered to be more interesting.

The designed presentation area for types of wine with vineyard wallpaper really caught customers' attention. Picture 2 depicts a map of the fixation points on which the respondents concentrated for more than 0.5 second. The first look of customers which lasted longer than 0.5 second was devoted to the central part of the display. More fixation points could be found on the right side of the display, where more expensive products were placed. Attention was equally focused on red, rosé and white wines.

Apart from the final heat map of the consumers' observations and the map of the fixation points, clusters of visual attention were also created, which indicate the individual zones of consumer interest when checking the types of wine (see Picture 4). The display was shown to 10 respondents for 10 seconds. The results show that the

respondents' attention was scattered around the image. The items that attracted the attention of 83% of the respondents are on the right side of shelf, where people usually looked first.

CONCLUSION

The research was focused on testing customers' visual attention in a specialised wine shop in Nitra, Slovakia. According to the biometric tests conducted, most of the respondents' attention was attracted by the higher places on the right side of the display. The biometric method made it possible to observe real consumers' visual preferences connected with merchandising. The effects of merchandising in such specialised shops can be even more intense. This study is devoted only to respondents' visual attention; further research ought to be conducted which would analyse customers' emotions. The authors recommend that specialist shops should place the more expensive products on higher shelves since these areas are the most visually attractive for customers, and should use ordinary backlighting for the displays (plus dramatic accent lighting for the wines), which improves the look of the products sold, attracts the customers' attention and promotes the desired behaviour among customers, thus resulting in increased sales and profit. The principal contribution of this study is to stimulate the interest of specialist shops in the use of neuromarketing for merchandising.

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