PRODUCT ELEMENTS AS THE BASIS FOR CONSUMER CHOICE: THE CASE OF FOOD SUPPLEMENTS

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Abstract

One way of analysing market offers is based on the evaluation of product elements from the position of potential consumers. Food supplements product category is rather specific and has not been much researched. Therefore, the objective of the paper is to determine which elements of food supplements are perceived as more important by the consumers and have the strongest influence on consumer buying decisions, and what combinations of products elements would be preferable by various consumers segments. The analysis was based on results of survey that included opinions of 188 participants. Conjoint analysis was used to determine consumer preferences based on the selected six research variables: brand name, main active ingredient, frequency of use, country of origin, price and recommendations. Also the gender, age and buying experience of consumers were considered. The results revealed that internal product elements had the strongest influence on consumer buying decisions. The most important internal characteristic was the frequency of use. Price was the most important among the external elements – the lower it was, the more consumers wanted to buy particular food supplement.

Keywords: consumer behavior, consumer choice, consumer buying decisions, product elements, food supplements, conjoint analysis.
JEL Classification: M31, M37, I12.

Introduction

Product elements analysis from the position of potential buyers and consumers is widely used in various instances (markets and product groups), but typically concentrate on high involvement items: durable goods or at least products that are perceived of relatively high importance to the consumer. Though other types of products also deserve attention of researchers, low involvement of potential buyers make these studies more complex or require use of more specific research methods.

As a product category, food supplements are rather specific. From the rational standpoint, they are far away from being the products of the first necessity. At the same time, emotionally this category is strongly related with health protection, which increases the importance of these products to some segments of the market. This controversy makes it difficult to understand which product elements are perceived as more important, and what their combinations would be suitable to various segments. This served as a background for the research on importance of the food supplement elements in Lithuanian market. Additionally, it is necessary to state that the legal definition of food supplements includes very broad set of product types that are used for fortifying one's health and can't be assigned to the category of pharmaceuticals. Thus, the study is based on the product group that belongs to the food supplements category – i.e. supplements for the eyes.

Therefore, the objective of the paper is to determine which elements of food supplements for the eyes are perceived as more important by the consumers and have the strongest influence on consumer buying decisions, and what combinations of products elements would be preferable by various consumers segments.

The research was carried out according to the conceptual model which included internal and external product elements that influence consumer decisions. The analysis was based on results of survey that included opinion of 188 participants. The conjoint analysis was used to determine consumer preferences based on the selected six research variables: brand name, main active ingredient, frequency of use, country of origin, price and recommendations.

Product elements

Previous consumer buying behavior studies revealed that customers pay attention to many product characteristics while choosing it, which can differ according the product type. Importance of product characteristics might differ among different customers, especially when they gain new experience and knowledge during the time period (Aliman *et al*., 2007).

Product characteristics and elements can be classified in several ways; however, often they are divided into two groups: internal (essential) product characteristics and external (inessential) characteristics (Northen, 2000; Fandos *et al*., 2006; Aliman *et al*., 2007; Veale *el al*., 2009).

Internal characteristics are the essential, natural product elements, which determine product functionality and physical appearance (Veale *et al*., 2009). These characteristics are specific for every product; also they disappear while consuming the product and cannot be changed without changing the essence of the product (Fandos *et al*., 2006). Such orgoleptic characteristics as appearance, color, taste, smell, can be classified as internal (Northen, 2000; Fandos *et al*, 2006).

External characteristics are related to the product but are not the part of it. These characteristics can be changed while not changing the physical product condition. Therefore, price, brand, country of origin, packaging, recommendations by authorities, suggestions by shop employees can be classified as external product characteristics (Northen, 2000; Fandos *et al*., 2006).

It was found that in evaluation of quality of the rationally purchased products (to which food supplements for the eyes can be assigned) internal product characteristics typically are considered as being more importante than external ones. However, for the products more related to the image (automobiles, apparel items, etc.), physical differences cannot be easily evaluated, and therefore external characteristics become more important (Pecotich *et al*., 2007).

Familiarity with product category also influences the reliability of product characteristics. Typically, external characteristics are more important when familiarity is low, while internal characteristics are more important when knowledge about product is high (Jin *el al*., 2010).

Brand can be classified as the most important element for consumers to decide whether to buy or not particular product (Srinivasan *et al*., 2002; Aliman *et al*., 2007). Brand is the external product element, which consumers consider in product evaluation, and especially – when they cannot understand or evaluate internal product characteristics (Aliman *et al*., 2007). Strong and well known brand provides customers information about product quality, visible and invisible product characteristics and might decrease concern during the buying process (Srinivasan *et al*., 2002). In addition to this, the more customer is familiar with brand, the less other external characteristics such as price or country of origin, are considered, because information provided by the brand becomes more valuable (Pecotich *et al*., 2007).

Many researchers have determined the positive impact of country of origin to product evaluation and choice (Hui *et al*., 2001; Aliman *et al*., 2007; Veale *et al*., 2009), however, the level of importance was found very different. As many researchers determined that internal product characteristics (appearance, colour, taste) have higher impact for quality evaluation than external characteristics (price, brand, country of origin), it is obvious that country of origin can make only limited influence on perception of product quality, especially when customer can evaluate many product elements (Al-Sulatiti *et al*., 1998). Therefore, customers perceive country of origin as an important element when: (a) they have information about the product or the information is less specific and reliable; (b) product is important and expensive, (c) buyers do not understand the product well enough, or (d) product category is closely related to the country of origin (such as French perfume or Chinese silk) (Veale *et al*., 2009). In some instances domestic products are evaluated higher, which might be influenced by ethnocentrism and higher recognition of local products (Pecotich *et al*., 2007).

Price is also one of the most important product elements, however, the impact of price is bigger then there is not much information about the product, as the broader information facilitates decision making process and decreases the impact of price (Veale *et al*., 2009). Higher price can be perceived as a signal of better quality, especially – when the product is very important for the customer, or it is difficult to evaluate product characteristics. In case of food supplements for the eyes higher price can be perceived as an indicator that the product will have stronger positive impact on a consumer's health (Akcura *et al*., 2004).

Additionally, decision about product choice is influenced by customer personal characteristics; especially: gender, age, income and buying experience. It was discovered that women and persons with lower income are more aware about the prices and see them as more important (Rosa-Dı´az, 2004). Consumer behavior also differs according to the buying frequency of particular product, as the product choice criteria differs in the process of acquiring experience and expertise (Nisel, 2001). Such customer characteristics as age, income, social class determine the number of attributes that each segment of customers evaluates. Typically, when buying novel and high involvement products, younger and higher social class customers evaluate more attributes than elder ones. Elder consumers, as well as the ones from lower social groups, typically try to simplify the process by analyzing less product attributes (Schaninger *et al*., 1981).

Conceptual Model

The main research variables include the six product elements: brand, main active ingredient, frequency of usage, country of origin, price and recommendations. According to the analyzed literature, brand, country of origin, and price are considered as essential product elements, common for every type of product (including food supplements for the eyes). However, in order to define product-specific external elements, the series of expert interview were performed. In addition to the known essential product elements, the experts reported that in case of food supplements for the eyes the most important influencing factors are: the main active ingredient; convenience of the using, particularly – how many times per day the product has to be used (frequency of use), manufacturer and recommendations of official institutions (opinion leaders) that may be found on the product packaging. However, influence of a manufacturer was excluded from the further research in order to avoid possible overlap with the brand.

Therefore, based on the literature analysis and pilot survey, the research model included two categories of product elements: internal (essential) characteristics (the main active ingredient, frequency of use); and external characteristics, such as: price, brand, country of origin, and recommendations of opinion leaders (Fig. 1).

INTERNAL characteristics:	EXTERNAL characteristics:
• Main active ingredient • Frequency of use	• Price • Brand • Country of origin • Recommendations of opinion leaders

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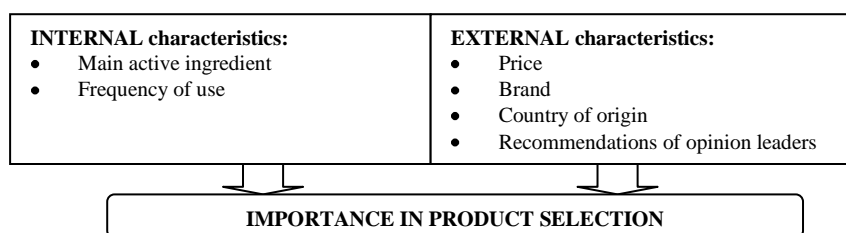
Figure 1. Research model

Hypotheses

The aim of the research was to evaluate how different product elements influence consumers' choice when selecting food supplements for the eyes. Therefore, according analysis of literature, six hypotheses were developed:

H1: Internal product elements (active ingredient, frequency of usage) have bigger impact on consumers' choice of food supplements for the eyes than external product elements (brand, country of origin, price, and recommendations).

H1a: Internal product elements (active ingredient, frequency of usage) have bigger impact on consumers that have experience in using food supplements for the eyes than for those who do not have experience in using food supplements for the eyes.

H1b: External product elements (brand, country of origin, price, and recommendations) have bigger impact on consumers without experience in using food supplements for the eyes than for those who do have experience in using food supplements for the eyes.

H2a: Consumers evaluate food supplements for the eyes better when the country of origin is Lithuania compared to USA or France.

H2b: Consumers evaluate food supplements for the eyes better when the country of origin is USA compared to France.

H3: Preferences for food supplements for the eyes differs between young and older consumers.

Methodology

The research was carried out according to the conceptual model which included product elements that influence consumer decisions. Respondents were selected using non probability sampling snowball method. The questionnaire was hosted on the internet and respondents received a link to it. To determine the required amount of respondents, the comparable researches that used conjoint analysis were analyzed. It was determined that average amount of respondents was 167 (Okechuku, 1994; Saunders *et al*., 1997; Arora, 2006; Jin *et al*., 2010; Quester *et al*., 1998; Kupiec *et al*., 2001; Hong *et al*., 1989). The analysis was based on results of survey that included opinion of 188 participants. The conjoint analysis was used to determine consumer preferences based on the selected six research variables: brand name (Liuberin, Yourlife, Akiuvita), main active ingredient (blueberries extract, lutein, vitamins), frequency of use (1, 2 or 3 times a

day), country of origin (Lithuania, France, USA), price (33.23, 39.09, 46.48 Lt) and recommendations (without recommendation; recommendation of Lithuanian oculists association; recommendation of International oculists association). Also gender, age and buying experience of food supplements consumer were considered. 18 representative profiles were constructed, having 6 attributes (research variables) with 3 levels each. SPSS program was used for results analysis.

Results

Survey represents opinion of 188 participants, of which 66.5% were women (N=125) and 33.5% were men (N=63). Two thirds of the respondents (61.7%, N=116) had eyesight malfunctions, whereas only 38.3% (N=72) stated that they yet do not have any problems with eyesight. The buying experience of food supplements for the eyes distributed almost equally among respondents, as 48.4% (N=91) of them bought food supplements for the eyes previously, whereas 51.6% (N=97) did not.

As the aim of the research was to determine the most important elements of food supplements for the eyes for consumers, the internal and external elements were evaluated. The results revealed that the most important internal product elements were frequency of use (25.46%) and main active ingredient (21.29%) (Fig. 2). Whereas, the external product elements were considered as less important: price (17.87%), brand (13.63%), recommendations (11.40%) and country of origin (10.34%) (Fig. 2).
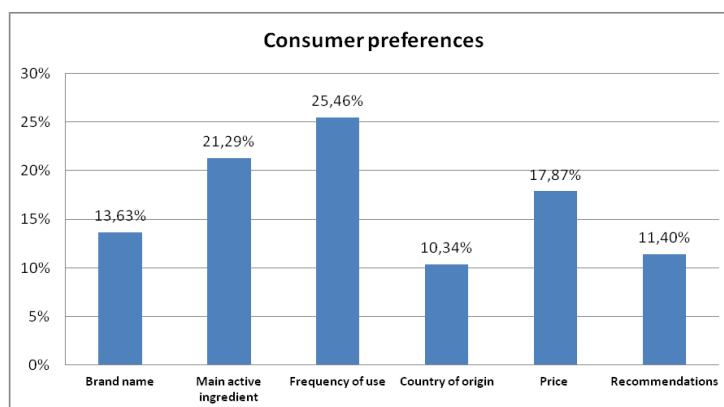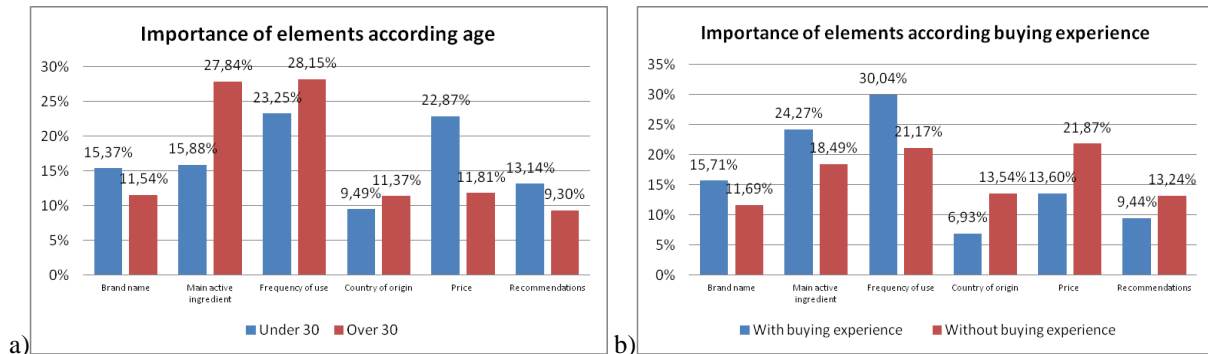

Figure 2. The importance of food supplements for the eyes elements

According the Stjudent criteria, frequency of use was stastistically more significant than all other external product elements, similarly as the main active ingredient, which only was not more important than price. The least significant were country of origin and recommendations (Table 1). These results confirm the findings of other researchers, which stated that impact of country of origin for the consumer choise is rather small (Al-Sulaiti *et al*., 1998; Ettenson *et al*., 1988). Also the hyphotesis H1 was confirmed, that internal product elements have greater impact on the consumer choise of food suplements for eyes than the external.

Table 1. The importance of food supplements for the eyes elements (t-test)

Nr.	Pair of product elements	t	df	Sig. (2-tailed)
1	Brand – Main active ingredient	-2.68	187.00	0.01
2	Brand – Frequency of use	-3.87	187.00	0.00
3	Brand – Country of origin	1.56	187.00	0.12
4	Brand – Price	-1.72	187.00	0.09
5	Brand – Recommendations	1.11	187.00	0.27
6	Main active ingredient – Frequency of use	-1.20	187.00	0.23
7	Main active ingredient – Country of origin	4.30	187.00	0.00
8	Main active ingredient – Price	1.18	187.00	0.24
9	Main active ingredient – Recommendations	4.09	187.00	0.00
10	Frequency of use – Country of origin	5.47	187.00	0.00
11	Frequency of use – Price	2.46	187.00	0.01
12	Frequency of use – Recommendations	5.36	187.00	0.00
13	Country of origin – Price	-3.56	187.00	0.00
14	Country of origin – Recommendations	-0.63	187.00	0.53
15	Price – Recommendations	3.30	187.00	0,00

To evaluate hypothesis H3, and determine if age influences consumer preferences in case of food supplements for the eyes, two age groups were segregated: under 30 years (103 respondents) and over 30 years (85 respondents). The significant difference (t test) was determined in case of main active ingredient and price (respectively Sig. 0.005 and 0.000). Therefore, H3 was confirmed, as price was more important for young people, and main active ingredient was more important for older people (Fig. 3a).

Figure 3. The importance of food supplements for the eyes elements according a) age; b) buying experience

To evaluate hypothesis H1a and H1b, and determine if buying experience influences consumer preferences in case of food supplements, two groups were segregated: consumers with food supplements for the eyes buying experience (91 respondents) and consumers without food supplements for the eyes buying experience (97 respondents). The significant difference (t test) was determined in case of frequency of use, country of origin and price (respectively Sig. 0.04, 0.01 and 0.01). Therefore, H1a and H1b were confirmed, as frequency of use (internal element) was more important for consumers with food supplements for the eyes buying experience, whereas country of origin and price were more important for consumers without food supplements for the eyes buying experience (Fig. 3b).

To determine consumer preferences, means of every data group was calculated, and significance of differences between the means was determined by Student test (t-test).

After the analysis of results it was determined that Liuberin band was preferred the most among the respondents (Table 2a). Also statistically significant difference was determined only between Liuberin and two other brands (Table 2b). Therefore, it can stated that customers prefer well know brand even in food supplements for the eyes category, however, the other global brand YourLife was evaluated the same as the imaginary brand Akiuvita, specially created for this research.

Table 2. Consumer preferences for brand (t-test)

Brand	Mean	Standard deviation	Pairs	t	df	Sig. (2-tailed)
Liuberin	0.59	2.894	Liuberin - YourLife	2.109	187	.036
YourLife	-0.23	2.812	Liuberin - Akiuvita	3.046	187	.003
Akiuvita	-0.36	2.136	YourLife - Akiuvita	.430	187	.668

In case of main active ingredient, it was revealed that it is important elements for customers. However, the extract of blueberries was much more important for the respondents compared to Lutein and vitamins, as only blueberries showed statistically significant difference (Table 3 a and b).

Table 3. Consumer preferences for main active ingredient (t-test)

Main active ingredient	Mean	Standard deviation	Pairs	t	df	Sig. (2-tailed)
Blueberries	1.77	3.819	Blueberries - Lutein	5.374	187	.000
Lutein	-.79	3.240	Blueberries - Vitamins	6.441	187	.000
Vitamins	-.98	2.781	Lutein - Vitamins	.561	187	.575

Differences between frequency of food supplements for the eyes use was statically significant for all three variants, however, usage 1 time a day was considered as advantage, whereas usage 3 times a day was considered as big disadvantage, while usage 2 time a day being as an intermediate option (Table 4 a, b).

Table 4. Consumer preferences for frequency of use (t-test)

Frequency of use	Mean	Standard deviation	Pairs	t	df	Sig. (2-tailed)
1 time a day	3.28	4.034	1 time - 2 times a day	9.117	187	.000
2 times a day	-.82	2.580	1 time - 3 times a day	12.185	187	.000
3 times a day	-2.45	2.799	2 times - 3 times a day	6.261	187	.000

Survey results revealed that Lithuanians do not prefer any country of origin, as no statically significant differences were determined (Table 5 a, b). Therefore, hypothesis H2a and H2B were not confirmed.

Table 5. Consumer preferences for country of origin (t-test)

Country of origin	Mean	Standard deviation	Pairs	t	df	Sig. (2-tailed)
Lithuania	-.03	2.636	Lithuania - France	-.348	187	.729
France	.07	2.017	Lithuania - USA	.034	187	.973
USA	-.04	2.104	France - USA	.506	187	.613

The analysis confirmed that Lithuanians are sensitive to price, as respondents preferred the lowest price and the differences between different prices were statistically significant (Table 6 a, b).

Table 6. Consumer preferences for price (t-test)

Price	Mean	Standard deviation	Pairs	t	df	Sig. (2-tailed)
33.23 Lt	1.90	3.400	33.23 Lt - 39.09 Lt	5.551	187	.000
39.09 Lt	-.14	2.287	33.23 Lt - 46.48 Lt	8.609	187	.000
46.48 Lt	-1.77	2.853	39.09 Lt - 46.48 Lt	5.729	187	.000

Respondents preferred recommendations of Lithuanian oculist association the most, however the statistical significant difference was determined between all pairs, therefore, product with recommendations was more attractive for customers than without them (Table 7 a, b).

Table 7. Consumer preferences for recommendations (t-test)

Recommendations	Mean	Standard deviation	Pairs	t	df	Sig. (2-tailed)
Lithuanian	.84	1.976	33.23 Lt - 39.09 Lt	2.832	187	.005
International	.02	2.427	33.23 Lt - 46.48 Lt	7.314	187	.000
None	-.86	2.017	39.09 Lt - 46.48 Lt	3.006	187	.003

To determine two different customers groups, the cluster analysis was used by "K-means" SPSS module. Therefore, the prediction was made that two clusters can be segregated, where one cluster prefers internal product elements, whereas the other cluster prefers external product elements. The start clusters centers were set at frequency of use as the most important internal element, and price as external product element. Final result was achieved after 9 iterations with 94 respondents in each cluster.
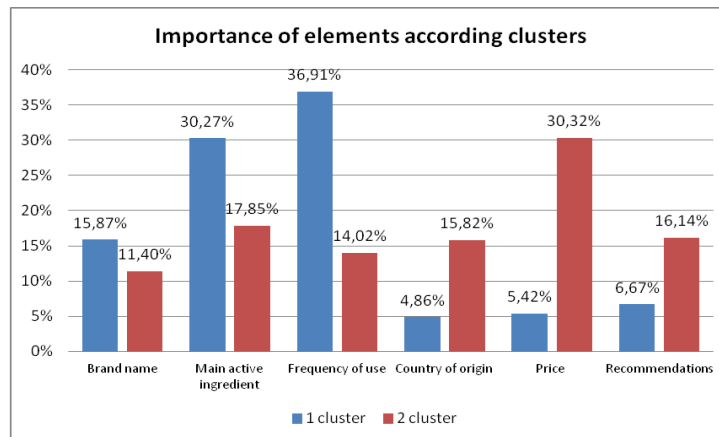
Figure 4. The importance of food supplement s for the eyes elements according clusters

Student test confirmed significant difference among all product elements except the brand (sig. 0.000). Therefore, it can be stated that for the first cluster internal product elements are more important, whereas for the second cluster – external (Fig. 4). Significant difference was determined between clusters according buying experience, as customers with buying experience preferred internal product elements (1st cluster), whereas customers without buying experience preferred external product elements (2nd cluster) (sig. 0.000). Also clusters significantly differed according age, as the average age of first cluster was 35.56, whereas the average age of second cluster was 31.01 (sig. 0.008).

Conclusions

The results revealed that internal product elements of food supplements for the eyes had the strongest influence on consumer buying decisions. The most important internal characteristic was the frequency of use, as the fewer times a day the food supplement had to be used, the more attractive it was to consumers. Also the active ingredient played a significant role, which was especially relevant for the older respondents. However, most of the consumers were aware only about one type of the three proposed sorts of active ingredients. From the external elements, price was the most important – the lower it was, the more consumers wanted to buy particular food supplements for the eyes, which was especially noticeable for the younger respondents. Also it was revealed that recommendations of opinion leaders were important for consumers, precisely when they were from local doctors association. However, such products elements as country of origin and brand name were not important for consumers. In addition to that, it was determined that the brand name awareness of food supplements for the eyes was very low among consumers in Lithuania.

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