SEGMENTING HUNGARIAN PEOPLE BASED ON HEALTHY EATING

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Abstract: Relying on customer trends healthy eating, which is one aspect of healthy lifestyle is becoming more and more popular. The aim of this study was to understand the healthy eating style of Hungarian adult consumers. An online empirical research with a sample of 1563 respondents (58.7% females and 41.3% males) was conducted in November 2018. Considering healthy eating two factors, namely the choice of healthy foods and the avoidance of unhealthy foods could be distinguished. A hierarchical cluster analysis was conducted to segment consumers. Four groups of consumers were identified: unhealthy food avoiders (20.3%), rejecters (11.8%), neutrals (26.2%) and healthy food choosers (14.7%). Unhealthy food avoiders are seniors. Rejecters are blue collar workers and have financial problems. Healthy food choosers live in families with children over 10 and do not have weight problems. This study is useful for the health sector and the government since targeted marketing programs can be planned to change eating behavior. To decrease overweight and obesity is the goal of all society, especially in developed countries. To increase the well-being of people and their quality of life educating social marketing campaigns are necessary with the aim of raising their awareness and explaining the basic principles of a healthy diet.

Keywords: healthy eating, perception, segmentation
(JEL Classification: 112, M30, M39)

INTRODUCTION

Researchers (törőcsik, 2014) identified the ‘extension of health market’, as one of the major trend in the 21st century. Households spend higher and higher amount of money the prevention and development of health and healing in case of illnesses. Dudás (2011) identified the elements of conscious consumer behavior and health consciousness is one aspect of that which means an approach, or a behavior and an activity to be healthier in the long run. One element of health consciousness is healthy and moderate food intake. Considering the most up-to-date food trends it can be said that plant based diet is becoming more and more popular. Previously meat was an important source of nutrient but nowadays there are a lot of skepticism about it such as healthiness, environmental and sustainability issues. There is a great demand for local fresh fruit and vegetable since vegetables become the main dishes. Vegetable symbolizes freshness, innocence and health (trendinspiracio.Hu/aktualistrendek-2019/). Health and healthy eating is an important topic for people. Relying on the most up-to-date researches of gfk hungary research institute (2019) hungarian consumers put more emphasis on the healthiness of food products. People eat regularly especially older people however younger people do not pay attention to eat regularly. Most of the hungarians eat three times a day and breakfast and lunch are the most important occasions of eating. When they purchase food products four aspects are the most important: taste, healthiness, ingredients and previous positive experiences (gfk research institute, 2019).

Considering the eating behavior of hungarian people the results of the hungarian diet and nutritional status survey (otáp - országos táplálkozás és tápláltsági állapot vizsgálat, 2014) can show a good overlook (nagy et al. 2017). The results of the latest survey show that hungarian adults are not so healthy. Mainly females had increased their fat intake especially their saturated fat intake. The fiber intake had shown a decreasing and added sugar intake had shown an increasing tendency. The vitamin intake was inappropriate of adults and the population could decrease their salt-intake but it
was still above the norm by 2.5 times. Considering fruit and vegetable consumption, females (346 g/day) were in a better situation than males (330 g/day) but it was still below the suggested level (400 g/day). Cereals (86.3 kg/capita/year) and fruit and vegetable together with potato (81.8 kg/capita/year) were the most important sources of food intake in 2017. People consumed more pastry (baked goods with white flour) to be favored cereals and sweeteners (equi-sweetenics, 2017; ksh, 2018).

The inappropriate eating habits are responsible for overweight and obesity which are considered to be the world’s epidemics. Based on the reports of the World Health Organization (WHO) in 2017 the average body mass index (BMI) of the hungarian adult population was 27.52 kg/m², which was a little bit lower among females (26.65 kg/m²) than males (28.37 kg/m²). 30% of the total population is obese. According to ncd risk living in rural areas have a higher level of average bmi than people living in cities. Relying on the health survey of ksh (central statistical office) from 2014, more than half of the entire hungarian population (54%) was overweight (BMI < 30) or obese (BMI > 30). This rate was higher in case of men (62%) than in case of women (49%). Based on age it can be said that 23% of young females were overweight or obese and 39% of young males. As people are getting older their BMI is increasing, too. 53% of middle aged females and 71% of middle aged males had problems with their weight. Among older people weight problems were even more common, 65% of elderly women and 72% of elderly men suffered from overweight and obesity (European health interview survey, 2014).

In this paper the healthy eating style of hungarian people is analyzed from a marketing viewpoint. After the theoretical background the result of an empirical quantitative study is presented.

MATERIALS AND METHODS
Perception of healthy eating can be defined as ‘the public’s and health professionals’ understandings, views, attitudes and beliefs about healthy eating and healthy foods (Paquette, 2005: 15).

Taking into consideration healthy eating or healthy diet the WHO principles are the following:
- Fruits and vegetables
- Grains and whole-grains
- Low in fats
- Low in sugar
- Low in salt
- High in calcium, fiber and vitamins
- Whole-grain products
- Female consumers care more about the weight, body weight and eating behavior of men. Women consume more calories-rich food, junk food and oily food with carbohydrates. Female more care about their body weight and eat less and eat more fruit and vegetable (WaH, 2016). GRACA et al. (2015) highlighted that meat was more important for males and females were willing to adopt a more plant-based diet to be healthier.

Among international researches more empirical results could be found that investigated a specific consumer group (Tanton et al. 2015; Andrè et al. 2017; Benedet et al. 2011). In their research the researchers analyzed the demographics of each group and found gender differences. WAH (2016) and LV et al. (2011) also emphasized the healthy eating behavior of women and the unhealthy eating behavior of men. Males consume more calories-rich food, junk food and oily food with carbohydrates. Female more care about their body weight and eat less and eat more fruit and vegetable.

The aim of this research was to explore the perception of healthy eating in Hungary there are some educational initiatives and programs by health government, and public education based on similar to eating behavior (65+). The other demographic variables were measured on ratio scale and we recoded into non-metric scales. The other demographic variables were measured on ratio scale and we recoded into non-metric scales.

Sample design and data analysis
To answer the research questions the author chose single cross-sectional research method. The authors used the quota sampling design. A proportional sampling technique based on gender was chosen. Originally the researcher planned to question the same number of people in each gender group, which mean 50% of males and 50% of females. The planned size of the sample was 1000 respondents.

The empirical research was conducted in November 2018. To obtain the primary information, the online questionnaire was sent to different social media groups. Finally 1563 people could be reached with the survey and were willing to fulfill the whole questionnaire. Actually the researcher could not maintain the planned sample design. The ratio of males to females was 41.3% to 58.7%. Based on age three generations were investigated: 60-69 years (18-34 years), 25-55 middle-aged (35-50 years) and 13.8% senior people (above 51 years). The
In connection with healthy eating 11 statements were conducted to segment consumers based on their healthy eating style of Hungarian adults. Considering healthy eating lifecycle, 11 statements were categorized senior Norwegian citizens based on similarities (2017) concentrated on unhealthy food habits and Anrdé et al. categorized senior Norwegian citizens based on similarities 1.000 1.100

Source: Own research

It is possible to profile each segment based on demographics, especially based on age, occupation, family lifecycle, income level and BMI. Unhealthy food avoiders are seniors. Rejecters are blue collar workers and have financial problems. Healthy food choosers live in families with children over 10 and do not have weight problems. Table 3:

### Cluster analysis

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Source: Own research

It can be stated that consumers can be grouped into homogeneous groups based on healthy eating factors (choice of healthy foods, refusal of unhealthy foods). Four groups of consumers were identified: unhealthy food avoiders (20.3%), rejecters (11.8%), neutrals (26.2%) and healthy food choosers (14.7%).

### Profiling consumer groups

In order to analyze the connection between cluster membership and basic demographics cross tabulation (Chi-square analysis) was conducted. The relationship with cluster membership and gender, generation, occupation, family lifecycle, income level, and BMI was analyzed. Significant relationships in case of generation (χ² = 25.450; P = 0.001) and BMI (χ² = 25.398; P = 0.001) were found. However, these connections were very weak (Cramer’s V uncorrected = 0.08; Cramer’s V corrected = 0.09, Cramer’s V corrected = 0.09, Cramer’s V corrected = 0.07 (Table 3). Relying on the results of adjusted standardized residuals it can be stated that unhealthy food avoiders are seniors. Rejecters are blue collar workers and have financial problems. Healthy food choosers live in families with children over 10 and do not have weight problems. Table 3:

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Source: Own research

It is possible to profile each segment based on demographics, especially based on age, occupation, family lifecycle, income level and BMI. Unhealthy food avoiders are seniors. Rejecters are blue collar workers and have financial problems. Healthy food choosers live in families with children over 10 and do not have weight problems.

### Discussion

More international studies focused on clustering adult population based on healthy eating or lifestyle. Beneđ et al. (2017) concentrated on unhealthy food habits and Anrdé et al. categorized senior Norwegian citizens based on similarities of food consumption. This research focused on the healthy eating style of Hungarian adults. Considering healthy eating two factors were identified: choice of healthy foods and refusal of unhealthy foods. The first behavior was referring to eating healthy, nutritious foods and the second one meant avoiding junk foods. A hierarchical cluster analysis was conducted to segment consumers based on their healthy eating (choice of healthy foods, refusal of unhealthy foods). Four groups of consumers were identified: unhealthy food avoiders (20.3%), rejecters (11.8%), neutrals (26.2%) and

### RESULTS AND DISCUSSION

### Healthy eating

In connection with healthy eating 11 statements were examined. In this case the value of Cronbach’s was 0.921, which means that this scale is consistent. The values of indicators proving the appropriateness of factor analysis were appropriate (KMO: 0.921, Bartlett’s Test: 6586.563, Sig. 0.000). The number of factors was determined by Scree-test that is two factors could be distinguished that explained 63.173% of the total variance.

The first factor contained five variables which represented a conscious behavior and the choice of nutritious foods that are good for the body:
- I try to select food fortified with vitamins. 0.828
- I make a special effort to get enough fiber. 0.801
- I try to avoid foods with high additives. 0.760
- I am concerned about getting enough calcium. 0.758
- I am concerned about how much sugar I eat. 0.568

The second factor contained six variables which represented a conscious behavior the refusal of unhealthy foods which are harmful for the body:
- I try to avoid foods that are high in cholesterol. 0.832
- I use a lot of low calorie products. 0.806
- I try to avoid foods that are high in fat. 0.726
- I try to avoid foods with a high salt content. 0.686
- Nutrition information determines what I buy. 0.554
- I am careful what I eat to keep weight in control. 0.551

The total variance explained by this factor was 31.450% and the value of Cronbach’s was 0.867. It can be stated that different factors can be distinguished based on healthy eating, namely the choice of nutritious food and the refusal of unhealthy foods.

### Cluster analysis

In the next step using the results of factor analysis were used for clustering. Relying on the results of Elbow criterion and Agglomeration schedule the four cluster solution was chosen. Count and frequency in case of each cluster was the following: 1st cluster 335 people (20.3%), 2nd cluster 401 people (24.2%), 3rd cluster 409 people (26.2%) and 230 people (14.7%). In order to make a typology for the different clusters analysis of the means was necessary. The method of one way ANOVA was used to check the category means of healthy eating factors (choice of healthy foods - CHF; refusal of unhealthy foods - RFU) in case of each cluster and significant differences (FCHF: 509.468; P < 0.000, 12.5.722; FRUF: 748.369, P < 0.000, 2.5.068). There were significant differences between groups in case of all variables. To test the homogeneity of variances Post-Hoc tests (Dunnett T3 and LSD) were conducted. Relying on the results there were significant differences among variables.

1. Unhealthy food avoiders (20.3%): they try to eat in a healthy way and they typically refuse unhealthy foods such as foods with high cholesterol value, fat and salt content. They prefer low calorie foods and make their purchasing decision based on nutrition. They pay attention on their weight.
2. Rejecters (11.8%): they can not be characterized by choice of healthy foods or refusal of unhealthy foods. They have a negative attitude towards the aspects of healthy eating.
3. Neutrals (26.2%): are neutral when it comes about healthy eating.
4. Healthy food choosers (14.7%): can be characterized by the choice of healthy foods. They put an emphasis on eating foods with vitamin, fiber, calcium (Table 2).
healthy food choosers (14.7%). Unhealthy food avoiders try to eat in a healthy way and they typically refuse unhealthy foods like smart plate, fork could help them to follow the basic principles of healthy eating. These applications could be developed with the cooperation of doctors, dietitians and nutrition consultancy. Educating people and changing their unhealthy habits is the interest of a society. Not only education but raising attention of people with emphasizing the importance of education level in healthy lifestyle. However more researches (Psouni et al. 2017, Heerman et al. 2017; Vries et al. 2008; LV et al. 2011) emphasized the importance of education level in healthy lifestyle. However in this study the level of education was not investigated. More researches (Psoon et al. 2017, Heerman et al. 2017) found that healthy eaters had lower level of BMI and they did not suffer from overweight and obesity. This line is with previous studies since people with normal weight are healthy food choosers.

CONCLUSIONS AND FURTHER RESEARCH

Present study is useful for the health sector (doctors, dieticians and food experts) and the government since targeted marketing programs can be planned to change unhealthy eating behaviors. In case of government social marketing programs would be necessary. Raising the health consciousness of neutrals and rejecters (38%) is also important. The barriers of healthy eating are the lack of support from others and knowledge, cooking skills, availability, willingness and time and hedonics such as too boring, not tasty are also barriers to healthy eating (MARROW et al. 2016). In order to increase the quality of life and wellbeing of people it is necessary to improve their health. Health is not only the state of being free from illness or injury, but it is even a more complex category. A sound mind in a sound body should be emphasized in social marketing campaigns. To decrease overweight and obesity is the goal of all society (especially in developed countries where this phenomenon is considered to be an epidemic) that is why educating people and applying social marketing campaigns are necessary. Informing people about the correct eating habits and the principles of a balanced nutrition (food pyramid, WHO principles) should be communicated to people. Developing applications and smart equipment like smart plate, fork could help them to follow the basic principles of healthy eating. These applications could be developed with the cooperation of doctors, dietitians and nutrition consultancy. Educating people and changing their unhealthy habits is the interest of a society. Not only education but raising attention of people with emphasizing the importance of education level in healthy lifestyle. However in this study the level of education was not investigated. More researches (Psouni et al. 2017, Heerman et al. 2017; Vries et al. 2008; LV et al. 2011) emphasized the importance of education level in healthy lifestyle. However in this study the level of education was not investigated. More researches (Psouni et al. 2017, Heerman et al. 2017) found that healthy eaters had lower level of BMI and they did not suffer from overweight and obesity. This line is with previous studies since people with normal weight are healthy food choosers.
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