

Price sensitivity of consumers to organic food and the most frequently purchased categories of organic food

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Abstract. The aim of the study is to validate a model of consumer behaviour towards organic foods, in particular processed ones, the target population consists of two non-random samples. Two different questionnaires were used to study the two populations, but with several common questions. The aim is, through two parallel studies, to establish in which aspects there are discrepancies between the viewpoints of the respondents, with the aim of offering a different marketing approach and attracting them to the market. The authors of the study examine the consumers of organic products in Bulgaria and their specific market behaviour when buying organic foods, the relationships between their price sensitivity and the external distinctions of the products such as brand, geographical origin. Investigate whether there is a relationship between gender and number of family members, frequency of shopping and the most frequently purchased food categories.

1 Introduction

The postmodern consumer and, in particular, the 21st century consumer is more demanding and seeks additional benefits. The development of the technologies and especially the social networks have formed another core of consumers that are related to the concepts of a healthy lifestyle, green marketing, sustainable development, affecting their judgment when they decide to make a purchase, who look for convenience when shopping and pursue a different image.

The biological foodstuffs are usually more expensive and less harmful for the environment than their conventional equivalents. The conflict between these concerns can be described as a gap between the intention and the behavior [1]. "The purchase of organic food is to a certain extent a moral dilemma, but considering the fact that it also involves the financial burden resulting from the behavior, the consumer is likely to diverge from their personal norms to a certain degree when making this choice" [2], [3].

The studies of the features of organic consumers come from different countries and show differences and peculiarities in the sales channels. The high price of organic food is said to be the main obstacle to their regular consumption as in [4], [5] and [6]. Another impediment to the dissemination and the demand of organic food is the fact that consumers are satisfied with the conventional foodstuffs they consume and find no substantial difference in their taste and even regard them as being tasteless [4].

A study conducted in Italy has established that the geographical origin of organic food as in [7] and [8], serves as an indicator of a certain quality as well as the logo of the certifying body. Another motive stimulating the consumption

of organic food is said to be the support provided to the local economy in Greece, the USA [9], [10], although this motive is not a major one. There is evidence that the significance of the motives and the obstacles may vary within the different product categories [11].

2 Research methodology

In order to validate a pattern of consumer behavior towards organic food, in particular processed organic food, the target population consists of two non-random samples. Two different questionnaires were used to study the two populations, but with several common questions. The aim is, through two parallel studies, to establish in which aspects there are discrepancies between the viewpoints of the respondents, with the aim of offering a different marketing approach and attracting them to the market. The study among the two groups of respondents was conducted within the period April-June 2018. A warranty probability of 95% has been set and the social and demographic characteristics of the respondents have been shown in Table 1.

2.1 Sample A

This sample consists of 151 respondents based on the methods of online inquiry. An online inquiry was conducted by means of a link to the questionnaire. The choice of an online inquiry by the consumers of organic food has been predetermined by the fact that they have accumulated experience and do not need any clarifications about what a processed organic product is.

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Table 1. Social and demographic characteristics of the respondents

Indicators	Frequency	(%)	Frequency	(%)
<i>Gender</i>	Sample A		Sample B	
Men	41	26.8	86	38.2
Women	110	71.9	139	61.8
Overall	151	100	225	100
<i>Age groups</i>				
16-30	68	45.0	225	100
31-45	67	44.4		
46-60	10	6.6		
61-75	6	4.0		
<i>Education</i>				
Doctor	4	2.6		
Master	65	43		
Bachelor	28	18.5		
College	10	6.6		
Secondary education	44	29		
<i>Residence</i>				
Village	9	6	33	14.5
Town	52	34.4	150	66.9
District city	55	36.4	30	13.3
Capital city	35	23.2	12	5.3
<i>Monthly net income of the household BGN</i>				
From 300 to 900 BGN	21	13.9	100	44.4
From 901 to 1600 BGN	54	35.8	82	36.4
From 1601 to 2100 BGN	33	21.9	21	9.3
From 2101 to 2600 BGN	21	13.9	12	5.3
Over 2600 BGN	22	14.6	10	4.4
<i>Number of family members</i>				
A single-member family	23	15.2	54	24.0
A two-member family	32	21.2	67	29.8
A three-member family	52	34.4	31	13.8
A four-member family	38	25.2	56	24.9
A five-member family	5	3.3	10	4.4
A family consisting of six or more members	1	0.7	7	3.1
<i>Marital status</i>				
Single	49	32.5	159	70.7
Married	102	67.5	66	29.3

2.2 Sample B

This sample consists of a quota of students of University of Food Technologies who have replied to a written inquiry (questionnaire).

3 Results

In sample A, a comparative research method has been used, i.e. the study of the price estimates is made with the participation of more than one product [12], [13]. Two variants of this method are used as the authors have applied another type – a choice with four brands, thus, there will be a smaller probability for the prices to imply a bias or a prejudice. It is regarded as a starting assumption that the consumers have already established a relation between usefulness and the price of the items. The product is fresh milk and there are four options for it. Two of the options were based on the geographical origin – Bulgarian with a marking; made in the EU, whose price is higher, based on the market research, the third option is a stamp of a private biological standard which additionally increases the price and the fourth option – by means of a direct sale at a farmers’ market, which affects the surcharge and is the lowest price, but there is no marking (see Table 2).

- a) The choice of fresh Bulgarian milk has a positive association with the attribute "green leaf" as a typical

characteristic of organic foods ($\chi^2 = 10.483$, $df = 4$, $p < 0.05$, $n = 151$, Cramer's $V = 0.263$);

- b) The choice of fresh milk produced in the EU correlates with the "brand" attribute as a characteristic of organic foods ($\chi^2 = 28.427$, $df = 4$, $n = 151$, Cramer's $V = 0.434$);
- c) The choice of fresh milk certified under a private standard is related to the "standard" attribute as a characteristic of organic foods ($\chi^2 = 12.235$, $df = 4$, $p < 0.05$, $n = 151$, Cramer's $V = 0.285$);
- d) The choice of farm milk has a negative relationship with the age of consumers, i.e. the older they are, the less likely they are to buy it Spearman rho (151) = - 0.172, $p < 0.05$.

Based on the summarized answers obtained from the online inquiry, the following ranks are formed based on the highest frequency in the selection cells:

- № 1 the largest number of consumers have indicated fresh milk "Produced in Bulgaria with the marking BGN 3.39" (45.7%);
- № 2 consumers choose fresh milk "Produced in the EU with the marking BGN 3.99" (28.5%);
- № 3 fresh milk "Farm milk without a marking, but with the manufacturer's guarantee BGN 3.19" (27.8%);
- № 4 fresh milk "Certified under a private standard BGN 4.29 (27.2%)“.

Table 2. Price range of four types of fresh organic milk – online respondents (sample A)

Range	(%) Responses	Choice №1	Choice №2	Choice №3	Choice №4
Made in Bulgaria with the marking BGN 3.39		45.7%	25.2%	13.2%	6.0%
Made in the EU with the marking BGN 3.99		7.9%	28.5%	19.9%	21.9%
Certified under a private standard BGN 4.29		13.9%	19.2%	12.6%	27.2%
Farm milk without a marking but with the producer’s guarantee BGN 3.19		33.1%	11.9%	27.8%	7.9%

The method of Gabor and Garner has been used for the scale measurement in the questionnaire in sample B. “In accordance with this method, there are two reasons why consumers will not purchase a specific product: to decide that the product is suspiciously cheap or to believe that the product is unreasonably expensive” [12].

This method has been used owing to the assumption that for the non-consumers of organic foods, the main obstacle is the price which is the core component in the concept of a product value.

The selected test product is yoghurt with a fixed weight and a price (see Table 3). The choice of this product has been based on the possible options for the consumers, including the option for homemade yoghurt and, on the other hand, it is an integral part of the menu of Bulgarians.

When asking consumers personally the following questions: What would you think if the price of 400 of organic yoghurt is BGN 2.15, as the responses can be classified in the following way:

Less than one third of the personally interviewed consumers would buy the yoghurt at this regular price (29.3%).

The reasons are that they think there is no point in buying organic yoghurt when there is a conventional equivalent (22.7%) and they make their own yoghurt (20.4%). In order to find out which the most frequently purchased organic foods are, we address the question to the online respondents (see Table 4). The most purchased organic food categories are dairy products including - cheese, milk, yellow cheese, butter (17.6%), followed by cereals - flour, oatmeal, spaghetti, bread (16.8%) and the third most frequently purchased foods are desserts - chocolate, raw bars, candies (11.1%).

When looking for a relationship between the consumption of different categories of food between the genders, we use the Mann-Whitney coefficient (see Table 5).

It has been established that there is a statistically significant difference between the level of organic food consumption between genders in certain food categories.

Baby food is most often bought by women, as well as eggs, and drinks are most often purchased by men.

Table 3. Price sensitivity among personally interviewed consumers (sample B)

Opinion	Absolute frequency	Relative frequency (%)
I would find somewhere else to buy organic yoghurt.	25	11.1
I would buy conventional yoghurt.	51	22.7
I make my own yoghurt.	46	20.4
I would buy it.	66	29.3
I would find another brand of yoghurt.	37	16.4
Overall	225	100

Table 4. Foods most frequently purchased by online respondents (sample A)

Categories	Opinion		% Cases
	Absolute frequency	Relative frequency (%)	
Dairy products	71	17.6	47.7
Cereal	68	16.8	45.6
Desserts	45	11.1	30.2
Snacks	40	10	26.8
Baby's food	36	8.7	23.5
Honey	35	8.7	21.5
Eggs	24	5.9	16.1
Meat	16	4.0	10.7
Spices	15	3.7	10.1
Drinks	15	3.7	7.4
Canned	8	2.0	5.4
Wine	3	0.7	2.0
Overall	404	100	271.1

Note: respondents were given the option of selecting more than one response

As can be seen from Table 5, the most frequently purchased organic foods by Bulgarian consumers are equivalents of conventional foods. This conclusion also overlaps with the results of a Greek study that "the least frequently purchased processed organic foods are also the least frequently purchased conventional foods" [14].

Table 6 shows the frequency of consumption of basic foods by online respondents. Desserts are most frequently purchased every day and dairy products and drinks are purchased 2-3 times a day.

Most often, consumers shop for the whole family (56.29%), shop for themselves (29%) and for the children as a priority (14.5%). A correlation analysis has revealed a moderate

positive relationship between the number of household members and the people for whom organic food is bought Spearman rho (151) = 0.309, as with 3- and 4- member families the most frequently given answer among online users is "I shop for the whole family".

There is a statistically significant relationship between the frequency of shopping and who something has been

Table 5. Comparison of the consumption of categories of foods between the genders among online respondents (sample A)

	Men Mean Rank	Women Mean Rank	Man-Witney U	p Asymp. Sig. (2-tailed)	r
Children's foods	67.21	79.28	1894.5	0.041	0.166
Drinks	83.23	73.30	1958.5	0.017	0.195
Eggs	67.37	79.22	2.092	0.036	0.17

Grouping Variable: gender

purchased for ($\chi^2 = 24.335$, $df=10$, $p < 0.01$, $n = 151$, Cramer's $V = 0.284$). Those who shop for themselves shop more rarely (63.25%), those who shop for the children do so once a week (24.1%), and for the whole family (59.3%).

There is a statistically significant relationship between the gender and for whom organic food is bought ($\chi^2 = 19.836$, $df = 2$, $p < 0.01$, $n = 151$, Cramer's $V = 0.362$). Most often, women shop for the whole family (64.5%), for children (16.4%), and men shop for themselves (34.1%).

Table 6. Frequency of the consumption of the main types of food by online respondents

Every day	2-3 times a week	Once a week	2-3 times a month	Once a month	More rarely
Desserts	Dairy products	Eggs	Snacks	Spices	Other
x	Desserts	Cereal	Canned food	x	x
x	Drinks	Honey	Wine	x	x
x	x	Children's foods	x	x	x
x	x	Meat	x	x	x

4 Discussion

In 2022, sales on the Bulgarian organic food market are estimated at around \$40 million, or 3.2% higher than in 2021 [14]. Based on the conducted survey, it has been established that the price is not the leading factor in the purchase of organic fresh milk by online respondents - proven users. In the other sample of potential consumers, less than a third (29.3%) would buy yogurt, as for them home production is an alternative to organic production (20.4%). The most frequently purchased biological processed products are dairy products - cheese, milk, yellow cheese, butter (17.6%), this conclusion is also confirmed by the report [14], citing distrust in the quality of conventional equivalents as the reason, despite the increased inflation.

Considering the time range (2018-2023) from conducting the survey to obtaining the latest data, we can confidently talk about a sustainable core of organic food consumers, mainly represented by women, who most often shop for the entire family, led by health-related motives.

It is also necessary in future research to take account the price premium between organic and the so-called conventional "plus" products that meet specific needs, such as "reduced pesticide," "no harmful additives," etc. [15].

5 Conclusion

In both samples A and B, we establish as the leading motive the maximization of the economic benefit in the use of the products (fresh milk and yogurt).

In sample A, through the comparative technique, it was established that the different attributes of the product, such as marking, origin, also influence the psychological benefit of using the fresh milk product.

The largest number of consumers have indicated fresh milk "Produced in Bulgaria with the marking BGN 3.39" (45.7%). The choice of fresh Bulgarian milk has a positive association with the attribute "green leaf" as a typical characteristic of organic foods ($\chi^2=10.483$, $df=4$, $p < 0.05$, $n = 151$, Cramer's $V = 0.263$).

There is a statistically significant relationship between the frequency of shopping and for whom something has been purchased for ($\chi^2=24.335$, $df=10$, $p < 0.01$, $n = 151$, Cramer's $V = 0.284$).

The factors influencing the purchase of organic products is further developed in the research [16]. Situational environmental factors (for whom the food is purchased) influence both attitude and intention to purchase organic food [16].

The method of Gabor and Garner has been used for the scale measurement in the questionnaire in sample B. "In accordance with this method, there are two reasons why consumers will not purchase a specific product: to decide that the product is suspiciously cheap or to believe that the product is unreasonably expensive".

Less than one third of the personally interviewed consumers (sample B) would buy the yoghurt at this regular price (29.3%). These results are a partly explained by the missing of children under age of 18 due to their social status of students.

The most frequently purchased organic foods by Bulgarian consumers are equivalents of conventional foods.

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References

1. J. Aschemann-Witzel, E. Aagaard, *Int. IJC* **38**, 500 (2014)
2. M. Kovacheva, *HST, S*, **203** (2019) [in Bulgarian]
3. J. Li, L. Zepeda, B. Gould, *J. Food Distr. Res.* **38**, 1 (2007)
4. N. Bencheva, T. Stoeva, E. Valcheva, M. Tepavicharova, *Acad. Publ. House, AU, Plovdiv, LX*, **19**, (2016) [in Bulgarian]
5. T. Hermaniuk, *Sci. Ann. Econ. Bus.* **63**, 135 (2016)
6. B. Yilmaz, B. Ilter., *Purc./ Int./ Econ.* **5**, 333 (2017)
7. C. Gianni, T. Guidice, R. Scarpa, *Br. Food J.* **104**, 200 (2002)
8. E. Tsakiridou, Ch. Boutsouki, Y. Zotos, *Int. J. Retail Distr. Manag.* **36**, 158 (2008)
9. L. Zepeda, D. Deal, *Int. J. Consum. Stud.* **33**, 697 (2009)
10. V. Owusu, M. Anifori, *AEASA Conf.*: pp. 9-10 (2010)
11. S. Zhelev, *Marketing research and marketing solutions, Trakia-M, Sofia* pp. 255-335, ISBN:954957458 (2000)
12. G. Petrescu, H. Ionica, M. Petrescu, *Foods* **6**, 1 (2017)
13. A. Krystallis, G. Chryssohoidis, *Br. Food J.* **107**, 320 (2005)
14. M. Boshnakova, Report Number: BU2023-0002 (2023)
15. M. Kovacheva, T. Pancheva, *Sci. Works of UFT* **65**, 162 (2018)
16. M. Kovacheva, D. Valeva, *HST, S*, 69 (2023)