Health factor in soft drink consumption, German example

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Abstract: Consumer lifestyle and health are relevant factors to understanding consumption preferences. The number of lifestyle diseases has dramatically increased worldwide. The main cause for these diseases is the change in lifestyle; including a lack of attention to physical activity and good nutrition. Health and lifestyle are important factors by purchase decision process. In accordance with these, I examine the consumer behaviour toward soft drinks with special regards to healthy lifestyle and the state of health. My examinations can be considered mainly as a qualitative research among German students, which can serve as a basis for further analyses and research, however, the conclusions and experience gained from it are worthy of consideration. I differentiated five categories: ice tea, carbonated soft drinks, fruit juices, mineral waters, sport and energy drinks and studied the consumer behaviour toward them. The study focuses on the consumption of these and the factors influencing their purchase with special regards to lifestyle.

Key words: soft drink, health, marketing

1. Introduction

The lifestyle diseases, like coronary disorders, heart diseases, high blood pressure, diabetes or obesity cause the predominant part of all the mortality worldwide. These are such diseases which occur resulting from the way people live their lives. In developed countries and societies, these diseases become more frequent as economic growth starts. (*Bhikha,* 2007)

These diseases are spread especially in the more developed Central and Eastern European countries. Based on previous researches and examining the Hungarian data apply to the association between health indicators and prevalence of food consumption we can ascertain similar results because in this country the lifestyle diseases are responsible for the mortality in a considerable proportion as well. Researches demonstrate that obesity is responsible in many cases for these diseases. In the case of cardiovascular diseases the influence of improper unhealthy eating habit is estimated higher than 30%. (*Szakaly,* 2006)

Obesity and the increase in the number of overweight people represent significant health problems. There are over one billion overweight people in the world and 300 million of them are critically obese. Obesity develops due to the imbalance of energy, caused by too high calorie intake in the long run and/or too low energy use; this is where the question of lack of physical activities should be mentioned as well. With respect to the relationship between lifestyle diseases and overweight, this is a burning problem. (*Nayga,* 2008) The United States is the first in the list, two third of the people are obese or overweight due to the sedentary works not requiring intensive physical activities, people's lifestyles and dietary habits. (*O'Keefe – Cordain,* 2004) According to scientific estimations, the number of obese or overweight people in the USA will be 80%. According to estimations, about 10% of the health system costs in the USA are directly related to obesity and the lack of physical activities. (*Community Health Needs Assessment,* 2001)

These problems became a major topic also in Europe recently, especially in the United Kingdom, where the number of obese people tripled in the last twenty years. (*Mazzocchi – Traill,* 2008) In addition to its social effect, this problem has a serious economic impact, as it results notable costs due to the relationship between lifestyle diseases and obesity. The economic aspects of diseases are the examination of the patients, costs of medication and hospital care, care for people at home and the missed working time. (*Biro – Biro,* 2000)

The costs of the health system can be considerably reduced via reducing the frequency of diseases by popularizing healthy lifestyle and healthy diet.

The increasing wealth of people in the developed countries, the aging of population and the increasing ratio of sick people contribute to the increase of demand for functional foods having beneficial effects on health. (*Jong* et al., 2003)

Food marketing should pay special attention to emphasising healthy nutrition and lifestyle as a result of the lifestyle trends and bad dietary habits. (*Deliza – Rosenthal – Silva,* 2003) Regarding the close relationship between consumer behaviour and lifestyle, the influence of healthy nutrition on purchase decisions should be an important factor in the consumer purchase decision analysis.

Soft drinks have a major role in the intake of liquids and energy necessary for life. A certain level of soft drink

consumption can be part of a proper diet. The potential problems arise from excessive consumption endangering especially children and young people. In addition to the contents of soft drinks, the problem can be the displacing in consumption of other useful foods having an important role in nutrient intake mentioned above.

One of the health-related effects is weight gain due to the high calorie and sugar intake, which can result in overweight and obesity. The actuality and importance were already discussed in the previous chapter. Nowadays, the ratio of overweight citizens is over 80% in the United States and it is 50% in Hungary. (European Commission, 2007) Significant research is performed on the relationships between the soft drink consumption and obesity, most of it is focused on children and the youth who are more endangered and for whom the formation and fixation of improper dietary habits may cause problems later. (*Nestle,* 2000)

2. Material and Methods

I carried out a survey between German students of Hohenheim (Stuttgart). In harmony with the objectives and nature of the research, I did not aim representative results. However, the consumption habits of young people are of determining importance in the formation of opinion about consumer behaviour toward soft drinks and in further studies. I performed a questionnaire survey, the students filled in the questionnaires themselves, which took 15 minutes in average. The final version of the questionnaire was created after several testing on smaller samples and focus group interviews, the results of which called for simpler, more understandable questions and a reduction of the time necessary for filling it in. Of course, the questionnaires were in German to avoid misunderstandings. In the final sample, 210 German students were involved.

In the analyses, relationships were sought between the answers with different statistical methods. In addition to descriptive statistics, I use the cross-tabs method to gain useful information on consumption, consumption influencing factors and demographic data. In addition, other statistical methods are used for several questions. With principal component analysis, I create variables which differentiate the studied sample based on the expectations toward soft drinks and ideas toward soft drink consumption. In relation to this, I differentiate consumer groups, clusters by cluster analysis, this leads to similar conclusions as the principal component analysis.

3. Results

Consumers differ in their expectations toward the ingredients and content of soft drinks. In the next examination, I aim to determine whether consumer groups can be differentiated based on their requirements. I studied the effect of the presence or lack of different characteristics of soft drinks. These characteristics included vitamins, minerals, the amount of calories, sugar content, organic nature of the product and different additional materials which the consumers can expect from the product (e.g. caffeine). For studying this, cluster analysis and principal component analysis are used, where well differentiated groups are sought based on product features.

In principal component analysis, the correlation matrix of the studied variables provides satisfactory results, as the values are high, which means that there is a relationship between the variables, if there were independent variables, the analysis should be narrowed. The corresponding significance values are also acceptable at 5% level and the determinant of the matrix is also appropriate (0.6). By applying the Kaiser recommended Eigenvalue threshold, which keeps only the values higher than one, we kept three components in the model.

The Kaiser-Meyer-Olkin measure of sampling adequacy for the model is 0.75, which is higher than the recommended threshold of 0.5, based on these the principal component analysis can be classified good for studying the problem. The Bartlett hypothesis that the original correlation matrix is an identity matrix is refused at 5% significance level, which is also a satisfactory result.

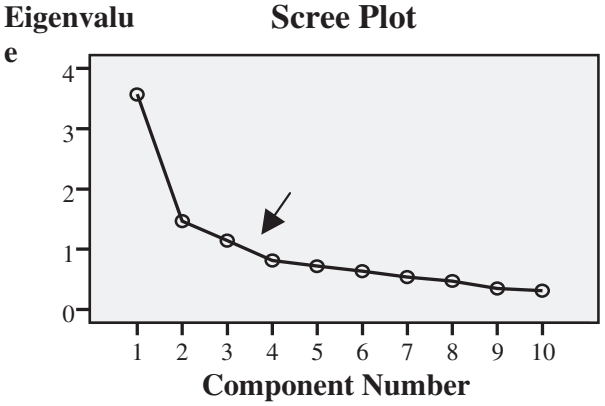

Figure 1: Scree Plot of the component

On the in Scree Plot it can be seen that three independent components are included in the model based on the Eigenvalue threshold. Meaning of the components can be defined as follows: one is a low-energy feature, where the sugar-free nature of the product and the reduced calorie content are of primary importance. According to the second component, naturalness is important, organic products rich in vitamins, minerals, not containing artificial sweeteners or other additives. In the third group, the stimulating materials are of great importance such as guarana, caffeine and taurine contents. These three components explain 61.74% of the total variance of the observed variables, with all Eigenvalues above 1, which can be qualified a good result. Rotation helps to equalize the relative weight of the different components in the model as it can be seen in the table.

Table 1.: Total variance explained by components

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative%	Total	% of Variance	Cumulative%
1	3.570	35.697	35.697	3.570	35.697	35.697	2.706	27.057	27.057
2	1.465	14.654	50.351	1.465	14.654	50.351	1.750	17.499	44.556
3	1.139	11.390	61.740	1.139	11.390	61.740	1.718	17.184	61.740
4	0.813	8.129	69.870						
5	0.716	7.161	77.031						
6	0.633	6.331	83.362						
7	0.534	5.340	88.702						
8	0.471	4.709	93.411						
9	0.348	3.480	96.891						
10	0.311	3.109	100.000						

Extraction Method: Principal Component Analysis.
Source: Own development

For better understand the achieved factors and the above mentioned three defined main meaning of the components I would present them in rotated component matrix.

Table 2.: Rotated Component Matrix, component explanation

How are you influenced by the following attributes?	Components		
	1	2	3
More vitamin	0.455	0.664	0
More calcium than usual	0.599	0.493	0
Contains fat burner	0.646	0	0.284
Zero sugar only artificial sweetener	0.831	-0.154	0
100% sugar no artificial sweetener	-0.137	0.618	0.470
Low sugar with few artificial sweetener	0.617	0.220	0.222
Low calorie	0.736	0.136	0.154
Organic (BIO) made from natural sources	0	0.752	0.101
contains guarana or taurin	0.181	0	0.847
With caffeine	0.236	0.141	0.785

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Source: Own development

For justifying the results, cluster analysis is made for the variables in which similar conclusions can be drawn via forming three well-defined clusters.

For the analysis, I select the hierarchical method and within this I form the clusters based on the smallest distance between the groups, for measuring the distance I use the squared Euclidean distance. When forming three clusters from the variables, similar clusters are formed as in the above results. One of them can be characterised as low-energy claim, the second shows the natural, organic product features, while the third can be characterized by the importance of the different stimulating materials. The similar conclusions drawn from the two examination methods are meant to increase the reliability of the results.

Healthy lifestyle and its relationship with nutrition and emphasis on these play an ever-increasing role among consumers nowadays. Health as a factor also has an increasing role in analyses of consumer behaviour and accordingly in marketing. For the evaluation of the results, the qualitative and non-representative nature of the examination should be mentioned, accordingly, no far-reaching conclusions can be drawn, however, the results are worthy of consideration and they serve as a good basis for quantitative research. It is not surprising that the consumer decisions are still greatly determined by the price and flavour of the product, but health aspects also have an important role. The consumers involved in the study could be well differentiated based on their soft drink consumption habits and their expectations toward the health factor of the product.

4. Conclusion

Health and way of life play an important role in purchase decision process. In the research we could differentiate three important factor of consumption. According to the meaning of the components can be defined three different expectations: one is a low-energy feature, where the sugar-free nature of the product and the reduced calorie content are of primary importance, second shows the natural, organic product features, while the third can be characterized by the importance of the different stimulating materials.

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