

Julia Wojciechowska-Solis

Uniwersytet Przyrodniczy w Lublinie
e-mail: julia.wojciechowska@up.lublin.pl

Andrzej Soroka

Uniwersytet Przyrodniczo-Humanistyczny w Siedlcach
e-mail: soroka_wachmistrz@o2.pl

THE ATTITUDE OF POLISH CONSUMERS TO ORGANIC FOOD

STOSUNEK POLSKICH KONSUMENTÓW DO ŻYWNOŚCI EKOLOGICZNEJ

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Summary: The aim of the study was to determine the requirements for organic food expected by Polish consumers. A method of diagnostic survey was used in the study with the author's research tool in the form of a survey questionnaire. The sample consisted of 1102 respondents. The Statistica 10.1 PL program was used for statistical analysis, including the analysis of discriminant function. The production of organic food should take place naturally without harmful substances. In Poland, the organic production has the potential to produce high protein and micronutrient products as well as of a reduced toxin contamination. The main places to purchase organic food were discount stores and those specializing in selling organic food as well as organic farms. It was emphasized that the respondents placed great importance on the accreditation of the product certification body on food packaging as well as on labeling these products as produced in ecological conditions. Currently the organic food market is considered to be a niche, but its importance is steadily increasing.

Keywords: organic food, consumption, niche market.

Summary: Celem badania było określenie wymogów stawianych żywności ekologicznej przez polskich konsumentów. W badaniu zastosowano metodę sondażu diagnostycznego z autorskim narzędziem w postaci kwestionariusza ankiety. Próba badawcza stanowiła 1102 ankietowanych. Podczas analiz statystycznych wykorzystano program Statistica 10.1 PL, w tym analizę funkcji dyskryminacyjnej. Produkcja żywności ekologicznej powinna odbywać się w sposób naturalny, bez substancji szkodliwych dla zdrowia. W Polsce produkcja ekologiczna ma potencjał w postaci wytwarzania produktów o wysokiej zawartości białka i mikroelementów oraz zmniejszonego zanieczyszczenia toksynami. W największym stopniu miejscem zakupu żywności ekologicznej były sklepy dyskontowe i specjalizujące się w sprzedaży żywności ekologicznej oraz gospodarstwa ekologiczne. Podkreślano znaczenie podania na opakowaniu takiej żywności nazwy jednostki certyfikującej produkt, a także oznakowania, że jest to

produkt wyprodukowany w warunkach ekologicznych. Obecnie rynek żywności ekologicznej jest uważany za niszowy, jednak jego znaczenie systematycznie się zwiększa.

Słowa kluczowe: żywność ekologiczna, konsumpcja, rynek niszowy.

1. Introduction

Trade in organic products is a significant and steadily growing segment of the market. In some product categories, organic food is an important growth area for the economies of individual countries, especially those with a high level of development [Oates et al. 2012]. Among these countries, sustainable production and consumption policies where organic food plays a significant role are becoming more and more important in the context of the protection of public health [Reisch et al. 2013; Smith, Paladino 2010].

Organic food is perceived by consumers as an environmentally friendly element, and the applied production methods as an important indicator in its protection [Grolleau et al. 2010; Smith, Paladino 2010]. While adopting their consumption pattern, consumers are mostly motivated by health, environmental protection and food security issues on a national and global scale [Nie, Zepeda 2011]. This is a phenomenon perceived through the prism of the negative impact of climate change on agriculture and natural resources, and the availability of production factors as well as the importance of processing food products [Ingram, Ericksen, Liverman 2010]. The latter issue is important due to its negative impact on the health of society [Phungpracha, Kansuntisukmongkon, Panya 2016].

Over the last two decades studies have been conducted on the type of consumption of organic food. Their aim was to determine the motives of purchasing organic products [Hwang 2016; Radzymińska et al. 2007]. The studies focused on the attitudes and behaviors of consumers regarding the purchase and consumption of organic food in highly developed countries, while ignoring developing countries [Zagata 2012; Yadav, Pathak 2016].

In Poland the conducted studies on organic food, especially these focused on the type of food consumed, pointed to its identification with health and food safety [Ozimek 2006] as well as rational nutrition [Gutkowska, Ozimek 2005].

The aim of the study was to determine the requirements to be met by organic food. The attempt was made to determine the factors that Polish consumers take into consideration while buying organic products. Additionally, the study aimed at defining ways of distinguishing organic from conventional food and identifying places where organic food can be purchased.

2. Methods

The “W” indicator was used to select a research sample. It defines the size of the basic tax revenue per capita of a voivodship, used to calculate the 2016 compensatory subsidy. This was the basis for dividing voivodships according to the wealth of their inhabitants. The Masovian (Mazowieckie) Voivodeship was excluded from the study due to the fact that its *W* indicator is many times higher compared to the rest of the voivodships. The other voivodships were divided into three groups.

The first group constituted voivodships which were represented by *W* indicator of a value from 170,00 to 110,00 points, and this was the Lower Silesian (Dolnośląskie) Voivodeship. In the second group with the *W* indicator from 109,99 to 80,00 there was the West Pomeranian (Zachodniopomorskie) Voivodeship and the third group from 79,99 and less points was represented by the Lublin Voivodeship.

The total sample consisted of 1102 respondents who were selected in proportion to the percentage of the population residing in the studied voivodship. In the case of the Lublin Voivodeship this was 26.80% of 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 maximum error at 0.03. After considering the gender and place of residence (village or town), the quota selection was applied on the basis of the respondents' availability.

A diagnostic survey method with the 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 the calculation of coefficients that were defined for each group. Prior to analysis, a multivariate normality was studied by examining each variable for normal distribution. Statistically significant were mean differences, where probability of incidence was less than $p < 0.05$.

3. Study results

The main requirements for organic food are its production in natural and ecological conditions as well as no chemical contamination. In the case of the second factor the values of classification function were the highest in the declarations of the inhabitants of all the surveyed voivodships, respectively: the Zachodniopomorskie Voivodeship 1.456, the Dolnośląskie Voivodeship 1.348 and the Lublin Voivodeship 1.278. Simi-

lar requirements were for organic food, which according to the respondents should not be harmful to one's health. Also in this case the opinions of the inhabitants of the three voivodships surveyed gained high values of classification function.

The greatest differences between the declarations of the inhabitants of particular voivodeships related to the traditional appearance of organic food. Such demands were made to the highest degree, at $p < 0.001$, by the inhabitants of the Zachodniopomorskie Voivodeship (0.785), whereas to the lowest degree by residents of the Lublin Voivodeship (0.422).

Also important differences, at $p = 0.003$, were found in declarations on low-processed food. As in the previous case, the highest requirements were shown by the inhabitants of the Zachodniopomorskie Voivodeship (0.680), while the lowest in the Lublin Voivodeship (0.368). Respondents from all the voivodships surveyed paid great attention to the taste values of organic products and the richness of their nutrients. Considerable attention was paid to the low content of salt and sugar in organic products as well as the packaging which should be friendly to the environment (Table 1).

Table 1. Requirements for organic food imposed by Polish consumers

Type of requirements	Wilks' lambda: 0.673 F = 7,193, $p < 0,001$ *			Classification function Respondents' age		
	Wilks' lambda	F value	P level	Lublin $P = 0.268$	the Lower Silesian $p = 0.378$	the West Pomeranian $p = 0.354$
With traditional appearance	0.653	7.899	0.001*	0.422	0.590	0.785
Slightly processed	0.672	5.784	0.003*	0.368	0.661	0.680
Rich in nutrients	0.601	1.336	0.263	0.911	0.952	0.803
Of high taste values	0.702	2.360	0.098	0.902	0.708	0.715
Harmless to health	0.678	1.389	0.251	1.142	1.109	0.989
Produced in a natural way	0.645	1.189	0.302	1.278	1.348	1.456
Containing little sugar	0.721	1.678	0.187	0.887	0.698	0.771
Containing little salt	0.672	1.239	0.290	0.660	0.777	0.625
Environmentally friendly packaging	0.629	2.526	0.080	0.861	0.714	0.806
Constant				14.266	14.398	15.021

* Significant difference at $p < 0.050$.

Source: own research.

When purchasing organic food, respondents paid less attention to the expiry date and ingredient list of a given product, as these declarations were not included in a discriminant function model. On the other hand, greatest attention was paid to the labeling of products. Such declarations to the highest degree ($p < 0.001$) concerned the inhabitants of the Zachodniopomorskie Voivodeship (1.681) and the Dolnośląskie Voivodeship (1.557), while they appeared to a lesser degree in the Lublin Voivodeship (1.302).

Significant differences also appeared in the case of the country and region of the origin of organic produce. Considering the first factor, such declarations most often were made at $p = 0.049$ by inhabitants of the Dolnośląskie (0.892) and the Lublin (0.792) Voivodeships, while to a lesser degree by inhabitants of the Zachodniopomorskie Voivodeship (0.604).

The second factor was found to be the most significant at $p = 0.033$ for inhabitants of the Lublin Voivodeship (0.464), and less important for the Dolnośląskie (0.183) and the Zachodniopomorskie Voivodeships (0.200).

Additionally, in the created model there was a factor associated with the producer of the food product. In this case, the high values of classification function were similar in all groups of respondents (Table 2).

Table 2. The factors that mostly attract customers when buying organic products

Types of factors	Wilks' lambda: 0,552 F = 6.156, $p < 0.001^*$			Classification function Respondents' age		
	Wilks' lambda	F value	P level	Lublin $P = 0.268$	the Lower Silesian $p = 0.378$	the West Pomeranian $p = 0.354$
Labeling	0.559	9.645	0.001*	1.302	1.557	1.681
Country of origin	0.5.87	2.678	0.049*	0.792	0.892	0.604
Region of origin	0.603	3.420	0.033*	0.464	0.183	0.200
Producer	0.589	1.650	1.650	0.852	0.971	0.854
Constant				6.657	6.711	6.529

* Significant difference at $p < 0.050$.

Source: own research.

The main suggestion that influenced the choice of organic produce rather than conventional one was the lack of harmful substances in such type of food. This element to the highest degree at $p < 0.001$ was noticed by respondents from the Zachodniopomorskie Voivodeship (2.847) and the Dolnośląskie Voivodeship (2.833), while to a lesser degree in the Lublin Voivodeship (2.496).

Additionally, high values of classification function were achieved in the case of consuming organic products due to their health properties. Such a declaration was expressed at similar level by inhabitants of all three voivodships. Similar proportions also occurred while using different diets by respondents.

The important suggestions of respondents of all voivodships surveyed while choosing organic food were the care for environment and declaration of better taste of organic food than conventional food (Table 3).

Table 3. Suggestions related to the choice of organic product

Types of factors	Wilks' lambda: 0.657 F = 9.323, $p < 0.001^*$			Classification function Respondents' age		
	Wilks' lambda	F value	P level	Lublin $P = 0.268$	the Lower Silesia $p =$ 0.378	the West Pomeranian $p =$ 0.354
No harmful substances	0.643	10.227	0.001*	2.496	2.833	2.847
Interest in different kinds of diet	0.676	2.486	0.087	0.778	0.874	0.715
Consumption for health reasons	0.603	2.168	0.116	1.122	1,232	1.060
Care for natural environment	0.672	1.947	0.143	0.534	0.534	0.619
Better taste of organic food than conventional food	0.671	1.056	0.356	0.660	0.660	0.715
Constant				10.78	12.25	11.72

* Significant difference at $p < 0.050$.

Source: own research.

In the opinion of the respondents, the best way to distinguish organic food from conventional food is its purchase in stores or stands offering organic products. Such opinions to the highest degree ($p = 0.016$) were provided by inhabitants of the Dolnośląskie (1.976), while to a lesser degree in the Zachodniopomorskie (1.767) and the Lublin (1.781) Voivodeships.

The high value of classification function has been achieved in the case of a factor that related to the producer's assurance of the ecological origin of the product. The greatest trust in producers of organic food was declared by inhabitants of the Zachodnio-Pomorskie Voivodship (1.261) and the Dolnośląskie Voivodship (1.175), while smaller by residents of the Lublin Voivodship (1.042). The difference was significant at $p = 0.044$.

Additionally, in a model of discriminatory function there was a factor of trust in sellers to provide organic products of ecological origin. To the highest degree this trust was expressed by inhabitants of the West Pomeranian Voivodship (0.919), to

a lesser degree in the Lower Silesian Voivodship (0.767), and to the least in Lublin Voivodship (0.892) (Table 4).

Table 4. A method for distinguishing organic food from conventional food

Methods for distinguishing	Wilks' lambda: 0.734 $F = 7.673, p < 0.001^*$			Classification function Respondents' age		
	Wilks' lambda	F value	P level	Lublin $P = 0.268$	the Lower Silesia $p = 0.378$	the West Pomeranian $p = 0.354$
Producer's assurance of ecological origin of the organic product	0.722	3.131	0.044*	1,042	1.175	1.261
Buying at stores offering organic food	0.712	4.147	0.016*	1.767	1.976	1.781
Seller's assurance of ecological origin of the organic product	0.745	2.930	0.049*	0.892	0.767	0.919
Constant				7.198	7.624	7.730

* Significant difference at $p < 0.050$.

Source: own research

The organic food was most often purchased on farms that were geared towards natural production. Such an attitude was the most common at $p = 0.007$ among inhabitants of the Dolnośląskie (1.610) and the Lublin (1,527) Voivodships, and to a lesser extent among inhabitants of the Zachodniopomorskie Voivodship (1.411). Purchases at marketplaces were made most often at $p = 0.007$ by respondents from the Lublin (1.496) and the Dolnośląskie (1.484) Voivodships, to a lesser extent by inhabitants of the Zachodniopomorskie Voivodship (1.270).

Table 5. The place of purchase of organic products by respondents

Place of purchase of organic products	Wilks' lambda: 0.639 $F = 11.689, p < 0.001^*$			Classification function Respondents' age		
	Wilks' lambda	F value	P level	Lublin $P = 0.268$	the Lower Silesia $p = 0.378$	the West Pomeranian $p = 0.354$
In a hypermarket	0.639	9.754	0.001*	0.666	0.784	0.979
In discount shops	0.630	4.696	0.009*	1.496	1.484	1.270
In shops specializing in organic food	0.609	4.867	0.007*	1.527	1.610	1.411
Constant				8.992	9.341	8.302

* Significant difference at $p < 0.050$.

Source: own research.

Hypermarkets which were also treated as places for purchasing organic products were also included in the created model of discriminatory function. Such a declaration was most often expressed by inhabitants of the Zachodnio-Pomorskie Voivodship (0.979), to a lesser extent by those of the Dolnośląskie (0.784) and the Lublin (0.666) Voivodships. The differences were significant at $p < 0.001$ (Table 5).

4. Discussion

The aim of the study, which was to define the requirements organic food should meet, showed that the production of such food ought to be run in a natural way, without harmful substances. These factors were very important for consumers in the United States and Canada [Larue et al. 2004]. The focus of organic food on health was also related to the requirements that pointed to the lack of sugar and salt in such products. An important feature of organic products was that they are rich in nutrients and that they show a small degree of processing. The studies in which the population surveyed comes from highly developed countries, put emphasis on the care of health and appreciation of the greater nutritional values of organic products [Baker, Thompson, Engelken 2004; Hamzaoui, Zahaf 2006; Padel, Foster 2005; McGill, Fulgoni et al. 2015].

Positive health-oriented attitudes were strongly correlated with the frequency of purchases of organic products [Padel, Foster 2005; Torjusen et al. 2001]. It was pointed out that ecological production has the potential to produce high-quality protein products with high levels of micronutrients and at the same time with reduced toxin contamination. It was emphasized that organic products should be less processed and without preservatives, even at the expense of a shorter date of consumption [Koudelka 2013].

The aesthetic values of organic food are its traditional appearance, its environmentally friendly packaging and high taste values [Kiviniemi, Rothman 2006], which was particularly emphasized by Canadian and Australian consumers [Fotopoulos, Krystallis 2002]. An important element of organic food was also its freshness [Zanoli, Naspetti 2002]. Attention was paid to the need for the visible labeling of organic products, which was emphasized in earlier studies [Mamouni et al. 2016]. Polish consumers recommended paying close attention to the countries and regions from which organic products and their producers originated.

An important suggestion when buying organic products was the care for the environment. Similarly, respondents from developed countries such as Belgium, Sweden, Denmark, Australia, France, Canada and the United States emphasized the fact that organic food is produced on farms that specialize in environmentally friendly organic farming [Fotopoulos, Krystallis 2002; Larue et al. 2004]. An important criterion for the purchase of organic food was also the awareness of environmental protection and taking care of the welfare of animals [Zanoli, Naspetti 2002].

While distinguishing between organic and conventional food, respondents most often suggested buying such food in stores and stands offering organic food, as well as the producers and sellers' assurance of the ecological origin of their products. The respondents indicated such places of purchase of organic food as ecological farms and marketplaces, which was also confirmed by earlier studies [Loureiro, Hine 2002]. Additionally, however to a lesser extent, the respondents pointed to hypermarkets as a place of purchase of organic food as well as discount stores, which to a small extent sell organic products.

In Poland, farms with an organic profile and stores specializing in selling organic products are still, as demonstrated in studies by Stefańska [2005], the preferred places to buy organic food. Residents of larger towns make their purchases of organic products in hypermarkets, due to their convenient location [Hjelmar 2011].

Nowadays, the organic food market is considered a niche market. However, its importance is steadily growing [Robinson et al. 2002; Ligenzowska 2014], which will undoubtedly have an impact on the health of society.

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