



Julia Wojciechowska-Solis*

Uniwersytet Przyrodniczy w Lublinie

Zakład Agroturystyki i Rozwoju Obszarów Wiejskich

Andrzej Soroka**

Uniwersytet Przyrodniczo-Humanistyczny w Siedlcach

Instytut Nauk o Zdrowiu

CRITERIA FOR BUYING ORGANIC FOOD BY CONSUMERS FROM DIFFERENT REGIONS OF POLAND

Abstract

The main criterion for buying organic food by modern societies is caring for health and natural environment. The aim of the study was to determine the attitude towards organic food of residents from different regions of Poland, differentiated in terms of their wealth. The effort was made to determine the types, motives and barriers that influence consumers' choices when buying organic food.

A method of diagnostic survey with author's research tool in a form of survey questionnaire was used in the study. The sample consisted of 1,102 respondents. The Statistica 10.1 PL program was used for statistical analysis, including the analysis of discriminant function and χ^2 test.

It was shown that when choosing organic food, consumers paid attention to its nutritional and health properties. Fresh vegetables and their products, cow's milk and its products, honey and potatoes were the most often purchased products. The

* E-mail address: julia.wojciechowska@up.lublin.pl.

** E-mail address: wachmistrz_soroka@o2.pl.

main barrier for consumers when buying organic food was its high price, whereas the most important motive was the lack of harmful substances in such products. There were significant differences in calculated values between consumers from particular regions, especially in the case of barriers associated with the purchase of organic food.

Keywords: organic food, consumption, motives, barriers

JEL codes: Q13, M31

Introduction

The prevailing fashion for organic food has no confirmation in the amount of its consumption, which is still at a low level. Even in highly developed countries, such as Switzerland and Austria, the percentage of this type of food in total food sale exceeds only 5% (Wojciechowska-Solis, Soroka, 2017, p. 2041). Nevertheless, the organic market is an important and systematically growing segment of the market in some product categories (Oates, Cohen, Braun, 2012, p. 2782).

Among highly developed countries the sustainable production and consumption policies, which emphasize the significance of organic food, are becoming increasingly important in the context of public health and environmental protection (Reisch, Eberle, Lorek, 2013, p. 8, Smith, Paladino, 2010, p. 93).

Systematic growth of production and consumption of organic food in developed societies also influences developing countries, which treat such tendency as a chance to increase health protection of their citizens (Willer, Kilcher 2009, p. 18; Jakubowska, Radzyńska, 2010, p. 381). Consumers also perceive organic food as environmentally friendly element and production methods as an indicator of food safety and its better taste (Grolleau, Ibanez, Mzoughi, 2010).

Poland is a country which tries to get to the higher level of organic goods production and has ambition to enter the world organic food markets. So far, extensive studies on the motives and barriers that consumers face when buying organic products have not been conducted in Poland. These carried out studies concerned only the type of consumption of organic food. They were mainly focused on food consump-

tion identified with health and food safety (Ozimek, 2006, p. 15) as well as rational nutrition (Gutkowska, Ozimek, 2005, p. 20).

The authors have been carrying out systematic monitoring of organic food market since 2015 with regard to the motives and barriers that consumers face when buying organic products. Earlier studies conducted by Mazurek-Łopacińska and Sobacińska (2010) have showed that the high prices and poor distribution network are the most important barriers to the development of organic food market in Poland.

The aim of the study was to determine the attitude towards organic food of inhabitants of different regions of Poland, differentiated in terms of their wealth. There were established the criteria and intensity of purchases as well as the motives and barriers that consumers face when buying organic food. The applied wealth criterion was determined by W indicator, which defines the basic tax revenue per capita of a given voivodeship. This indicator is used to calculate the tax subsidy for 2016 (1. Portal Samorządowy, 2017).

1. Methods

The W indicator was used to select a research sample related to the selection of voivodeships, in which the study was conducted. It defined a size of the basic tax revenue per capita of a voivodeship used to calculate the 2016 compensatory subsidy. This was the basis for determining the wealth of inhabitants of a given voivodeship. The voivodeships, apart from Masovian Voivodeship (the highest indicator compared to the rest of voivodeships, that is why it was not taken into account in the study), were divided into three groups. The first group constituted voivodeships which were represented by W indicator of value from 170.00 to 110.00 points, and this was the Lower Silesian Voivodeship. The second group with the W indicator from 109.99 to 80.00 points was represented by the West Pomeranian Voivodeship and the third group from 79.99 and less points – by Lublin Voivodeship.

The total sample consisted of 1,102 respondents, who were selected in proportion to the percentage of the population residing in the studied voivodeship. In the case of Lublin Voivodeship, it was 26.80% of the respondents, the Lower Silesian Voivodeship – 37.80% and the West Pomeranian Voivodeship – 35.40%.

Such methodological procedures allowed calculating the sample size, in which the confidence level was set at 0.95, the estimated fraction size at 0.50, and the max-

imum error at 0.03. After considering sex and place of residence (village and town), the quota selection was applied on the basis of the respondents' availability.

A diagnostic survey method with author's research tool in the form of a questionnaire was used in the study. The questionnaire included eight questions, four of which were used in this paper and dealt with the barriers and motives for buying organic food, the type of products preferred, and the frequency of their consumption. Likert's five-point scale was used to measure the attitudes.

The Statistica 10.1 PL program and discriminative function analysis were used for statistical analysis. The classification function was used in the form of calculation of coefficients that were defined for each group. Prior to analysis, the multivariate normality was studied by examining each variable for normal distribution. Statistically significant were mean differences, where probability of incidence was less than $p < 0.05$. In order to investigate the relationship between two nominal variables, the Pearson's Chi-squared independence test (χ^2) was used, based on the comparison of the observed values with expected ones.

2. Research results

In the case of twelve proposed organic products, four of them were found in the discriminant function model; these are honey, fresh vegetables and their products, cow's milk and its products and potatoes. Inhabitants of Lublin and Lower Silesian Voivodeships declared the consumption of ecological honey at significantly higher level (at $p < 0.001$) than residents of West Pomeranian Voivodeship. Fresh vegetables and its products were significantly more frequently purchased (at $p = 0.029$) by inhabitants of the Lower Silesian Voivodeship than those of Lublin and West Pomeranian Voivodeships. When declaring purchases of cow's milk and its products and potatoes, there were no significant differences in the level of declared answers between respondents from three voivodeships, which were expressed by the size of classification function (table 1).

Table 1. Types of ecological products preferred by inhabitants of particular regions of Poland

Type of product	Discriminant Analysis Model			Classification function		
	Wilks's Lambda: 0.765; F=10.525			voivodeships		
	Wilks's Lambda	F value	P values	Lublin Region P=0.268	the Lower Silesian p=0.378	the West Pomeranian p=0.354
Honey	0.762	29.987	0.001*	1.251	1.290	0.867
Fresh vegetables and their products	0.742	3.568	0.029*	0.819	1.032	0.928
Cow's milk and its products	0.701	1.488	0.226	1.009	1.038	1.113
Potatoes	0.721	1.228	0.293	1.023	1.114	1.078
Constant				7.721	8.732	7.029

*the level of significant difference at $p < 0.050$

Source: own research.

Data in table 2 indicate that the respondents most frequently declared the consumption of organic products several times a month. Such statement was expressed by nearly half of the respondents (49.08%). Inhabitants of West Pomeranian and Lublin Voivodeships more likely appeared in this group than the residents of Lower Silesian Voivodeship. Inhabitants of Lower Silesian Voivodeship to a greater extent declared that their contact with organic food was more frequent than the residents of two other voivodeships. Their declaration on the consumption of organic food several times a week amounted to 20.71%, with 8.39% for the inhabitants of Lublin Voivodeship and 11.14% for West Pomeranian Voivodeship. In other studied cases, the percentages of responses were at marginal levels. A significant correlation was found between the type of statements that were related to the frequency of organic food consumption and respondents of particular voivodeships, where the chi-squared value was 71.232 at $p < 0.001$ (table 2).

Table 2. Frequency of consumption of ecological products by inhabitants of selected voivodeships

Type of answer	Lublin Region	Lower Silesia	West Pomerania	Total
Every day (%)	1.31	3.28	1.57	6.16
Several times a week (%)	8.39	20.71	11.14	40.24
Several times a month (%)	15.86	11.66	17.56	49.08
Several times a year (%)	1.18	2.23	4.98	8.99
Not buying (%)	0.13	0.0	0.0	0.13
Overall (%)	26.87	37.88	35.26	100.0
Chi-square test value				p<0.001

* the level of significant difference at $p<0.050$

Source: own research.

While choosing organic food, the respondents, to the greatest extent, were motivated by the lack of harmful substances in such food. Such declarations appeared definitely more often, at $p<0.001$, among the inhabitants of Lower Silesian and West Pomeranian Voivodeships than those of Lublin Voivodeship. The absence of harmful substances in organic food coincided with the declaration of eating organic food for health reasons. In this case, high values of the classification function in all three groups of the respondents did not show any significant differences. Within selected motives there were also important these related to the better taste of organic food than conventional one, the respondents' interest in new diets related to organic food and the care for the environment. These three motives were included in the created model, without showing any significant differences in values of the classification function between three groups of the respondents (table 3).

Table 3. Motives for selecting organic products by inhabitants of particular regions of Poland

Motives	Discriminant Analysis Model			Classification function		
	Wilks' Lambda: 0.721; F=4.329; p<0.001			voivodeships		
	Wilks' Lambda	F value	P values	Lublin Region P=0.268	the Lower Silesian p=0.378	the West Pomeranian p=0.354
Contains no harmful substances	0.721	10.229	0.001*	2.487	2.832	2.847
I am interested in new diets	0.791	2.458	0.087	0.778	0.879	0.719
I eat them for health reasons	0.701	2.167	0.116	1.123	1.238	1.067
I care for the environment	0.721	1.956	0.143	0.447	0.638	0.510
Such food is tastier	0.711	1.0501	0.345	0.789	0.661	0.711
Constant				10.787	12.256	11.729

* the level of significant difference at $p < 0.050$

Source: own research.

The high price of these products was the biggest barrier that had a negative impact on the purchase of organic food. Such declaration was more often expressed, at $p=0.006$, by the inhabitants of Lublin and West Pomeranian Voivodeships than by those of Lower Silesian Voivodeship. The classification function reached high values in the case of a barrier of the lack of confidence in this type of food. Such answer, to a significantly higher degree, at $p=0.042$, was given by the inhabitants of Lublin and West Pomeranian Voivodeships than those of Lower Silesia Voivodeship. The residents of West Pomeranian Voivodeship, to a significantly higher extent – at $p=0.028$ – than those of two other voivodeships, encountered difficulties in purchasing organic food due to the lack of specialized shops in their area of residence. The inhabitants of Lublin Voivodeship had a bigger problem, at $p=0.004$, than those of two other voivodeships, in the ability to distinguish organic food from conventional one (table 4).

Table 4. Barriers affecting the purchase of organic products by inhabitants of particular regions of Poland

Barriers	Discriminant Analysis Model			Classification function		
	Wilks' Lambda: 0.734; F=5.087; p<0.001			voivodeships		
	Wilks's Lambda	F value	P values	Lublin Region P=0.268	the Lower Silesian p=0.378	the West Pomeranianp=0.354
Too many problems with the purchase of such foods	0.771	7.275	0.001*	0.319	0.538	0.256
Organic food is too expensive	0.725	5.098	0.006*	2.189	1.913	2.003
I cannot distinguish organic from conventional food	0.703	5.418	0.004*	0.325	0.556	0.586
There are no organic foods in stores I do shopping	0.737	3.576	0.028*	0.932	0.992	0.772
I have no trust in organic food	0.718	3.189	0.042*	0.881	0.682	0.837
Constant				8.398	8.227	7.529

* the level of significant difference at $p < 0.050$

Source: own research.

Conclusion

The aim of the study was to determine the premises of purchases, as well as motives and barriers that consumers face when buying organic food. The wealth of the inhabitants of studied voivodeships was a criterion used in the study.

It was shown that the respondents most often declared the purchase of organic honey, potatoes, milk and its products, as well as fresh vegetables and their products.

The inhabitants of Lower Silesian Voivodeship showed significantly higher demand for the purchase of fresh vegetables and its products, as it might be related to their higher income than of the residents of West Pomeranian Voivodeship, and especially Lublin Voivodeship. These types of products, which are produced in ecological conditions, are expensive (Kapusta, 2015, p. 695). This is the reason

why they are more accessible to the inhabitants with higher income (Murray, Auld, Inglis-Widrick, Baker, 2015, p. 571). The socio-demographic factors are the key determinants of consumers' inclination to pay higher price for organic products. The hypothesis that in developed countries the vast majority of consumers of organic food are willing to pay higher prices for these products, due to attributes related to childhood sentiment and health, was confirmed (Zander, Hamm, 2010, p. 495).

In the case of vegetables, it was shown that their organic production is very common, which probably has an influence on their greater availability among the respondents, as it was expressed in the study (Hjelmar, 2011, p. 336; Gracia, Barreiro-Hurlé, Galán, 2014, p. 49).

In the model, there is a lack of organic products which are often consumed in conventional form, such as cereal products, fresh fruit and their products, pork and its products and eggs.

The higher wealth of the inhabitants of Lower Silesian Voivodeship can be observed in their declaration of consumption frequency of the products of ecological origin. Among the inhabitants of this voivodeship there was a higher percentage of those who consumed ecological products on a daily basis, although in general this dimension was at a very low level. Additionally, there was significantly higher percentage of these inhabitants who consumed organic products several times a week. Witczak and Sojkin (2010) in their studies found that over half of the respondents (54%) were willing to pay a higher price for organic than conventional products. These results were synonymous with those obtained by McGill, Fulgoni, Devareddy (2015) and Hjelmar (2011) on the respondents from Western Europe.

The main motive for the purchase of organic food, significantly intensified among the inhabitants of more prosperous voivodeships, was the lack of harmful substances in such food and its health values, which was particularly emphasized by the inhabitants of Lower Silesian Voivodeship. This was a confirmation of Łuczka-Bakuła's studies (2007), where the respondents emphasized that organic products should be healthy (86.4%), have high nutritional value (70.2%) and be safe for humans (78.6%). The respondents from Lower Silesian Voivodeship were also more interested in new diets related to organic food and in taking care of the environment (Infante-Amate, González de Molina, 2013, p. 27). Also the inhabitants of highly developed and more affluent countries appreciated the lack of harmful substances in the organic food, its nutritional values and the positive impact of such products

on health (Fotopoulos, Krystallis, 2002, p. 730; Williams, Hammitt, 2001, p. 320). Additionally, it was emphasized that such food must not have genetically modified compounds (Teng, Lu, 2016, p. 96). A better taste of such products was also an important aspect (Kiviniemi, Rothman, 2006, p. 247).

As a basic barrier for buying organic food, the respondents considered the high purchase price, which was mostly emphasized by the inhabitants of the least affluent region, Lublin Voivodeship. A similar statement had residents of distant Shanghai, for whom the high price of healthy food, so popular in this region of the world, is the biggest barrier (Hasimu, Marchesini, Canavari, 2017, p. 191). Especially, the inhabitants of Lower Silesian and Lublin Voivodeships raised the problem of the lack of organic food in stores in which they do their shopping. The residents of less affluent voivodeships, Lublin and Lower Silesian, showed less trust in organic food than the inhabitants of Lower Silesian Voivodeship.

References

1. Portal Samorządowy. Wskaźniki dochodów podatkowych dla gmin, powiatów i województw na 2016. Retrieved from: www.portalsamorzadowy.pl. (15.01.2017).
- Fotopoulos, C., Krystallis, A. (2002). Purchasing motives and profile of the Greek organic consumer: A countrywide survey. *British Food Journal*, 104 (9), 730–764.
- Gracia, A., Barreiro-Hurlé, J., Galán, B.L. (2014). Are local and organic claims complements or substitutes? A consumer preferences study for eggs. *Journal of Agricultural Economics*, 65 (1), 49–67.
- Grolleau, G., Ibanez, L., Mzoughi, N. (2010). Eco-labelling schemes faced with selfish or altruistic consumer motivations and with the public or private nature of environmental attributes. *INRA Sciences Sociales*, 4. Retrieved from: <http://ageconsearch.umn.edu/handle/150550/> (17.03.2017).
- Gutkowska, K., Ozimek, I. (2005). *Zachowania konsumentów na rynku żywności – kryteria zróżnicowania*. Warszawa: Wydawnictwo SGGW.
- Hasimu, H., Marchesini, S., Canavari, M. (2017). A concept mapping study on organic food consumers in Shanghai, China. *Appetite*, 108, 191–202.
- Hjelmar, U. (2011). Consumers' purchase of organic food products. A matter of convenience and reflexive practices. *Appetite*, 56 (2), 336–344.

- Infante-Amate, J., González de Molina, M. (2013). Sustainable de-growth' in agriculture and food: an agro-ecological perspective on Spain's agri-food system (year 2000), *Journal of Cleaner Production*, 38, 27–35.
- Jakubowska, D., Radzyńska, M. (2010). Polish consumer attitudes and behavior towards meat safety risk. *Polish Journal of Food and Nutrition*, 60 (4), 381–385.
- Kapusta, F. (2015). Bezpieczeństwo żywnościowe jako indyktor zrównoważonego spożycia. *Journal of Agribusiness and Rural Development*, 4 (38), 695–703.
- Kiviniemi, M.T., Rothman, A.J. (2006). Selective memory biases in individuals' memory for health-related information and behaviour recommendations. *Psychology and Health*, 21 (2), 247–272.
- Łuczka-Bakuła, W. (2007). *Rynek żywności ekologicznej. Wyznaczniki i uwarunkowania rozwoju*. Warszawa: PWE.
- Mazurek-Łopacińska, K., Sobocińska, M. (2010). Ekologizacja konsumpcji i wynikające z niej konsekwencje dla zarządzania produktem. *Zeszyty Naukowe Uniwersytetu Ekonomicznego w Poznaniu*, 153, 109–118.
- McGill, C.R., Fulgoni, V.L., Devareddy, L. (2015). Ten-Year Trends in Fiber and Whole Grain Intakes and Food Sources for the United States Population: National Health and Nutrition Examination Survey 2001–2010. *Nutrients*, 7 (2), 1119–1130.
- Murray, E.K., Auld, G., Inglis-Widrick, R., Baker, S. (2015). Nutrition Content in a National Nutrition Education Program for Low-Income Adults: Content Analysis and Comparison With the 2010 Dietary Guidelines for Americans. *Journal of Nutrition Education and Behavior*, 47 (6), 566–573.
- Oates, L., Cohen, M., Braun, L. (2012). Characteristics and consumption patterns of Australian organic consumers. *Journal of the Science of Food and Agriculture*, 92, 2782–2787.
- Ozimek, I. (2006). *Bezpieczeństwo żywności w aspekcie ochrony konsumenta w Polsce, Rozprawy Naukowe i Monografie*. Warszawa: Wydawnictwo SGGW.
- Reisch, L., Eberle, U., Lorek, S. (2013). Sustainable food consumption: an overview of contemporary issues and policies. *Sustainability: Science, Practice & Policy*, 9 (2), 7–25.
- Smith, S., Paladino, A. (2010). Eating clean and green? Investigating consumer motivations towards the purchase of organic food. *Australasian Marketing Journal*, 18 (2), 93–104.
- Teng, Ch.-Ch., Lu, Ch.-H. (2016). Organic food consumption in Taiwan: Motives, involvement, and purchase intention under the moderating role of uncertainty. *Appetite*, 15, 95–105.
- Willer, H., Kilcher, L. (2009). *The Word of organic agriculture – Statistics and emerging trends*. Bonn: IFOAM.

- Williams, P.R., Hammitt, J.K. (2001). Perceived risks of conventional and organic produce: pesticides, pathogens, and natural toxins. *Risk Analysis*, 21 (2), 319–330.
- Witczak, J., Sojkin, B. (2010). *Konsument żywności ekologicznej w dużym mieście*. In: A. Graczyk, K. Mazurek-Łopacinska (eds) (pp. 156–168), *Badanie rozwoju rynków produktów rolnictwa ekologicznego i żywności ekologicznej w Polsce*. Wrocław: Wrocław University of Economics Press.
- Wojciechowska-Solis, J., Soroka, A. (2017). Motives and barriers of organic food demand among Polish consumers: A profile of the purchasers. *British Food Journal*, 119 (9), 2040–2048.
- Zander, K., Hamm, U. (2010). Consumer preferences for additional ethical attributes of organic food. *Food Quality and Preference*, 21, 495–503.

KRYTERIA ZAKUPU ŻYWNOŚCI EKOLOGICZNEJ PRZEZ KONSUMENTÓW Z POSZCZEGÓLNYCH REGIONÓW POLSKI

Abstrakt

Głównym kryterium zakupu żywności ekologicznej wśród współczesnego społeczeństwa jest dbałość o zdrowie i troska o środowisko naturalne. Celem pracy było określenie stosunku do żywności ekologicznej mieszkańców poszczególnych regionów Polski, zróżnicowanych pod względem zamożności. Starano się określić rodzaje, motywy i bariery, które mają wpływ na konsumentów przy zakupie żywności ekologicznej.

W badaniach zastosowano metodę sondażu diagnostycznego, z autorskim narzędziem badawczym w postaci kwestionariusza ankiety. Próba badawcza stanowiła 1 102 ankietowanych. Przy analizach statystycznych wykorzystano program Statistica 10.1 PL, a w nim analizę funkcji dyskryminacyjnej i test χ^2 .

Wykazano, iż przy wyborze żywności ekologicznej konsumenci sugerują się jej walorami odżywczymi i względami zdrowotnymi. Najczęściej kupowanymi produktami były warzywa świeże i ich przetwory, mleko krowie i jego przetwory oraz miód i ziemniaki. Główną barierą wśród konsumentów przy zakupie żywności ekologicznej była jej wysoka cena, natomiast najważniejszym motywem – brak w takich produktach substancji szkodliwych dla zdrowia. Pomiędzy konsumentami z poszczególnych regionów, zwłaszcza przy barierach związanych z zakupem takiej żywności, wystąpiły istotne różnice w wyliczonych wartościach.

Słowa kluczowe: żywność ekologiczna, konsumpcja, motywy, bariery