Examination of environmentally conscious consumer groups on the Hungarian food market

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Today's issues such as environmental protection, healthy diet, quality assurance of food, and consumer protection are attracting more and more publicity. The role of ecological consumer protection is constantly growing in Hungary, with ultimate targeting that conscious consumption will play an important role in the consumers' values.

The main target of my research is the identification and characterization of environmentally and health conscious consumer groups, and tendencies in foodstuff consumption. Therefore, in order to outline the consumer's responsibilities and limits, I carried out a multi-step data acquisition as early as in 2008. This was followed by a survey in 2013. In March 2013 this questionnaire was delivered to 2400 consumers, of which 2000 were suitable for evaluation, hence this was the size of the sample. The two main elements of the research are: health consciousness (importance of health, survey and assessment of its extent and method) and environmental consciousness (motivations of consumers to protect the environment when purchasing foodstuff). I wish to present the results of the latest research series: consumer segments revealed by cluster analysis, and consumer groups by their environmental consciousness. I was able to detect five clusters with the K-means method, considering fifteen variables. The names of the clusters and distribution in percentage:

1. Dark green – with strong environmental consciousness (19.1%)
2. Light / Pale Green – youthfully wasteful (19.5%)
3. Economically green – consciously thrifty (15.2%)
4. Passively green – elderly inactive (22.1%)
5. Potentially green – the evolving environmentally conscious majority (24.1%)

In my study I present the main characteristics and future potentials in these consumer clusters in terms of environmental awareness.

Keywords: consumer behaviour, health consciousness, environmental consciousness, environmental protection, cluster analysis.

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Introduction

Environmental consciousness was first studied by the environmental psychologists Michael P. Maloney and Michael P. Ward. In 1973 they came to the conclusion that some people are not indifferent to the environment, and are worried about its future. They pointed out that, unfortunately, this is not universal. Although they may agree with the necessity of environmental protection, their behaviour cannot be considered environmentally conscious at all (Maloney and Ward 1973). Environmental concern is defined in various ways, as it is a very complicated and unstable concept (Chan and Lau 2004). Crosby et al. (1981) define it as having a strong attitude for protecting the environment.

Environmental awareness is interpreted on several levels: global, national, organizational and individual (Schäfferné Dudás 2008):

Global level. The acceleration of industrialization in the second half of the 20th century was accompanied by the growth of ecological risks. The increase in production and development of applied technology did not only result in spectacular improvement but intensive use of raw materials and environmental destruction as well. The main reason behind this is growth. World population is growing, and so does the pollution and industrial production of food, making this growth exponential (Meadows et al. 2004).

National/governmental level. Environmental awareness of the public sector can show itself in performing its environmental protection related tasks on a high level.

Organizational level. This layer includes profit oriented business entities, non-profit civil organizations as well as academic organizations and the degree of their role in environmental protection.

Consumer level. My research examines consumers' health and environmental awareness, therefore I want to thoroughly describe this level. As it became evident in the light of Vlek's (1996, 2000) data, our consumption patterns need to change. From the 1980's there are a growing number of customers who appreciate environmental efforts of companies and reject companies that engage in activities harmful to

the environment (Menon and Menon 1997). According to Meffert and Kirchgeorg (1993) consumer consciousness is none other than:

- the implementation of ecological consistency concerning shopping habits and decisions;

- the awareness that the product's development, production, distribution, consumption, use and even the following period has a disadvantageous impact on the environment and causes additional costs;

- efforts aiming minimization of adverse effects and additional costs.

These three factors were studied during my research.

Ottman (1998) defines three segments of environmentally conscious consumers based on their environment-related efforts and activities:

- The aim of the *Earth protectors* is the protection of wildlife and the restoration/preservation of the original state of the environment. They consider soil, air and water related problems as being crucial issues.

- *Health fanatics* focus on the effect of environmental problems on health. They are afraid of sunlight-induced skin cancer, genetic disorders caused by radiation and toxic waste and the long term adverse effects of chemical content in plants.

- *Animal protectors* boycott goods produced with animal use, they are the advocates of animal rights and protect endangered species. They are typically vegetarians and refuse to buy animal-tested products.

Albayrak et al. (2010) aimed to measure the environmentally sensitive behaviour of consumers and to cluster them according to their environmental concerns and skepticisms. These two psychographic variables were selected by their diverse nature and importance for understanding the basic determinants of a continuously developing market segment. A solution of three clusters was obtained for the participants who were named as: keen skeptics, fanatics, and hesitants.

Some companies expressly target those people who are environmentally sensitive and prefer to purchase “green” products. To identify these environmentally sensitive consumers and define meaningful market segments, mostly demographic characteristics of

customers are used and analyzed. However, many studies have indicated that demographics are not the exact and only determinants of the environmental concern and environmentally sensitive behaviour (Mainieri et al. 1997; Schlegelmilch et al. 1996).

Materials and methods

A questionnaire conducted in Budapest in March 2013 was delivered to 2400 consumers of which 2000 were suitable for evaluation; hence this was the size of the sample. My objective when creating the sample was representativeness and randomness. The sampling with quotas aimed to provide representativeness by gender, age (over 18) and type of residence. The data survey used standard questionnaires and interviews. The response time was 20-25 minutes, and the number of structured questions which included personal data was 31. The obtained data were analyzed with the SPSS program. The analysis was made by using either one or multiple variables, the results showing a statistical validity at 95% confidence level +/- 2%. The scale type of questions was analyzed by using average and percentage computations as well as cross-tabulations.

First, it was performed a *factor analysis*, concerning the research as a whole, as well as separately regarding the two main areas of my research. For the entire research data, the examination was made on twenty-two variables and managed to establish six factors. During the examination fifteen variables were analyzed focusing on health consciousness, which resulted in four factors. While focusing on environmental consciousness, an opportunity has risen to separate four factors as well, applying fifteen variables as in the previous case.

The *Cluster analysis* can be perfectly applied for the market's segmentation and for analyzing the market structure, which is the main objective of my research. As method of the cluster analysis, K-mean, a non-hierarchical method was chosen since the hierarchical analysis cannot be applied in case of a high number of sample elements. Therefore, one had to determine the cluster centers and the number of clusters to be created (Sajtos and Mitev, 2006).

As a result, including the full research material, six clusters were created. Throughout my research focusing on health consciousness, I have examined fifteen variables, resulting in five clusters. While focusing on environmental consciousness, I was also able to separate five clusters, applying the same amount of fifteen variables. In my study, I desired to present the clusters and consumer groups which I examined regarding the environmental consciousness.

Results and discussion

The standardized questionnaire consisted of twenty questions and three parts: food purchasing habits, level of consciousness during the food purchasing process, and personal data.

The number of adult participants living in the capital was 2000, of which 1963 were added to the statistics during the cluster analysis (the population of Budapest is approximately 1.7 million). The participants' division by gender was the following: male 45.8%, and female 54.2%. Their division based on residence was: capital inner city districts 60.7%, and the capital's outer districts 39.4%. Table 1 shows the distribution of the sample by age groups.

Table 1. Distribution of the sample by age groups

Age groups (years)	Frequency (head)	Percent (%)
Youth(18-34)	607	30.4
Middle-aged (35-60)	1084	54.2
Ageing (60+)	309	15.5
Total	2000	100.0

Source: own research

The results of factor analysis concerning environmentally conscious food purchase

Focusing on environmental consciousness, four factors could be distinguished based on fifteen variables. During the analysis the Principal Component Analysis method and the Varimax rotation was applied. The KMO index value exceeds 0.8, which means that the factor analysis is suitable (Table 2).

Table 2. KMO and Bartlett's Test (n=1963)

Kaiser Meyer–Olkin Measure of Sampling Adequacy		**.837**
Bartlett's Test of Sphericity	Approx. Chi-Square	6352.233
	df	105
	Sig.	.000

Source: own research

The weight matrix of the rotated factors produced using the Varimax method is visible in Table 3. The investigation resulted in four factors which explain 53.9% of the variance.

Table 3. Rotated Component Matrix (n=1963)

Variables	Component			
	1	2	3	4
Paying attention to green emblems	**.815**	.041	.064	-.102
Preference for recyclable packaging	**.795**	.045	.069	.012
Environmentally friendly behavior	**.726**	.164	.073	-.104
Frequency of organic food purchase	**.676**	.061	-.038	-.268
Preference for returnable packaging	**.596**	.021	.198	.268
Purchase of products from nearby manufacturer	**.548**	.101	.122	.034
Pre-planned grocery shopping	.022	**.756**	.191	-.003
Frequency of the usage of shopping lists	.084	**.682**	.042	-.010
The rate of informedness concerning food	.284	**.631**	-.081	-.006
The role of efficiency	-.016	**.583**	.380	.259
Avoidance of unnecessary purchases	.010	.181	**.729**	.143
Preference for fresh food	.170	.099	**.615**	-.297
Avoidance of over packaged food	.420	-.011	**.589**	.040
Degree of routine in food shopping	.035	-.020	-.104	**.802**
Price sensitivity	-.263	.299	.275	**.488**
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
Rotation converged in 6 iterations.				

Source: own research

The factors have been named as a result of a very subjective decision-making process. During the process variables with the highest

factor loadings have to be emphasized. The factors were named as follows:

1. Strong environmental orientation factor;
2. Planned and economical factor;
3. Optimal amount and fresh product factor;
4. Conservative – price sensitive factor.

Clusters from the aspect of environmentally conscious food purchase

Variables and properties have been examined on a scale of 1-5. Referring to the respondents' alternatives, value 1 is not true at all, while value 5 is completely true. The answers' interpretation can be seen in Table 4. In my research, focusing on environmentally conscious food purchase, I was able to detect five clusters with the K-means method, taking into account fifteen variables. I would like to briefly present these consumer groups.

Cluster 1 (19.1%): Dark green – with strong environmental consciousness. This cluster shows the highest proportion of women (64.5%), who are typically middle aged (73% are between the age 31 and 65). The average age concerning this group is 46. The group with the highest qualification is divided as it follows: 47.7% have a college degree, which means 10% more points than the average. Only a small proportion of this group consists of students (4.4%), while most of them are employees (54.5%) and the rate of entrepreneurs is also higher than the average. This is the group of customers with the highest income. Two thirds of them prefer to shop at super- and hypermarkets, but 17.3% of them also like to shop at traditional markets (an average of 9.2%). Due to their high income, this group has the highest value of order details. Small households are typical: two adults (54%) and one (20%) or two (14%) child(ren). This customer group shows the best values concerning every variable examined. According to their own admission, they are the most environmentally-aware, they are strongly brand-loyal, they have the highest standards, they prefer domestic and nearby produced groceries; they mostly buy bio-products and they have the highest proportion in buying products with returnable packaging,

they avoid over-packaged products and are more likely to buy fresh food. For this group the price of the products is of the least importance which is possible because of their high average income. They are highly informed and open-minded to innovations. This is the most environmentally conscious group, who are also highly health-oriented.

Table 4. The mean of the variables of environmentally conscious clusters on a scale of 1-5 (n=1963)

Cluster	Environmentally friendly behaviour	Paying attention to green emblems	Preference for recyclable packaging	Avoidance of over packaged food	Avoidance of unnecessary purchases	Preference for fresh food	Frequency of the usage of shopping lists
1	4.13	3.99	3.94	4.06	4.03	4.64	3.98
2	2.21	1.69	2.11	2.41	3.02	3.58	1.75
3	2.55	1.86	1.77	2.81	3.54	4.22	4.04
4	2.85	2.26	3.24	3.42	4.17	4.15	3.90
5	3.42	3.25	3.00	3.38	3.36	4.05	2.18
Total	3.06	2.66	2.87	3.24	3.63	4.12	3.10

Cluster	Preference of returnable packaging	Frequency of organic food purchase	Pre-planned grocery shopping	Degree of routine in food shopping	Price sensitivity	The rate of informedness concerning food	The role of efficiency	Purchase of products from nearby manufacturer
1	4.09	3.53	4.48	3.23	3.74	3.92	4.24	3.56
2	2.00	1.50	3.06	3.55	3.70	2.76	3.29	1.91
3	2.17	1.82	4.32	2.81	3.91	3.29	3.91	2.02
4	2.69	1.71	4.48	4.02	4.51	3.60	4.51	2.61
5	3.39	2.89	3.44	3.33	3.45	3.26	3.62	2.88
Total	2.91	2.32	3.93	3.43	3.86	3.37	3.92	2.63

Source: own research

Cluster 2 (19.5%): Light / Pale Green - Youthfully wasteful. In this group, the proportion of men is extremely high (65.4%). It is the youngest cluster, more than half of the group (57.3%) is under the age of 45. Two or three adults form a household (68%) with typically one minor (18.3%). Due to their age, the proportion of students is the highest (16.6%) while every other member is an employee. Interestingly, both the number of members with the lowest (14.7%) and

highest (31.5%) income is higher than the average. Two thirds of them like to shop at super- and hypermarkets but the highest proportion prefer small shops (16.8%), they often buy small lots, since they are mostly students or single young adults with a higher income. They "avoid" traditional markets. They claim to be the least environmentally conscious. Concerning most of the variables I obtained the weakest data regarding environmental consciousness. For example most of them don't prefer domestic products, they are the ones least looking for returnable packaging, they don't pay attention to environment friendly emblems. Neither do they avoid over packaged and unnecessarily purchased products. According to their own admission they are less loyal to brands and they don't seek information about the food they purchase. Efficiency and planned shopping is not their characteristic. Overall we can say that they don't feel the importance of their decisions regarding the environment due to their young age.

Cluster 3 (15.2%): Economically green – consciously thrifty. This is an interesting group consisting of mostly women (62.8%) where the proportion of both the younger (age between 18 and 35 years, 33.9%) and the older (17.4%) age groups is higher, with an average age of 45 years. The highest proportion of the group (cca. 67%) lives in inner city districts. They are mainly employees (55.8%), but many of them are pensioners (19.2%). The households are considered bigger: usually with 4-6 persons of which 1-2 are minors. The incomes are moderate, but since they live in bigger households, they prefer economical and sparing purchases and find environmentally friendly products very expensive. They are the least loyal to brands, but they complete their shopping according to a previously prepared list and plan economically and with a high price sensitivity. They show passivity towards returnable or recyclable packing or wrapping. Based on their answers, they can be characterized as moderately open and informed, having moderate standards.

Cluster 4 (22.1%): Passively green – elderly inactive. As to their gender, the number of women is moderately higher (59.3%). Concerning the oldest cluster, 41.2% of them are over 56 and their

average age is 50. Therefore it is not surprising that nearly 30% are retired and the proportion of single occupancy households is rather high (24.3%). They have the lowest education level, which also explains their passivity regarding environmental protection and their lack of awareness. This group has the smallest number of entrepreneurs (9.7%) and their average income is also the lowest (due to low pensions in Hungary). Certainly, most of them go to supermarkets and hypermarkets, but they also like small shops and markets. It is also not surprising that on these occasions they spend less on groceries than the average. This is a moderately eco-friendly and informed group, but they like domestic products. They are moderately concerned about recyclability, over packaging and eco-friendly emblems. However they prefer returnable packaging, presumably because the product is cheaper this way. They are not typically bio-product buyers, because that is more expensive. Due to their low income they shop economically, avoiding any excesses. They are the most price sensitive group, they mostly buy out of habit, and plan their shopping, they are not too loyal to brands, because they keep looking for discounts. This group is the least open minded concerning new products.

Cluster 5 (24.1%): Potentially green - The evolving environmentally conscious majority. As to their gender, they show the proportion of the pattern, mostly middle-aged (55% consist of age between 31 and 55) with the smallest headcount of elderly people (3.8%) and an average age of 42 years. Regarding their education, the proportion of members with college degree is high (44.8%, which is 6% higher than the average). This cluster includes a higher headcount of entrepreneurs (22.6%), thus the average income is the highest in this group. They almost only shop at super- and hypermarkets (84.8%). They can be described with households of 3-4 members of which 1-2 are children. This is the second most environmentally conscious group (after the first cluster). They prefer domestic and bio-food, and are open to novelties. They pay attention to recyclable packaging and eco-friendly emblems. However, shopping lists and the purchase of fresh products is not their characteristic. They buy a lot of unnecessary products, and don't avoid

over packaging. The members of the cluster have high standards but they are only moderately informed about groceries. This group is the least price sensitive due to their high income.

Conclusion

In this study I have tried to categorize the environmental consciousness of the adult population of Budapest. I obtained five clusters, which show that the population in the capital still has to improve their behaviour concerning the environment. There is a strongly health and environmentally conscious costumer group that has a good effect on the environment and their children, thus their number is likely to grow. The second cluster is the youngest and strongly wasteful, but this may and should be improved by good communication and campaigns. They are receptive and responsive. Ideally, many of them could become members of the strongly environmentally conscious cluster. The third group consists of lower income young adults and elderly people. In my opinion they could only become more environmentally conscious if their salary would grow, otherwise they will keep showing a thrifty but passive environmental orientation. The fourth group consists of elderly people with low pensions, the lowest average income and education. Due to their age, their routines, and the lack of open-mindedness they are difficult to mobilize. Their environmentally conscious behaviour is not likely to improve. The last cluster may be the most easy to improve in the examined matter with most members with adequate income. There is a lot of potential in this group. They are typically middle aged with small children; therefore they might be more open to eco-friendly solutions. This is one of the most important groups, who can be reached through the communication channels and may be mobilized in the near future.

The survey conducted in Budapest in 2013 shows better results than our earlier national research, which can be explained partly by the higher education level and higher average income in the capital, but also by the increase of environmental consciousness in Hungary.

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