QUALITY ATTRIBUTES THAT MATTERS WHEN PURCHASING MILK BY SLOVAK CONSUMERS

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Food market has changed dramatically over past decades. Whereas in the past consumers faced problems with food availability and quantity, today they are more concerned with its qualitative side. Milk, Slovak traditional foodstuff, is now experiencing the declining consumer interest. Regarding this, the main aim of the article is to examine the importance and influence of quality attributes on Slovak consumers when purchasing milk. For accomplishing this, a quantitative consumer survey was arranged. Its results showed that to the group of top five most important quality attributes belonged healthiness, freshness, sensory appeals, processing and fat; and a presence of at least two dependencies in relation to age, gender, income and education individually was confirmed. This creates a valuable basis for the value concept development, segmentation, targeting and positioning projection, product strategy modification and innovation and segmentation and marketing mix strategy creation.

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INTRODUCTION

Food represents one of the most essential parts of everyday human life. Basically, people consume food for their survival and therefore a need for eating belongs to the basic physiological needs occupying the bottom (most fundamental) part of Maslow's pyramid of needs. Beside human survival, food has also different significance or better said importance. From the biological point of view, food is a material consisting essentially of protein, carbohydrate, and fat used in the body of an organism to sustain growth, repair, and vital processes and to furnish energy (https://www.merriam-webster.com/dictionary/food). This points out another two biological functions, concretely it supplies human body with energy necessary for executing daily activities, and it supports healthy growth and development of human body. On a global scale, people consume 5133 tonnes of food every minute, devote on average 86 minutes of day to eating and drinking and individually spend approximately 1548.81 dollars on purchasing food and beverages per year (OECD, 2014; Thomson, 2014; Knoema, 2016). This suggests that food also plays a significant role from economic (a driver of national economy), social (an expression of identity and maintenance of relations), cultural (a part of cultural heritage), symbolic (a religious symbol), psychological (a tool for overcoming stress and striking internal balance), and epidemiological (a medicament to resist and recover from illnesses) point of view (WHO/FAO, 2002; Shepherd, Raats, 2006; Largen, Bence, 2015).

Whereas in the past people used to produce food themselves (like butter, potatoes, marmalades or preserves), today, they acquire it in real or virtual shops. The way of procuring food is not an only thing that has changed over decades. According to the latest diet and nutritional studies there are a number of trends propelling food market. Firstly, consumers increasingly concern about health and therefore they reach for the products rich in probiotics, prebiotics, antioxidants, vegetarian proteins and health fat and simultaneously low in sugar, pesticides or artificial additives. Secondly, consumers search for convenience and time-saving solutions in their eating behaviour. Thirdly, consumers are not willing to sacrifice taste for health or convenience. Finally, consumers have become increasingly interested in the way of food production (Kearney, 2010; Orrigo, 2016; Webb, 2016; FleishmanHillard, 2017; Sanova et al., 2017).

Food consumer behaviour '…involves the selection and consumption of foods and beverages, considering what, how, when, where and with whom people

eat as well as other aspects of their food and eating behaviours' (Shepherd, Raats, 2006). When making decisions about food purchase, there are many influencing factors. Overview of these affecting elements is best outlined via models of food consumer behaviour. One of earliest models, i.e. the one from Pilgrim (1957, In: Wierenga et al., 1997), highlighted three factors determining food acceptance, specifically physiological effects of food, perception of sensory attributes and influences from environment. Randall, Sanjur (1981, In: Shepherd et al., 1995, Barjolle et al., 2013) took into consideration the criterion of object and distinguished three sets of determinants of food preferences, namely (1) product one including physical/chemical property of food, nutrition content or method or preparation; then (2) person one involving age, sex, knowledge, experiences, attitudes or perceptions; and (3) environmental one containing season, availability, mobility, size of family or culture. The youngest models, in main, included most of mentioned factor variables but the only variation was in their segmentation, such as e.g. the model by Sobal, et al. (2006, In: Shepher, Raats, 2006) who divided factors into group of life course events and experiences, then the group of personal and environmental influences and finally personal food system; or the model by Franchi (2012) specifying two axes of factors making up food choices, specifically the axis of interpretation including experiences, relations, life courses, credence, values and identity, and the axis of influences incorporating ties, resources, income, time availability, instruction, parental models, media and brands.

The above mentioned models of consumer behaviour portrayed a whole spectrum of various factors influencing consumers when choosing and purchasing food products. Under the influence of current market conditions, determined by globalization, liberalization and product saturation, consumers are becoming more and more demanding with respect to the criterion of food's healthiness, taste, safety and production practices that comply with animal welfare and environmental protection and therefore the initial quantity-oriented food production is shifting towards the quality-oriented one (Blaha, 2000). Considering this, food businesses have to know what quality attributes matters most among consumers. In literature, we can find various categorizations of these attributes. The most general ones distinguish between intrinsic quality attributes (relating to the physical and chemical characteristics of food products), and extrinsic ones (associated with consumer's perceptions, cognition and emotions) (Taub, Singh, 1998). On the other hand, the most specific categorizations recognize beside of intrinsic and extrinsic quality attributes, experience (e.g. freshness, shelf life, tenderness and convenience) and credence ones (e.g. healthiness, naturalness and the way of production) (Grebitus, 2008).

The practical implementation of upward specified quality attributes could be perceived via a number of research studies. It terms of food generally, researches show that their purchase is mostly determined by healthiness/safety, sensory appeals, price, nutrition, freshness, convenience, quality or availability (Stavkova et al., 2008; Lusk, 2011; Neto, Serafin de Melo, 2013; Tirelli, Martinez-Ruiz, 2014; BreAic et al., 2017). These findings are acknowledged also by statistical agencies. For example, the statistic portal of Statista (2015) published a list of top five factors influencing U.S. consumers when purchasing food and beverages to which there belonged a factor of taste (83%), price (68%), healthfulness (60%), convenience (52%) and sustainability (35%); or the research agency Eurobarometer associated price (97%), quality (97%), country of origin (81%) and brand (67%) as key factors in purchasing food by Slovak consumers (Beracka, 2015).

MATERIAL AND METHODS

The main aim of this paper is to examine the importance and influence of quality attributes on Slovak consumers when purchasing animal milk. The reason why is that Slovaks are increasingly losing interest in consuming milk as evidenced in their consumption level that decreased by 1.31% during the last ten years and now its consumption accounts just for 8.48% of total food consumption (Statistical Office of the Slovak Republic, 2009, 2015). This calls for a need for finding what (quality attributes) matters in Slovaks when purchasing milk in order to know product benefits creating consumer value of milk. The production and consumption of milk and milk products in Slovakia has more than a century-old tradition (Kubicova, Habanova, 2012). Milk represents one of the basic components of rational nutrition for all mammals complexly balanced in its nutritional content and having notable health impact, economic significance and cultural symbolism, too (Habanova et al., 2010; Kurajdova, Taborecka-Petrovicova, 2015). According to past surveys, when considering qualitative characteristics, consumers were especially interested in sensory aspects, healthiness, nutritional and fat content, price, availability, variety, certification, origin, brand, image, label, package, design, store and advertisement when purchasing milk (Bonaventure, Nagyova et al., 1998; Kapsdorferova, Nagyova, 2005; Hsu, Lin, 2006; Alwis et al., 2009; Kresic et al., 2010; Umberger, 2012; Kumar, Babu, 2014).

Partial aims of this paper are: (1) to identify top quality attributes for consumers when purchasing milk where we expect that the most important factor influencing milk purchase will be healthiness, and (2) to examine dependencies between milk quality

Table 1 List of Studied Milk Quality Attributes

Extrinsic	A_2 Brand; A_8 Package Design; A_9 Package Material; A_{10} Package Size; A_{12} Quality Mark
Intrinsic	A_1 Assortment; A_{13} Sensory Appeals
Experience	A_4 Fat; A_5 Freshness; A_7 Nutrition
Credence	A_3 Origin; A_6 Healthiness; A_{11} Processing

Source: Own research.

attributes and personal factor variables. Following the main aim, we selected a group of thirteen studied milk quality attributes (Table 1) and specified the following four hypotheses: There exists a relationship between quality attributes of milk and gender (H1); between quality attributes of milk and age (H2); between quality attributes of milk and education (H3); and between quality attributes of milk and income (H4).

For fulfilling the set objectives we carried out a quantitative survey to gather primary descriptive data on qualitative attributes influencing milk consumers. We decided to avail the method of questioning by means of an online questionnaire that consisted of three thematic areas, namely (1) milk purchase, (2) factors influencing milk purchase, and (3) consumer profile. In order to know the importance of selected milk quality attributes we utilized close-ended questions with multiple choice answer options and a five-degree rating scaling technique (5 – essentially important, 1 – not at all important). Research sample consisted of 975 respondents where we tried to apply quota sampling method based on the criterion of Slovak nationality, age over 18 years and active role of milk purchaser. The basic socio-demographic profile of respondents is shown in Table 2. The final data collection (from April 15th to July 15th, 2015) was followed up by a pilot study (sample of 52 respondents).

RESULTS

Following the first partial aim we set upon identifying top quality attributes that our respondents considered as the most important when purchasing milk. For accomplishing this, we used the statistical function of mean rank by Friedman test to study all attributes in the first step. For the comparison of the means of two variables we applied Wilcoxon test where we focused on top first five factors to find out if healthiness is the most important one. This approach can be used in the case of sociological, consumer behaviour, and/or marketing oriented researches (R e z a n k o v a , 2007). The results presented in Table 3 showed that credence quality attribute of healthiness (1st position), experience quality attribute of freshness (2nd position), intrinsic quality attribute of sensory appeals (3rd position), credence quality attribute of processing (4th position) and experience quality attribute of fat (5th position) are considered to be the five most important qualities for Slovak milk purchasers.

The second partial aim was to examine the dependencies between selected milk quality attributes and four personal factor variables. We used the Spearman correlation and Fisher exact test for the evaluation of settled hypotheses on the 5% level of significance. As it could be seen from Table 4, a dependency was

Table 2 Socio-demographic Profile of Respondents

Socio-demographic variable		Number	Percentage
Gender	female	599	61.44
	male	376	38.56
AGE	under 35	399	40.92
	35 – 65	474	48.62
	over 65	102	10.46
Education	elementary	45	4.62
	high school without graduation	92	9.44
	high school with graduation	359	36.82
	university	479	49.13
Income	up to 334 €	39	4.00
	335 to 550 €	126	12.92
	551 to 1,110 €	406	41.64
	1,111 to 1,670 €	273	28.00
	over 1,671 €	131	13.44

Source: Own research.

Table 3 Ranking of Milk Quality Attributes

Position	Quality Attribute	Mean Rank
1.	A_6 – Healthiness	10.28
2.	A_5 – Freshness	9.89
3.	A_{13} – Sensory Appeals	9.30
4.	A_{11} – Processing	8.20
5.	A_4 – Fat	7.83
-*	A_3 – Origin	7.11
-*	A_7 – Nutrition	6.73
-*	A_{10} – Package Size	6.48
-*	A_{12} – Quality Mark	6.29
-*	A_9 – Package Material	5.46
-*	A_2 – Brand	5.12
-*	A_1 – Assortment	4.87
-*	A_8 – Package Design	3.44

Wilcoxon Signed Ranks Test			A6 – A5	A5 – A13	A13 – A11	A11– A4	A4 – A3
Asymp. Sig. (2-tailed)			0.000	0.000	0.000	0.006	0.000
Monte Carlo Sig. (2-tailed)	Sig.		0.000	0.000	0.000	0.005	0.000
	99% Conf. Int.	Lower Bound	0.000	0.000	0.000	0.003	0.000
	99% Conf. Int.	Upper Bound	0.000	0.000	0.000	0.007	0.000
Monte Carlo Sig. (1-tailed)	Sig.		0.000	0.000	0.000	0.003	0.000
	99% Conf. Int.	Lower Bound	0.000	0.000	0.000	0.002	0.000
	99% Conf. Int.	Upper Bound	0.000	0.000	0.000	0.004	0.000

Note: *After setting an order of importance of individual product properties by mean rank, we subjected just first five positions to the statistical verification by the Wilcoxon Test.

Source: Own research.

confirmed in each of the studied personal factors variable. More specifically, age was found to be positively weakly correlated to healthiness (+ 0.082) and assortment (+ 0.084), which indicates that these qualities are more important for older consumers. Education appeared to be positively weakly correlated to nine quality attributes, namely sensory appeals (+ 0.098), fat (+ 0.127), nutrition (+ 0.080), healthiness (+ 0.066), processing (+ 0.127), origin (+ 0.133), brand (+ 0.109), quality mark (+ 0.121) and package material (+ 0.168), which suggests that these qualities were more important for respondents with higher degree of education. Regarding income, a presence of weak dependency was found in the case of fat (+ 0.074), origin (+ 0.064) and brand (+ 0.065), which implies that these attributes are more considered by consumers having a higher level of income. Lastly, considering gender, there was confirmed a presence of four weak dependencies in relation to freshness (0.113), healthiness (0.106), processing (0.115) and assortment. By computing weighted averages, it was found that freshness (4.06), healthiness (4.38) and the way of processing (3.78) were more important for females and assortment (2.72) was assigned with a higher importance in males. In the connection to this, it could be said that women are more complex in their decision making than men and therefore we agree with the statement of Darroch (2014) that '…if you meet the expectation of women, you at least meet, if not exceed, the expectations of men'.

The final evaluation of settled hypotheses is presented in Table 5. As could be seen, in each hypothesis we identified at least two dependencies associated with the studied personal factor variables.

DISCUSSION

The above described survey showed that our respondents consider the credence quality attribute of healthiness and way of processing, and experience quality attribute of freshness and fat, and the intrinsic quality attribute of sensory appeals as the most important when purchasing milk. These results are not only in line with mentioned current consumer food market trends on healthiness, the way of production and taste (Orrigo, 2016; Webb, 2016; Fleishman Hillard, 2017), but also they correspond to the research results of Nagyova et al. (1998), Hsu, Lin (2006), Alwis et al. (2009), McGarry Wolf et al. (2009), Kresic

Table 4 Dependencies between Milk Quality Attributes and Personal Factor Variables

Quality Attribute	Age		Education		Income		Gender			
	p-value	Spearman´s rho	p-value	Spearman´s rho	p-value	Spearman´s rho	p-value	Cramer´s V	Weighted Average	
									Woman	Man
A_{13} (Sensory Appeals)	0.172	-	0.002	+ 0.098	0.088	-	0.571	-	-	-
A_{4} (Fat)	0.544	-	0.000	+ 0.127	0.021	+ 0.074	0.920	-	-	-
A_{7} (Nutrition)	0.666	-	0.012	+ 0.080	0.114	-	0.220	-	-	-
A_{5} (Freshness)	0.155	-	0.065	-	0.517	-	0.013	0.113	4.06	3.98
A_{6} (Healthiness)	0.010	+ 0.082	0.039	+ 0.066	0.070	-	0.025	0.106	4.38	4.20
A_{11} (Processing)	0.910	-	0.000	+ 0.127	0.423	-	0.011	0.115	3.78	3.58
A_{3} (Origin)	0.222	-	0.000	+ 0.133	0.044	+ 0.064	0.356	-	-	-
A_{2} (Brand)	0.647	-	0.001	+ 0.109	0.043	+ 0.065	0.317	-	-	-
A_{12} (Quality Mark)	0.386	-	0.000	+ 0.121	0.271	-	0.866	-	-	-
A_{8} (Package Design)	0.064	-	0.078	-	0.972	-	0.992	-	-	-
A_{10} (Pack. Size)	0.220	-	0.307	-	0.573	-	0.700	-	-	-
A_{9} (Pack. Material)	0.945	-	0.000	+ 0.168	0.632	-	0.527	-	-	-
A_{1} (Assortment)	0.009	+ 0.084	0.063	-	0.871	-	0.043	0.100	2.70	2.72

Source: Own research.

et al. (2010), Bonaventure, Umberger (2012), Saheeka et al. (2013), Starzyczna et al. (2013), Kusiluka et al. (2015), and Pinto et al. (2016). On the basis of these survey's findings, the value of consumer's trust in product and its benefits as well as the significance of delivering positive experiences with product's consumption for a dairy business could be perceived.

In our consumer survey, we aimed not only at finding the importance of studied milk quality attributes, but also at examining the way of their influence on consumer's purchase decision-making. In the connection to this, we confirmed (on the 5% level of significance) the presence of (positive weak) dependency between age and the quality attribute of healthiness and assortment; then the (positive weak) dependency between education and the quality attribute of sensory appeals, fat, nutrition, healthiness, processing, origin, brand, quality mark and package material; the (positive weak) dependency between income and fat, origin and brand; and lastly (weak) dependency between gender and freshness, healthiness, processing and assortment on the basis of applied statistical tests. This points out the fact that more educated and female consumers are more demanding in decision making on milk purchase; older consumers are more concerned with health benefits and issues when purchasing milk; and consumers with a higher income pay attention to the purchase of milk that is richer in fat and better in the origin of its production and reputation of its producer. Similarity of these research findings could be acknowledged in the linkage to the research results of Bonaventure, Umberger (2012) considering the quality attribute of nutrition, quality mark and package; Kresic et al. (2010) regarding the quality attribute of origin and brand; Alwis et al. (2009) with respect to the quality attribute of nutrition and package; Hsu, Lin (2006) in reference to the quality attribute of nutrition and brand; and Nagyova et al. (1998) in the case of the quality attribute of brand and quality mark.

Table 5 Evaluation of Hypotheses

Hypothesis	Evaluation
H1	weak dependency in 4 milk quality attributes.
H2	weak dependency in 2 milk quality attributes.
H3	weak dependency in 9 milk quality attributes.
H4	weak dependency in 3 milk quality attributes.

Source: Own research.

CONCLUSION

In Slovakia, the milk market currently finds itself in a very difficult situation rising concerns about its future. One of the main causes lies in a continuously decreasing interest of consumers in milk consumption. Regarding this we aimed at examining the importance and influence of quality attributes, as one of key de-

terminants of consumer food purchase behaviour, on Slovak consumers when purchasing milk. The results of our examination showed that for Slovaks to the group of top five quality attributes belonged credence quality attribute of healthiness and processing, experience quality attribute of freshness and fat and intrinsic quality attribute of sensory appeals. We see the possible practical application of these findings in the understanding of benefits (specifically product benefits – freshness, sensory appeals and fat, individual benefits – healthiness, and production process benefits – processing) creating value of milk; specifying the basis for milk market segmentation, targeting and positioning strategies (i.e. on the basis of combining descriptive consumer characteristics and product characteristics); and identifying sources of the product strategy modification and innovation (such as e.g. in branding or packaging). Besides, our research revealed dependency between age and quality attribute of healthiness and assortment; education and sensory appeals, fat, nutrition, healthiness, processing, origin, brand, quality mark and package material; income and fat, origin and brand; and finally gender and freshness, healthiness, processing and assortment, what might be considered useful for the segmentation and marketing mix strategy creation.

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