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# CONSUMERS ON ORGANIC FOOD MARKET – FACTORS DETERMINING THE CHOICE OF DAIRY PRODUCTS

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**ABSTRACT**

The aim of the publication is to identify and evaluate the factors determining the choice of organic food products, establish links between them and decide which factors determining consumer choices on the dairy products market are the main. The analyses were based on the results of a survey conducted in 2016 on a group of 358 students. In the selection process, targeted selection methods were used. The study was carried out using the CAWI and the PAPI methods. The study uses methods of statistical analysis, including a comparative analysis of the behaviour of buyers and non-buyers of organic products and factor analysis to detect internal interdependencies between factors shaping purchasing decisions of buyers. Based on the analysis, it can be concluded that the most important factors taken into consideration when choosing organic food on the dairy market are related to the characteristics of the products. According to the surveyed buyers, an organic product is a product with a specific composition, fresh and without preservatives. The remaining factors are marketing communication, sales activation and "guarantee" of quality and healthiness of products in the form of certificates, markings and product brands.

**Key words:** organic food, product selection, dairy products
**JEL codes:** D12, M30

## INTRODUCTION

The development of the human population, economic growth and progress of civilisation are nowadays connected with excessive and at the same time increasing consumption of various goods and services, many times not justified by actual needs, which generates a wide range of often incremental and negative consequences both in the individual or social but also ecological sphere [Wasilik 2014]. Their reduction or elimination often requires verifying and reorienting the purchasing behaviour towards green consumption. Consumption of organic food fits in this trend.

Organic food is a category of food products produced by means of ecological farming (organic, biological, biodynamic), that is, an ecologically, economically and socially sustainable management system based solely on natural production methods. Through the stimulation of natural production mechanisms it creates conditions for nurturing, enhancing prolificacy and improving fertility of soil, contributes to ensuring the healthiness of plant and animal organisms and makes it possible to obtain high quality agricultural products. The credo of this type of farming is giving up the use of agricultural chemicals for the sake of biological, mechanical or agrotechnical treatment [Sołtysiak 1995, Pilarczyk and Nestorowicz 2010, Bujanowicz-Haraś 2011].

The quintessence of organic farming is unquestionably delivering a peculiar type of product. Eco-food is a type of food produced by organic methods respecting strict rules, meeting specific criteria described in detail by respective regulations, subject to the

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procedure of control, certification and proper marking, which affects the development of its identity, increases identifiability and recognisability by present and also potential buyers, and guarantees the optimum quality [Żakowska-Biemans and Gutkowska 2003].

In the process of selecting a food product a special role is assigned to characteristics associated with the product and the perception of such characteristics. The characteristics attributed to an organic food product testify to its peculiarity. They can be defined as private good values and public good values. The first category comprises values also referred to as use values that are distinguished by projection connected with perception of the characteristics of eco-foods such as taste, freshness or healthiness dictated by the needs and expectations of buyers and their families. In turn, public good values include protection of the natural environment, also in the light of relations between the environment and the used methods of agricultural production, and animal welfare [Łuczka-Bakuła 2007]. The attractiveness of food is determined by characteristics building its sensory quality such as taste, aroma, and appearance. Its value is also determined by the presence of nutrients necessary to ensure correct functioning of the body (including carbohydrates, proteins, fats or vitamins), that is, so-called nutritional value of food. An attribute of food products is their healthiness, most often associated with their physical or chemical purity (occurrence of contaminants, i.e. for instance residues of chemical pesticides, heavy metals, pharmacological substances, namely hormones, antibiotics) and microbiological purity (specific microflora) [Szołtysek 2004, Czernyszewicz 2009]. Products from organic sources, in comparison to those produced by conventional methods, are generally characterized by lower content of nitrates, nitrites and residues of pesticides, but they show increased levels of minerals, vitamins (and in particular vitamin C), dry mass or carbohydrates etc. [Bourn and Prescott 2002, Rembiałkowska 2002, Crinnion 2010, Lairon 2010, Winter 2012]. The indicated attributes of organic food to an essential degree determine the purchasing decisions of buyers of such food [Padel and Foster 2005, Żakowska-Biemans 2011, Wojciechowska-Solis and Soroka 2016]. As emphasized by Pilarczyk and Nestorowicz [2010], an organic product is not only a marginal good but it carries a specific idea, that is, environmental protection with simultaneous care about consumers' health. It must be mentioned that for the eco-products purchasing process there are also other significant factors that matter, such as product price, the place where one can buy the product and insufficient knowledge of the rules of eco-food production and marking [Żakowska-Biemans 2011, Ozguven 2012, Bryła 2015].

Organic products are more and more often noticed and they are more eagerly purchased. They constitute an alternative to those produced by conventional methods. The development of the organic products market has been relatively dynamic but it is still a niche market and changes occurring there are determined both by the supply of organic food products and the preferences and behaviours of consumers. The observed value of eco-food sales has been continuously increasing. According to Organic Monitor, in 2000–2015 it increased more than four times on a global scale (356%), and in 2015 it reached EUR 75.7 billion. At the same time, the European market of organic products was characterised by 325.7% growth in sales (by EUR 22.8 billion). In 2015 the value of sales amounted to EUR 29.8 billion. In turn, in the territory of the European Union sales in 2000–2015 went up by 316.9%, i.e. EUR 20.6 billion (2015 – EUR 27.1 billion). In Poland sales of organic food in 2015 oscillated around EUR 167 million [Domańska et al. 2015, Willer and Lernoud 2017].

Available literature most frequently contains studies regarding the analysis of organic product choices on the food market, that mainly focus on the qualitative aspects of the product. Therefore, the authors attempted to extend the analysis by aspects related to sales promotion.

The aim of this paper is to identify and evaluate factors determining the choice of organic food products, establish links between them and indicate the main factors influencing consumer choices on the dairy products market.

## DATA AND METHODS

The analyses presented in this paper were based on the results of surveys conducted in 2016 involving a group of 358 students (as a very important group of buyers

in the future). Respondents were selected according to the targeted selection method. The main data collection method was the CAWI, with the support of the PAPI. The questionnaire was developed in an electronic version, made available online and linked to a database (SurveyMonkey platform). It consisted of 18 problem questions regarding the assessment of behaviours and attitudes of buyers on the food products market with a particular focus on factors shaping the product choice process and on the place of purchase. The surveys covered four groups of products: meat, fruits and vegetables, dairies and cereals.

The authors focused on the analysis of factors linked to the choice of organic food products on the dairy products market. In order to verify the aspects taken into consideration by respondents in their choices of dairy products, they were presented with a list of 33 factors that could potentially influence such choices and were asked to rate the significance of respective factors according to a five-point Likert scale, where 1 was equivalent to insignificant, 2 – rather insignificant, 3 – difficult to say, 4 – rather significant, 5 – definitely significant. In order to facilitate the analysis and presentation of responses, the factors were split into two categories: factors connected with product characteristics (*P*1 – appearance, *P*2 – taste, *P*3 – aroma, *P*4 – quality, *P*5 – ingredients, *P*6 – nutritional values, *P*7 – lack of preservatives, *P*8 – freshness, *P*9 – low fat content, *P*10 – healthiness, *P*11 – best before date, *P*12 – quality certificates) and factors connected with sales promotion (*SP*1 – price, *PS*2 – discounts, *PS*3 – brand, *PS*4 – "eco" markings, *PS*5 – traditional recipe, *PS*6 – appearance of packaging, *PS*7 – packaging size, *PS*8 – availability in store, *PS*9 – possibility to taste the product in store, *PS*10 – loyalty programmes, *PS*11 – exhibition in store, *PS*12 – promotional sales in store, *PS*13 – TV commercials, *PS*14 – radio commercials, *PS*15 – press advertising, *PS*16 – billboards, *PS*17 – recommendations from family/friends, *PS*18 – recommendations from the seller, *PS*19 – positive opinions on the product/ producer in mass media, *PS*20 – country of origin, *PS*21 – regional producer, *PS*22 – fashion trends).

Primary data were processed using statistical analysis methods, including comparative analysis of the behaviour of customers buying and not buying organic products and factor analysis to detect internal interdependencies between factors shaping the purchasing decisions of organic food buyers.

## RESULTS AND DISCUSSION

The first stage of analysis verified the existence of differences in the significance of factors connected with the characteristics of a food product taken into account by the surveyed buyers and non-buyers of organic food in their product choices (Table 1). With reference to buyers of organic products it should be mentioned that when making decisions regarding the purchase the surveyed buyers attached greater attention to the analysed characteristics of the products than the "non-buyers" did. In the first place, they paid attention to the ingredients and sensory characteristics of products such as aroma and taste. The biggest differences between groups of buyers can be observed in the perception of the significance of certificates of product quality, healthiness and the lack of preservatives. In order to identify significant statistical differences between the observed groups (buyers and non-buyers of organic food), additional statistical analysis was carried out using the Mann–Whitney U test. This test confirms statistically significant differences in the rating of significance of factors determining product choices between respondents representing respective groups of buyers. Those were the following factors: product quality, ingredients, and nutritional values, lack of preservatives, low fat content, product healthiness, and quality certificates.

The next stage comprised an analysis of relationships between the effect of sales promotion measures and decisions regarding the choice of food products in the groups of buyers of organic food and other buyers (Table 2). Both buyers and non-buyers of organic food in their purchasing decisions are mainly guided by the buying cost (price and discounts) and availability of products in stores. The biggest differences can be observed in the evaluation of significance of eco-markings, traditional methods of production, promotional sales and publicity. The Mann–Whitney U test confirms statistically significant differences between the evaluations given by respondents representing respective groups of buyers regarding factors connected

**Table 1.** Comparison of significance of factors connected with product characteristics in the product selection process

| Factor | Organic products purchase (mean factor rating[b]) | | Difference in means (buyers *vs*. non-buyers) |
|---|---|---|---|
| | buyers | non-buyers | |
| *P*1 | 4.432 (9) | 4.296 (5) | 0.136 |
| *P*2 | 4.691 (3) | 4.653 (2) | 0.038 |
| *P*3 | 4.716 (1) | 4.571 (3) | 0.145 |
| *P*4 | 4.660 (5) | 4.265 (7) | 0.395[a] |
| *P*5 | 4.698 (2) | 4.265 (6) | 0.432[a] |
| *P*6 | 4.654 (6) | 4.214 (8) | 0.440[a] |
| *P*7 | 4.593 (8) | 3.980 (9) | 0.613[a] |
| *P*8 | 4.673 (4) | 4.663 (1) | 0.010[a] |
| *P*9 | 4.204 (11) | 3.643 (10) | 0.561[a] |
| *P*10 | 4.315 (10) | 3.480 (11) | 0.835[a] |
| *P*11 | 4.630 (7) | 4.510 (4) | 0.119 |
| *P*12 | 4.142 (12) | 2.980 (12) | 1.162[a] |

(*x*) – factor significance ranking based on the mean rating.
[a]Statistically significant differences, Mann–Whitney U test, level of significance: $p < 0.05$.
[b]Mean rating of significance of the characteristics according to five-point Likert scale, where 1 was equivalent to insignificant, 2 – rather insignificant, 3 – difficult to say, 4 – rather significant, 5 – definitely significant.

Source: Own elaboration based on surveys.

**Table 2.** Comparison of significance of factors connected with sales promotion measures in the product selection process

| Factor | Organic products purchase (mean factor rating[b]) | | Difference in means (buyers *vs*. non-buyers) |
|---|---|---|---|
| | buyers | non-buyers | |
| *PS*1 | 4.389 (1) | 4.122 (1) | 0.266 |
| *PS*2 | 4.179 (3) | 3.459 (3) | 0.720[a] |
| *PS*3 | 4.012 (6) | 2.908 (10 | 1.104[a] |
| *PS*4 | 3.790 (10) | 1.867 (17) | 1.923[a] |
| *PS*5 | 3.944 (7) | 2.663 (7) | 1.281[a] |
| *PS*6 | 4.037 (5) | 2.969 (8) | 1.068[a] |
| *PS*7 | 4.080 (4) | 3.000 (6) | 1.080[a] |
| *PS*8 | 4.272 (2) | 3.776 (2) | 0.496[a] |
| *PS*9 | 3.222 (16) | 2.020 (16) | 1.202[a] |
| *PS*10 | 3.198 (17) | 2.122 (15) | 1.075[a] |
| *PS*11 | 3.420 (15) | 2.296 (14) | 1.124[a] |
| *PS*12 | 3.704 (12) | 3.153 (4) | 0.551[a] |
| *PS*13 | 3.043 (18) | 1.837 (20) | 1.206[a] |
| *PS*14 | 2.809 (22) | 1.673 (22) | 1.135[a] |
| *PS*15 | 2.815 (21) | 1.755 (21) | 1.060[a] |
| *PS*16 | 2.883 (20) | 1.837 (19) | 1.046[a] |
| *PS*17 | 3.722 (11) | 2.867 (11) | 0.855[a] |
| *PS*18 | 3.432 (14) | 2.306 (13) | 1.126[a] |
| *PS*19 | 3.457 (13) | 2.408 (12) | 1.049[a] |
| *PS*20 | 3.926 (8) | 3.092 (5) | 0.834[a] |
| *PS*21 | 3.877 (9) | 2.939 (8) | 0.938[a] |
| *PS*22 | 2.957 (19) | 1.867 (18) | 1.089[a] |

(*x*) – factor significance ranking based on mean rating.
[a]Statistically significant differences, Mann–Whitney U test, level of significance: $p < 0.05$.
[b]Mean rating of significance of the characteristics according to five-point Likert scale, where 1 was equivalent to insignificant, 2 – rather insignificant, 3 – difficult to say, 4 – rather significant, 5 – definitely significant.

Source: Own elaboration based on surveys.

with sales promotion measures in the product selection process. The only factor for which there are no statistically significant differences between evaluations given by buyers and non-buyers of organic products is the price.

It can be observed that generally the surveyed buyers of organic food give higher rating to the significance of respective factors in the product selection process. It is clear both with regard to product-related factors and those connected with sales promotion. Analysing many factors and identifying their significance in terms of quality and marketing, they make conscious purchasing decisions.

In order to analyse the problem more thoroughly, a factor analysis involving varimax orthogonal rotation of factors was performed. The factor analysis is a set of statistical methods and procedures thanks to which a large number of analysed variables can be reduced to a considerably smaller number of factors or principal components independent of one another. In marketing surveys, factor analysis is used, among other purpos-

es, for formulating conclusions on the structure of the analysed phenomenon, that is, for identifying general relationships in the analysed phenomenon [Walesiak and Bąk 1997, Balon and Dziadkowiec 2016]. One of the most popular statistical techniques applied in factor analysis for the analyses of behaviours (responses) of consumers in the market is the principal component analysis. As a result of factor analysis, an originally large set of variables is reduced to a few principal components determining, e.g. the choice of the specific product by the consumer [Kaczmarek 2016].

Analytical activities in the PCA include the following [Mruk 2003]:

- selection of variables for analysis;
- determining the matrix of correlations and eliminating variables with low correlations;
- identifying and rotating the factors;
- interpreting the results.

Based on the level of explanation of variances set at 62.80%, four principal components were identified (Table 3). By interpreting the scope of information conveyed by the respective components, factors determining the choice of organic food products in the sample of respondents were identified. The features for respective determinants of the choice of organic products on the dairy products market are as follows:

- component 1 – qualitative characteristics of the product, factors connected with ingredients, product freshness, lack of preservatives, quality and nutritional values;
- component 2 – market information/communication, factors connected with advertising on TV and in press and recommendations of salespeople and friends;
- component 3 – sales promotion, factors connected with marketing activities in store, mainly price discounts, appearance of the packaging on the shelf and promotional sales;
- component 4 – "quality guarantee", factors connected with product markings and the "perceived" healthiness of such products.

Based on the performed analyses, it can be concluded that the most important factors taken into consideration when choosing organic food on the dairy

**Table 3.** Rotated component matrix

| Specification | | Component | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| Factor influencing purchasing decisions | *P*1 | 0.523 | 0.087 | 0.428 | –0.085 |
| | *P*2 | 0.585 | –0.138 | 0.195 | 0.321 |
| | *P*3 | 0.785 | –0.087 | 0.166 | 0.079 |
| | *P*4 | 0.810 | 0.059 | 0.090 | 0.166 |
| | *P*5 | 0.851 | 0.103 | 0.087 | 0.129 |
| | *P*6 | 0.799 | 0.110 | 0.087 | 0.172 |
| | *P*8 | 0.832 | 0.079 | 0.095 | 0.085 |
| | *P*9 | 0.476 | 0.128 | 0.386 | 0.114 |
| | *P*10 | 0.322 | 0.048 | 0.161 | 0.781 |
| | *P*11 | 0.738 | 0.030 | 0.149 | 0.116 |
| | *P*7 | 0.828 | 0.048 | 0.094 | 0.168 |
| | *PS*1 | 0.430 | 0.030 | 0.568 | –0.012 |
| | *PS*2 | 0.266 | 0.142 | 0.697 | –0.055 |
| | *PS*6 | 0.146 | 0.164 | 0.673 | 0.210 |
| | *PS*7 | 0.179 | 0.134 | 0.715 | 0.140 |
| | *PS*11 | 0.061 | 0.458 | 0.608 | 0.293 |
| | *PS*9 | –0.119 | 0.322 | 0.583 | 0.425 |
| | *PS*10 | –0.080 | 0.342 | 0.613 | 0.383 |
| | *PS*12 | 0.105 | 0.263 | 0.613 | 0.189 |
| | *PS*13 | –0.014 | 0.835 | 0.332 | 0.020 |
| | *PS*14 | –0.036 | 0.807 | 0.318 | 0.047 |
| | *PS*15 | –0.020 | 0.817 | 0.352 | –0.017 |
| | *PS*16 | 0.029 | 0.755 | 0.384 | –0.032 |
| | *PS*17 | 0.163 | 0.760 | 0.102 | 0.066 |
| | *PS*18 | 0.044 | 0.821 | 0.091 | 0.041 |
| | *PS*19 | 0.010 | 0.772 | 0.074 | 0.041 |
| | *PS*22 | –0.056 | 0.666 | 0.234 | 0.169 |
| | *P*12 | 0.492 | 0.047 | 0.210 | 0.586 |
| | *PS*5 | 0.268 | 0.104 | 0.157 | 0.825 |
| | *PS*3 | 0.271 | 0.170 | 0.621 | 0.132 |
| | *PS*4 | 0.237 | 0.183 | 0.308 | 0.658 |
| | *PS*20 | 0.372 | 0.569 | –0.174 | 0.227 |
| | *PS*21 | 0.416 | 0.541 | –0.116 | 0.204 |
| Total loadings | | 6.635 | 6.223 | 4.877 | 2.986 |
| % variance of the SS loadings rotation | | 20.11 | 18.86 | 14.78 | 9.05 |
| Accumulated % of the SS loadings rotation | | 20.11 | 38.97 | 53.75 | 62.80 |

Rotation extraction method: varimax with Kaiser normalization, KMO (Kaiser–Mayer–Olkin) test – 0.867.

Source: Own elaboration based on surveys.

products market relate to the characteristics of the products. According to the respondents, an organic product is a product with specific ingredients, fresh and without preservatives. The second group comprises advertising aspects. In the contemporary world information is the key to shaping consumer preferences and behaviours. On the one hand, thanks to new communications technologies businesses and sellers can increase the reach of information on their offer to potential customers. On the other hand, though, the consumer awareness of the present-day buyers is higher, which makes the information a particularly significant factor in developing competitive advantage [Szwacka-Mokrzycka 2013]. Another identified group of factors that determine the choices of the surveyed buyers is merchandising connected to sales promotion in store. This is a very significant factor with reference to places where food, including organic food, can be bought – hypermarkets and discount stores being predominant facilities [Lipowski and Angowski 2014]. The last group is factors providing a "guarantee" of quality and healthiness of products in the form of certificates, markings and product brands.

## SUMMARY

Faced with growing social awareness of the revealing negative effects of civilisation development, mutual relationships between the quality of food and the environmental conditions and production methods, the direction of transformations characterising the market of organic food products does not raise doubts. To a large extent its development is determined by the expectations and behaviours of "eco"-food buyers. The degree to which the requirement of organic food is declared is created by a number of factors and it has been continuously evolving. Thus, taking the aforementioned into account, it is particularly significant to acquire current information about attitudes of customers buying an organic product.

The main purpose of the analysis was to identify principal factors connected with the effect of product characteristics and sales activities on the preferences of the surveyed respondents regarding the choice of organic foods on the dairy products market. Four aggregated groups of factors determining product choices were identified. Based on the performed analyses, it can be concluded that the most significant determinant of buying preferences on the dairy products market was the group of factors connected with the qualitative characteristics of the product. In choosing organic products, respondents pay attention to the quality of food, its ingredients, and freshness, lack of preservatives, quality and nutritional values. In addition, the surveyed buyers declared that market information is important in the process of selecting organic food as it improves their knowledge about eco-foods. Of course, the reliability of such information reaching potential buyers through the press and TV advertising in the context of so-called bio-foods being available on the market, may be questionable.

Surveys and conclusions referring to the preferences of buyers on the organic products market presented in this paper may form grounds for subsequent, more thorough surveys and analyses, which can contribute to improving the understanding of the food market, splitting the market into segments, and as a consequence the market offer may be enhanced when an adequate marketing strategy is developed.

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## CZYNNIKI KSZTAŁTUJĄCE WYBÓR PRODUKTÓW MLECZARSKICH PRZEZ KONSUMENTÓW NA RYNKU ŻYWNOŚCI EKOLOGICZNEJ

### STRESZCZENIE

Celami publikacji są identyfikacja i ocena czynników decydujących o wyborze ekologicznych produktów żywnościowych, ustalenie powiązań między nimi oraz określenie głównych czynników determinujących wybory konsumentów na rynku produktów mleczarskich. Analizy zostały opracowane na podstawie wyników badań ankietowych przeprowadzonych w 2016 roku na grupie 358 studentów. W doborze zastosowano metody doboru celowego. Badanie zrealizowano metodami CAWI i PAPI. W opracowaniu wykorzystano metody analizy statystycznej, w tym analizę porównawczą zachowań kupujących i nie kupujących produkty ekologiczne oraz analizę czynnikową w celu wykrycia wewnętrznych współzależności między czynnikami kształtującymi decyzje nabywcze kupujących. Na podstawie analiz można stwierdzić, że najistotniejsze zagregowane czynniki brane pod uwagę przy wyborze ekologicznej żywności na rynku produktów mleczarskich związane są z cechami produktów. Według badanych nabywców produkt ekologiczny to produkt o określonym składzie, świeży i bez konserwantów. Pozostałe czynniki to komunikacja marketingowa, aktywizacja sprzedaży oraz „gwarancja" jakości i zdrowotności produktów w postaci certyfikatów, oznaczeń i marek produktów.

**Słowa kluczowe:** żywność ekologiczna, wybór produktu, produkty mleczarskie