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THE INFLUENCE OF PACKAGE ATTRIBUTES ON CONSUMER PERCEPTION AT THE MARKET WITH HEALTHY FOOD

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Abstract

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The paper provides findings about how packaging of healthy foods is perceived by consumers. The primary data were collected by eye-tracking using the SMI RED 250. This investigation analyzed 12 healthy products and it was completed by 50 respondents. This method was supplemented with in-depth interviews with the same respondents who participated in the eye-tracking research. A questionnaire survey (n = 261) was also a part of the research. Based on these two methods, real and declared consumer behavior can be recognized and the differences between these behaviors can be identified. The main interest was to determine which package attributes of healthy foods are the most interesting according to consumers. The research shows that the most attention in terms of information is devoted to nutritional value, food composition and also country of origin. Furthermore, the attention was focused on the most suitable packaging materials for various kinds of products as well as colors used on the packaging of these foods. The results provide valuable information to create an attractive and effective packaging of healthy products.

Keywords: healthy foods, packaging, country of origin, nutrition value, food composition, consumer perception, eye-tracking, Czech consumers

INTRODUCTION

A healthy lifestyle is according to Foret and Paděra (2008) the second priority for most Czechs. The number one is their family. Nearly twothirds of the population of the Czech Republic prefer a healthy lifestyle and healthy eating that is connected to it. Price has been identified as one of the barriers to consumers when buying healthy foods. The high price of healthy food is one of the reasons why people buy less healthy alternatives. Any increase in the price of unhealthy products may result in a reduction in the purchase of unhealthy products. A reduction in prices of healthy foods may result in an increase in the purchase of these foods. It was also verified by cross-elasticity, which shows that any increase in prices of unhealthy products may increase the purchase of products that are considered as a healthier alternative. In this same research by Yang and Chiou (2010) it also highlighted that packaging should emphasize claims about the health benefits. They believe that this could partially prevent a big problem with obesity.

The perception and evaluation of healthy foods is sometimes unclear to consumers. Bucher, Müller and Siegrist (2015) warn that consumers tend to neglect saturated fat, protein and sodium when assessing food. They should be more aware that they should not only focus on fat content but they should pay attention mainly saturated fatty acids and salts, which are negative factors and they should also give preference to products high in protein. According to study made by Souček (et al., 2015) the crucial nutrition parameter of a milk is a content of fat. The information about the fat level is significant for the consumer's attention. But this study also showed that for the consumer's attention are in the case of dairy products more important the title name (milk) and the brand of milk. This parts of packages takes the highest attention.

Colby (et al., 2010) concluded that nutrition marketing is mostly used on products with high

saturated fat level, sodium and sugar. Grunert and Wills (2007) claim that there is widespread interest among consumers regarding nutrition information on food packaging. According to Cheverton (2004) the consumer's attention is impacted by effective packaging design. This results in a longer time spent at the shelf and potentially results in a sale. Drexler and Souček (2016) claimed that creatively designed and distinct packaging placed in shelf could take very much of the consumers attention and that could cause to purchase. This type of package is preferred especially if there are no special offers in category and could take the high consumer attention also in case a product is outside of the preferred brand.

The results of the study by Verhoeven *et al.* (2012) suggest that gender, education level, body mass index (BMI), marital status or age don't influence the preference not to eat junk food as the actual eating habits of consumers. The importance of the impact of bad eating habits was also confirmed by Schoeppe and Trost (2015) who studied this factor among children of preschool age and found a significant impact of poor eating habits of parents on their children. Two most common additional influential factors were mentioned insufficient financial funds and lack of time to prepare a good meal. Healthy lifestyle, however, seems to be a motivator in changing eating habits, for women it seems to be the most common reason (Turčínková and Stávková, 2006).

In line with this Šarman (2014) of Walramcom claims on the basis of their sales figures that the higher demand for healthy food products is among women, who also have a greater awareness of healthy eating. He also emphasizes that for an increasing number of consumers is relevant whether the food is produced from organic farming. Their statistics also show that their customers are increasingly willing to spend on healthy foods. This trend is confirmed by the Dvořáková (2015), who highlights the declining consumption of white bread, animal fats and alcohol. Czechs now buy more dairy products, fruits and vegetables. These findings are based on current data from the Czech Statistical Office. It is becoming more and more common to bake bread at home, where more than wheat, rye flour is applied. This increases the nutritional value of bread in the intestines and thus the total content of vitamins, minerals and fiber slats.

Retailers (e.g. chain Globus) also confirm the current trend of increasing consumption of healthy food. Surge of interest in category of healthy food products in the second half of 2014 compared with the previous year is dramatic (80 % increase). This leads to widening choice of this product category not only for vegans and vegetarians, but also for those who simply want to eat healthier and still tasty food (Dvořáková, 2015). According to Yin (et al., 2009) study consumers are motivating especially to purchase organic products because of positive effect on the human body. Participants

in this study also chose taste and environmental impact as important attributes influencing their purchase of organic food.

Similar findings as Verhoeven et al. (2012) were provided in research by Jovičovič (2015) who claims that there are no significant differences between men and women in regard to the consumption of healthy foods. In their results, however, age of a consumers plays a role in their demand for healthy foods. Awareness and personal choice of the right diet starts on average at age of 3, for younger consumers this phenomenon is yet not clear. Research has shown that a healthy diet is not as important for consumers to up to 21 years of age as it becomes important to consumers over 31 years. It explains the fact that older consumers are more sensitive to the prevention of diseases, maintain optimal weight and attractiveness of their appearance. Talukdar and Lindsey (2013) associated younger generation with impulsive buying when selecting healthy foods. As part of their research it was also found that consumers who follow information about healthy foods on social networks are less sensitive to changes in prices of these products, as those who do not follow this information.

The aim of this paper is to present the results of the research identifying elements on the packaging of healthy foods that lead to increased consumer interest in such products. The findings may be particularly useful for producers of these foods.

METHODOLOGY

Qualitative and quantitative methods were used in the research aimed at determining the most attractive attributes on the packaging of healthy foods. The qualitative part of the research consisted of eye-tracking research and also in-depth interviews which were carried out with the same respondents. Twelve products, which have been classified into six categories, were photographed in a preparatory phase of the eye-tracking research. The products were always shown in two variants for studying the different design solutions. These were as follows: fruit juices, teas, milks, biscuits, spreads and side dish couscous.

The qualitative research was conducted with a stationary device SMI RED 250. The RED has a sampling rate of 250 Hz. The distance between participants and eye tracker with screen was 60 cm. First step with all participants were calibrated by 9 automatic calibration points and validated by 4 validation points. In some cases were done these steps repeatedly to taken better results.

This was done in November of 2015 at the specialized eye-tracking laboratory at the Faculty of Business and Economics, Mendel University in Brno. There were 54 participants. One respondent could not be properly calibrated and therefore collected data had to be excluded from the experiment. The individual packages of healthy products were displayed on a computer screen.

Respondents were allowed to look at the package as long as they enjoyed it. If they were not interested in a product, they could move to the next packaging. During the research, they were asked questions that focused on the attitudes of participants regarding each design element. Using in-depth interviews, it was possible to identify their emotions and opinions.

The eye-tracking data were collected by the SMI Experiment Centre software and transformed to SMI BeGaze software for analysis of heat maps and areas of interest (AOIs). Heat maps show using a graphical representation that part of stimulus, to which a participant or a selected group of participants focused most of their attention. Warm colors are the places with the greatest attention of the participants. As the key performance indicators for the areas of interest were used title, claims (e.g. no milk, GMO free, cholesterol free, etc.), name, eco-label, content, favor, etc. Specification of AOIs makes it possible to accurately quantify the selected indicators and parameters. Mainly the dwell time parameter was monitored for each AOI, which quantifies in milliseconds the time of attention (focusing into particular point) of a participant in any particular AOI. Other monitored parameters for each AOI were the hit ratio (the number of participant interested in AOI) and Entry time (the average time when was AOI seen firstly).

The qualitative research made it possible to determine real consumer behavior. A questionnaire survey was needed to for the detection of declared behavior. On the basis of these methods, it is possible to compare the real and declared consumer behavior. The questionnaire survey was carried out on-line in November of 2015 and it was completed by 261 respondents. The collected primary data was processed by using the program Statistica v. 12.

RESULTS

Research results based on in-depth interviews, questionnaire survey and eye-tracking can be divided into separate product categories. Altogether 12 food products that can be included in the category of healthy products were examined.

For the purpose of this article, as healthy food product we understand "foods that humans universally benefit from and at the same time they do not burden them. They must provide a human body with sufficient amount of nutrients – protein, fat and carbohydrates, while providing the body with protective substances such as vitamins and other necessary nutrients, e.g. antioxidants,

probiotics, etc." (Kunová, 2011). Some of the tested products were also in organic.

Category of beverages includes examined samples of fruit juices and milk. For each there were two products examined in order to compare selected attributes on the packaging.

Fruit juices

For fruit juices a mango juice packaged in Tetra Pak and a black currant juice in a PET bottle has been used. In eye-tracking research thanks the dwell time(i.e. the amount of time respondent's eyes spend in the same area) analysis it was found that respondents paid more attention to the percentage of fruit juice content (100%) than the volume of juice (0.33 l). However, in terms of frequencies (hit rate) it can be concluded that attention of 42 respondents out of 54 was drawn to the indication of juice package volume and 38 respondents looked at the fruit content. Also for the black currant juice when analyzing dwell time, again more time was devoted to the fruit content (but only about 61.7 ms). As part of in-depth interviews it was detected that respondents remembered those elements of the packaging. However, more than a third of respondents answered that the juice contained 33% of fruit. Thanks to in-depth interviews following the eye-tracking analysis we could get a better insight of how the respondents process the visual perception. And we can see that some of them notice certain information provided on packaging, but not everything is processed well enough and individual pieces of information may end up mixed. Therefore, it seems that if producers would want to ensure the correct perception of fruit juice content, no other numerical input (such as volume) should be anywhere close to it, rather it should be the only number on the front of the packaging. The packaging size (volume) may be placed on the back side, so the confusion misleading customers to the detriment of the manufacturer would be reduced.

In terms of packaging materials used for fruit juices Tetra Pak it is preferred. Respondents consider it of higher quality, more reliable and the packaging design goes better with healthy foods in their opinions. These preferences were also examined in the questionnaire survey and the results can be equated with the results of in-depth interviews. On the contrary, for fruit juices in PET bottles many respondents have the feeling that it rather is a sweetened mineral water, which they don't consider as a healthy food product. In terms of the colors used respondents think it is good to use

I: Attractiveness of Mango Juice Packaging

Mango juice	100 % fruit content	0.33 l volume of juice
Dwell time (ms)	706.5	496.5
Hit ratio (pc)	38	42
Entry time (ms)	5435.4	5372.7

colors that are associated with fruits from which the juice is produced, or use a picture of particular fruits on the packaging. When examining mango juice orange color was perceived positively. Within the eye-tracking research it can be concluded that up to 53 respondents (out of 54) paid attention to the information about contents (ingredients) of examined juice. However, in terms of dwell time they spent only 477.6 ms on average looking at the list of ingredients of mango juice, which compared to the packaging of black currant juice is by 34.9 % less. This reduced interest could perhaps due to the language used. While mango juice contents description was in German, for black currant juice it was in Czech. Based on this characteristic, it can be argued that for a Czech consumer, it is important that the information is provided in his mother tongue which leads to increased attention. Results also show that less respondents were interested in examining the nutritional value than the juice ingredients. It was only 45 respondents who examined it, however, the dwell time was 5.4 times longer than that of the what they spent on examining contents.

Milk

In the category of beverages milk was also included. Again one product was packed in PET bottles and the other one in Tetra Pak. For these products opposite results as fruit juice were discovered. Respondents favored PET bottles both in the questionnaire survey and in-depth interviews. Easy handling with the product was mentioned as the most favored feature. Respondents mentioned the ease of re-opening and closing of the products and how practical for storage in a refrigerator it was. In terms of freshness of milk respondents also have this quality more associated with PET bottles than Tetra Paks. The results of the eye-tracking research, by analyzing the dwell time, indicate that the most sought out and important information on the packaging of milk is the fat content. This information, however, had a different location on analyzed products. Greater attention was paid to this figure in the lower left corner (for milk in Tetra Pak) than to this information when it was placed midupper part of the milk packaging in PET bottles. This result can be partly explained by the information provided in in-depth interviews, when respondents explained that for milk in PET bottles they have more trouble locating this information.

Based on these results it can be stated that the information on the fat content of milk for consumers is very important and they need to find it easily. In this case it was on the bottom of the container; perhaps respondents are more accustomed to find it there. What colors and packaging design used concerns, respondents positively assessed pictures of mountains on the packaging which, as they mentioned, evoked in them a feeling of freshness. In-depth interviews also revealed that similar feelings is evoked by use

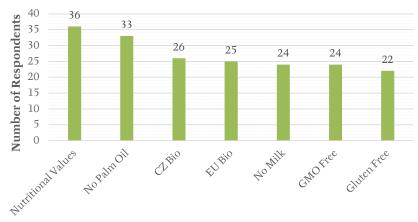
of blue color which they would preferred to use of green as it was on examined milk packaged in PET bottles. Both milk products were in organic quality, therefore, it was possible to observe which one of them will gain a higher rate of interest. Milk in Tetra Pak had both European and Slovak organic labeling. 38 respondents out of 54 noticed the European label, the Slovak label attracted attention of only 24 respondents. When analyzing how much attention was paid to the product contents and nutritional values results were very similar as for the fruit juices. The information about milk contents was examined by 51 respondents with an average dwell time of 864.6 ms, while 44 respondents were interested in the nutritional value with an average dwell time of 5174.1 ms, which is almost 6 times

Hemp seed

Further research focused on packaging of hemp seed. Packaging material used for this product was paper. That was positively rated by 76 % respondents of our questionnaire survey. In-depth interviews revealed that the paper as a packaging material gives the impression of homemade product, of connection to nature and healthy food products in general, they also mentioned it also agreeable, pleasing for the eye, and recyclable and, thus, more environmentally friendly. On these properties, the majority of respondents agreed. That part of respondents (24%) who negatively assessed the paper packaging considered paper as inadequate packaging material. They associated it with poor quality or cheap products in general. They would rather prefer cellophane packaging. They also considered the paper packaging as featureless and thought they would overlook the product on a store shelf. One of the respondents stated that he believed it was only a "marketing gimmick" of producers who try to induce a feeling of homemade production. The results of in-depth interviews also infer that the used light blue color design with a combination of white letters is not interesting for consumers. Even though the colors used are the soft, the contrast was insufficient; therefore, all the labels on the packaging were barely legible for respondents. This proves that producers must ensure that texts are easy to read and adjust the design and layout of packaging material accordingly.

Biscuits

For analysis of products in the category of biscuits we can summarize that based on the dwell time analysis the greatest interest was focused on following three elements characterizing the product features: "no milk" (303.4 ms), "GMO free" (257.9 ms) and "gluten free" (255.6 ms). The number of respondents whose attention was drawn to the mentioned elements of the packaging is shown in Fig. 1. The logos certifying the organic origin "EU bio" and "CZ bio" received about the same level of attention.



Areas of Interest

1: Interest in selected attributes on the packaging of biscuits.

From Fig. 1 it is evident that the largest number of respondents focused on information about nutritional value of biscuits, and also the dwell time results confirm it. One package of the analyzed biscuits was packed in transparent packaging material, which was viewed positively by the respondents. The other analyzed sample was biscuits packed in opaque packaging. There was only a picture of the biscuits on the front side, but the packaging didn't allow respondents see the actual content. The results of in-depth interviews as well as from the questionnaire are almost identical. 96 % of respondents in our questionnaire survey would prefer purchasing biscuits in a transparent packaging, as they can clearly imagine the taste, and it also gives them better idea of what they are getting already in the purchase decision-making process. The biscuits in non-transparent packaging were also considered less attractive. This product was a Fair Trade product and the packaging was also bearing a logo certifying it. However, when respondents were given a choice which one of these two products examined products they would prefer; only two respondents chose the Fair Trade product, even though they considered the product less attractive. These results suggest that producer should provide customers with a possibility to see the contents of a particular product thanks to use of at least partially transparent packaging, which preferred by customers. For highlighting information on the packaging, it is ideal to use just brief claims, which are easier to notice and process. Especially it applies to attributes mentioned above. For respondents it is also important to find easily the most important items in nutritional information on the packaging.

Soy products

Next analyzed products were two soy products. One of them (a spread) had doubled packaging – plastic box and also paper packaging bearing the information about the product. It had white and blue checkered design, but respondents didn't like it very much. The packaging can be seen in Fig. 2, which also presents selected areas of interest analyzed on the front of the packaging. Respondents tended to perceive this product thanks to its design as a cheap product in the "Tesco quality"



2: Interest in selected attributes on the packaging of a spread.

(a private label of Tesco retail chain) and resembled rather a traditional butter instead of a spread with content beneficial to the health. Respondents assessed positively the provision of product contents available both on the front and the back of the product packaging, which they considered as well-arranged. Respondents were particularly attentive to ingredients used as well as the country of origin, which was listed on the back cover. Out of the three key elements of the packaging: "cholesterol-free", "no preservatives" and "high protein content" the highest level of interest was paid to "no cholesterol" and the least to "no preservatives". These findings come from the analyses of dwell times and numbers of respondents who observed these elements.

Couscous

The last selected products surveyed were 2 packages of couscous – a side dish that can also be classified as a healthy food. The examined packages of these products were quite similar (thanks to limited variety offered), so the focus was mostly

on learning what information on a package are noticed and whether any information is considered as missing. Therefore, the area of interest focused mainly on the back of the packaging containing product information. One of the analyzed products included even cooking instructions, but in the context of in-depth interviews it was found that respondents do not usually seek this information on a packaging at the moment of their purchase decisions-making, but rather, it at home it would be something they would be looing for on the packaging. A closer examination of the eyetracking research results (see Fig. 3) allows seeing that perception of women and men is slightly different. Increased interest in this area has been reported for women, presented on image b. In contrast, men are seen slightly more interested in numeric values that are associated with nutritional

The results of in-depth interviews were also in line with a questionnaire survey. The questions were, however, mostly focused on generally missing information on the packaging of healthy foods. Majority of respondents replied that they





3: (a) Heat map of couscous – men; (b) Heat map of couscous – women.

were, indeed, missing information on packaging. Respondents who added what was the mostly missing information (n = 6) mentioned:

- Information on how to use the products for cooking;
- Food processing methods in production (e.g. concerning heat);
- Information on the type of variety;
- Information whether the food is suitable for diabetics.

DISCUSSION AND CONCLUSION

The aim of this paper is to present the results of the research identifying elements on the packaging of healthy foods that lead to increased consumer interest in such products. Several categories of food products were analyzed and for each there were two products to examine. In terms of packaging materials used for fruit juices Tetra Pak it is preferred. Respondents consider it of higher quality, more reliable and the packaging design goes better with healthy foods in their opinions. The findings suggest that numeric information on packaging can sometimes be mutually confused, therefore, to ensure the correct perception of fruit juice content, no other numerical input (such as volume) should be anywhere close to it, rather it should be the only number on the front of the packaging.

For milk, results show that less respondents were interested in examining the nutritional value than the juice ingredients. The most sought out and most important information on the packaging of milk is the fat content and it needs to be found easily on product's packaging. Respondents favored PET bottles. What colors and packaging design used concerns, respondents positively assessed pictures of mountains on the packaging which, as they mentioned, evoked in them a feeling of freshness. Indepth interviews also revealed that similar feelings is evoked by use of a blue color,

For hemp seed paper as a packaging material gives the impression of homemade product, of connection to nature and to healthy food products category in general. Respondents also mentioned it also agreeable, pleasing for the eye, and recyclable and, thus, more environmentally friendly.

For biscuits results suggest that producer should provide customers with a possibility to see the contents of a particular product thanks to use of at least partially transparent packaging, which preferred by customers because it gives them better idea of what they are getting already in the purchase decision-making process. For highlighting information on the packaging, it is ideal to use just brief claims (the greatest interest was focused on following three elements characterizing the product features: "no milk", "GMO free" and "gluten free"), which are easier to notice and process. Especially it applies to attributes mentioned above. For respondents it is also important to find easily the most important items in nutritional information on the packaging.

For soy products respondents were particularly attentive to ingredients used as well as the country of origin, which was listed on the back cover. Out of the three key elements of the packaging: "cholesterol-free", "no preservatives" and "high protein content" the highest level of interest was paid to "no cholesterol" and the least to "no preservatives".

In general we can add that our research has proven that producers must ensure that texts are easy to read and adjust the product design and layout of packaging material accordingly.

In this article proposed recommendations which producers can use in packaging solutions of healthy products. On the basis of the research attractive elements of the package have been identified which lead to increased interest of consumers. There was also analyzed real and declared consumer behavior which showed some variation. To expand on the issue it would be useful to analyze the other product categories (e.g., tea, dried fruit, etc) that cover more healthy foods analysis.

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