

in terms of reducing logistics costs, image improvement, increased competitive advantage, the research of the problem at the micro level is considered to be a great perspective for further research.

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## ЧИННИКИ РОЗВИТКУ РИНКУ БІОПРОДУКТІВ ДЛЯ МОЛОДИХ ПОЛЬСЬКИХ СПОЖИВАЧІВ

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Досліджено шляхи і напрями визначення змін в організації виробництва і збуту для ринку біопродуктів. Показано високу чутливість 20–25-вікової групи для визначеного асортименту продуктів. Результати повинні забезпечити можливість для виявлення основних чинників, що визначають розвиток ринку біопродуктів.

**Ключові слова:** біопродукти, екологічні продукти харчування, бар'єр зростання.

## DETERMINANTS OF DEVELOPMENT OF THE MARKET FOR BIO-PRODUCTS AMONG YOUNG POLISH CONSUMERS

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Presented studies identify ways and directions of changes in the organization of production and sales for bio-products market. Previous author's studies have indicated the high sensitivity of 20-25 age group to the specified assortment. The results should enable the identification of the main determinants of development of the market for bio-based products.

**Key words:** bio-products, ecological foods, growth barrier.

**Problem formulation.** The specificity of consumer products which are bio-products depends on their connection with the wider aspect of health care. Colloquially, it is assumed that these are drugs,

pharmaceutical products or other herbal goods, possibly produced in the organic production. They are also used as cosmetics, dietary supplements and food products with a high degree of naturalness and none or in practice minimized share of processing component and preservatives. Each of these aspects concerns the quality of the products and organic agricultural production process. This applies not only to non-chemical fertilizers but also the location of crops and cultivation due to soil conditions, weather, climate and agricultural culture represented in the area.

Bio-products market in Poland is characterized by a high growth potential, due to the low areas under crops and small size of agricultural production for the market in bio-products compared to other countries. In Germany in 2011, bio-products market grew by 10%. Moreover, much of the bio-products purchased in Germany, but also in other countries is imported. And here we can see the possibilities for the development of Polish organic farming.

**Analysis of current research outputs and publications.** One of the main barriers to the development of the bio-products in Poland is their relatively high – comparing to our earnings – price. The increase in sales of these products in other European countries is associated with significantly greater wealth of those societies. In response, Polish consumers are increasingly turning to their substitutes for what are commonly regarded as regional products. Despite the lack of evidence of certification of their quality, they are treated almost the same as products certified and usually much more expensive and less available in retail stores [1].

First empirical research confirmed, that the greatest barrier to purchasing bio-products shall be the price. The opinion prevails in all age groups. The study also confirms that the bio-products are primarily associated with direct sales, which is not a problem. As already mentioned, a lack of information is identified as an important barrier. It is worth noting that a significant portion of business information is now transmitted via the Internet, so the most severe lack of information is observed in the oldest consumer group, characterized by the lowest sensitivity to information from electronic sources. The lack of information is mainly indicated by bio-cosmetics (19.8%) and bio-products (20.3%) consumers. Price as a barrier is indicated by 64.2% of real consumers, most commonly, these are the people buying bio-cosmetics and bio-dairy products. Information as a barrier is indicated by 20.1% of respondents in the real consumers group [2]. The competitiveness of economy turned out with equally important matter.

Therefore, also in the European Union, we notice proposals put forward by the member states with covering activities aimed at improving the competitiveness of individual regions through support of enterprises in the process of extending the scope of activity, job creation in the community and increasing the profitability of enterprises. In this respect, the implementation of new technologies and alternative solutions in various sectors of the economy including the agriculture and food industry is a very important factor. Also new, or newly introduced types of crops and agricultural production and processing can be included in this group. The EU's policy to increase the production and consumption of bio-products because of their renewable and sustainable character is consistent with these activities. Paradoxically, therefore, less developed countries – such as Poland – have some kind of advantage. It is based on the fact that it is less mechanized and often undercapitalized – but thus to a small extent contaminated with chemicals and fertilizers. This is a kind of a new field of activity. The use of organic farming in these areas might be profitable. Normally, the production of organic products is associated with the growing demands but also "the consent of consumers" on higher prices. So this is a chance to develop, even for small farms, which are numerous especially in poorer areas. Economics of operation in a small area farms which is a typical farm is questionable. However, the specialization of agricultural production, taking into account its environmental performance can generate a relatively higher incomes.

Moreover, there are many wastelands in countries of the former Eastern bloc – undeveloped areas where the utility for industry or typical agricultural activities is negligible, but for energy crops can be profitable. Energy crops are now becoming more and more popular. This is due both to their cost in terms of economics and straight-forward foundation and running of such business, low funding, lack of restrictions during the operation and virtually unlimited – as of today – market. This market is primarily a wholesale trade. Individuals are a small percentage here. The main players are the power companies which,

in accordance with EU directives commit to a sufficiently high share of renewables – including pellets produced from energy crops – to produce electricity [3]. According to the Directive of the European Parliament and of the Council 2009/28/EC of 23 April 2009 on the promotion of energy from renewable sources, the share of this type of energy in transport by 2020 must be at least 10% of final energy consumption in this sector. However, in general, the share of renewables in energy consumption in 2020 is projected to reach 15%.

Even today such investments are visible [4]. In 2011, the Szczecin Power Plant launched a biomass boiler with a capacity of 183 MW, followed by the power plant in Konin – 50 MW unit at 100% powered by biomass. Looming large on the opening of the largest "green blocks" in Poland – 190 MW. The Kozienice Power Plant biomass is used in the production of up to 160 MW [5]. Already in 2010 the amount of electricity generated from biomass amounted to 5 500 126 762 kWh and constituted 56% of all renewable energy production [6].

Bio-products market in Poland is still regarded as a not fully developed niche. In addition to frequently indicated barriers in different countries another one can be noticed. It is the general slowdown in growth due to the economic crisis. In conditions of uncertainty, most decisions are made in a more rational way. The shopping cart includes usually typical, well-known products, often less expensive of a bit lower but satisfactory quality. An increase in sales of bio-products in Poland previously observed has encountered this type of barrier. It is not completely blocking the growth but slowing it down. What's more, the situation with an unknown future, does not allow even an approximate forecast of the development of this market – even by analogy. Hence, in turn, funds to invest in the development of this prospective area are limited.

The increase in customer demand for natural food corresponds with the movement of the market for this type of product. Last years in Poland were have noted down the violent growth of number of ecological farms. Despite quick increase till 2009 year of number this type of farms concerned in Poland 1,8 proc. of general number of agricultural farms only just [7, p. 146]. As in other countries, there are associations of producers. As mentioned above, the production of bio-products is an opportunity for development of small farms. There are over 550 thousand with the area less than 15 hectares in Poland which represents one third of all farms. Prospects in this field are very optimistic. Bio-area countries such as France and Austria increased in recent years at a rate of several percent per year. In response to this situation the following associations have been established:

- Mazowiecka Dolina Ekoprodukcji uniting farmers and representatives of the organic processing. The initiative coordinates the "Stowarzyszenie Zdrowe Życie"

- Valley of organic food in the Lublin region, which is the structure of business and social relations organic market participants in the Lublin region. It is composed of producers, processors and retailers in the region. Its members are affiliates of the Association "Ekolubelszczyzna". The cluster currently opens to inter-regional cooperation with an indication of the Polish eastern province: Podkarpackie, Świętokrzyskie, Warmińsko-mazurskie and Podlaskie [8].

- Bioprodukt Cluster that was created by Polish producers and processors of organic food. It brings together different parties involved in the production and processing: farmers, plant and food processing, agricultural organizations, local governments and non-governmental organizations and research institutes. The combination of business, research centers and other entities increases the potential of the group and allows the implementation of comprehensive activities related to organic food. Cluster members Bioprodukt are various institutions. In contrast to the previously mentioned, this cluster is cross-regional, because it includes entities from Mazovia, as well as from Krakow, Szczecin and Częstochowa.

Number of organic producers in Poland has been growing at an unprecedented pace in other areas, for the years 1999-2011 it amounted to an average of 47.2% per year with 39.4% growth of organic acreage. According to estimates prepared by leading industry representatives Polish organic market is estimated at PLN 350-600 million [9].

**Article objectives.** The consumption of each product depends on many factors. One of them is the age of the consumer. It is not, however, about the age in terms of the duration of life, but about age treated

as a synonym for the appropriate group of people having a particular way of seeing the world, of life, culture, level of education and degree of independence. In the case of this study, people aged 19-25 were taken into account, which is a period identified in general as higher education time. The study is part of a broader research project conducted by the author in 2010-2012. The identification of the main determinants of development of the market for bio-products in the 19-25 target group in Poland was the major aim of work. Students who took part in the survey are characterized by several important features:

- They are adult individuals – with a high degree of discretion in terms of consumption and purchase.
- Units with the same high level of knowledge about food at all – as consumers and producers often also.
- This is the group containing apart of the non-conformist side units (the vast superiority) conformists who follow fashion trends often created automatically by trend-setters unaware of it.

**Presentation of main materials.** It is assumed that the selection of the sample for testing should be seen as purposeful and random it will concern common units. Random sampling is to determine the groups covered by the study in an objective way, which is independent of both the will of the person conducting the test, as well as the willingness of respondents to participate [10, p. 62]. The purposefulness of sampling was associated with a place of residence of the respondents (Silesia) and their age.

Assuming that a large part of the research will involve the use of estimates of structure rates, the minimum sample size was set at an error  $d$  assumed at 0.1 and unknown general structure rate adopted at  $w_i = 0.5$ :

$$n \geq \frac{u_a^2 * w_i(1 - w_i)}{d^2} = \frac{1,96^2 * 0,5 * 0,5}{0,1^2} \approx 97$$

In this study besides the key measures of descriptive statistics also average differences tests for two trials, for the two structure indicators, and the correlation measure based on the  $\chi^2$  – mainly coefficient  $\phi$ -Youla were used. The level of significance eligible to make a decision which were adopted is  $\alpha = 0.05$ .

Even preliminary studies showed slightly asymmetric distribution of responses that determine the other – indicating purchases or bio-products. Finally 210 completed questionnaires were received. The number is on the one hand satisfactory, on the other hand allows the use of multiple statistical methods. The legitimacy of the classification has been confirmed in ongoing studies. 54.8% of respondents made in the past a purchase of bio-product. Therefore the sample enables both the assessment of real consumer preferences and barriers for only potential consumers.

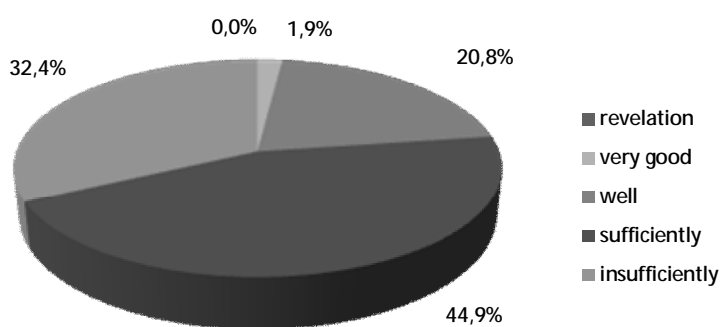


Figure 1. The opinion of advertising the Polish bio-products  
Source: Self-elaboration

Among the respondents the largest group buy bio-vegetables and fruits (39.1%), milk bio-products (33.9%) and bio-cosmetics (30.4%). The most common place to purchase bio-cosmetics is a supermarket (39.1%), grocery (30.4%) and drug stores (23.5%). Generally, both the real-life and potential consumers

find bio-products too expensive but useful. On the topic of its popularity their opinions are not well-established. The differences relate to the nature of the pro-health characteristics and fashion. Real-life consumers evaluate the nature of the health of bio-products significantly higher ( $t_a = 2693$ ,  $p < 0.004$ ) relative to potential consumers, alike significantly higher ( $t_a = 2.761$ ,  $p < 0.003$ ) is estimated the bio-products fashion. Performed using the  $\chi^2$  test correlation coefficient confirmed a relationship of type of consumers (actual / potential) and the estimation of utility of bio-health products ( $\chi^2 = 10.123$ ,  $\phi = 0.221$ ,  $p < 0.038$ ) and fashion on such products ( $\chi^2 = 12.051$ ,  $\phi = 0.243$ ,  $p < 0.017$ ).

Nearly two thirds of respondents (62.9%) observed deficiency of bio-products of Polish origin in the shops, but their marketing assessment is unfavorable among 77.3%, with only 1.9% (Figure 1.) positive ratings. Their opinion is determined by the real consumption, which confirms the significance of the correlation of these two features ( $\chi^2 = 11640$ ,  $\phi = 0.242$ ,  $p < 0.001$ ). However, if we look at the barriers to growth in sales of bio-products, real consumers mostly (67.8%) indicate a price, interestingly significantly higher ( $t_a = 4.322$ ,  $p < 0.001$ ) than the potential consumers (37.6%). The potential consumers as the most common indication confirmed the lack of information (50.5%), significantly more often ( $t_a = -2.807$ ,  $p < 0.002$ ) real-life than consumers (31.3%). We observe a significant relationship ( $\chi^2 = 14.012$ ,  $\phi = 0.251$ ,  $p < 0.001$ ) between the type of customer and the assessment of barriers. In terms of preferences real-life consumers indicated the need to purchase all bio-products directly at the source at equal intensity.

During the research, also an attempt to verify the significance of the relationship between the studied categories and characteristics of the respondents has been made. Interestingly, it occurred that gender has an impact on the assessment of the level of prices of bio-products ( $\chi^2 = 8.125$ ,  $\phi = 0.197$ ,  $p < 0.044$ ). It was the men who more often considered them cheap. Also interesting are the conclusions of the study based on the opinion of bio-products and the wealth of the respondents. A significant correlation between the income per family member, and the price of bio-products ( $r = 0.159$ ,  $p < 0.011$ ) has been confirmed. Those affluent consider bio-products more expensive. On the other hand, they consider Polish bio-products more competitive ( $r = 0.135$ ,  $p < 0.026$ ).

Table 1

**The value of Pearson correlation coefficients  
among individual features**

specification	competitiveness		choice		promotion	
	$r_{xy}$	p	$r_{xy}$	p	$r_{xy}$	p
price	-0,030	0,334	-0,016	0,409	-0,000	0,500
usefulness	-0,038	0,293	-0,017	0,406	-0,086	0,106
wholesomeness	0,034	0,313	0,130*	0,030	-0,061	0,187
fashion	-0,130*	0,029	0,051	0,229	-0,103	0,068
propagating	-0,058	0,199	-0,165*	0,008	-0,224*	0,001
competitiveness	1,000	-	0,150*	0,015	0,116*	0,046
choice	0,150*	0,015	1,000	-	0,297*	0,000

Source: own calculation

The results confirm that between the assessment of bio-products as fashionable and competitive there is a significant correlation ( $r_{xy} = -0.130$ ,  $p < 0.029$ ), which indicates that people who consider bio-products fashionable at the same time consider them to be competitive. People who think Polish bio-products are competitive, consider also, as evidenced by the significant correlation ( $r_{xy} = 0.150$ ,  $p < 0.015$ ), that there is a sufficient variety of such products (and vice versa). In the group of people considering the variety of Polish bio-products high, those who consider bio-products as indifferent to health ( $r_{xy} = 0.130$ ,  $P < 0.030$ ) but well promoted ( $r_{xy} = -0.165$ ,  $p < 0.008$ ) can be found. The assessment of promotion of Polish bio-products found to be significantly correlated with the rate of advertisement ( $r_{xy} = -0.224$ ,  $p < 0.001$ ),

competitiveness ( $r_{xy} = 0.116$ ,  $p < 0.046$ ), and high variety ( $r_{xy} = 0.297$ ,  $p < 0.001$ ). Those evaluating the promotion of Polish bio-products highly praise advertisement of them, rate them highly competitive and indicate on high choice.

**Conclusion and perspectives for further research.** Young consumers prefer purchases in supermarkets or the others kinds of big shops. They show the needing of buying from manufacturers directly. As the largest barrier in purchase the bio-product the price and the lack of information are recognized. The consumers perceived the shortage of Polish products at the our food market. Recapitulating, market of bio products has the large perspectives of development in Poland in the closest future. We observe very large potential in the increasing information about these products and the increasing of consumers' consciousness.

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