

A RETROSPECTIVE APPROACH TO CLUSTER DEVELOPMENT IN THE CONTEXT OF THE MARKETING CHAIN IN THE POLISH ORGANIC FOOD MARKET

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Abstract. The organic food market in Poland is undergoing constant transformation. Accession to the European Union was an important accelerator of its development. It can be analyzed and evaluated by looking at the development of concentration of organic production and processing activities in the regional context. The aim of the article is to assess the degree of cluster development in the organic food market in Poland in the context of its marketing chain. It was achieved by using the location quotient through which regions with the highest potential from the point of view of cluster theory were identified. Based on the conducted analysis, it was established that at the level of both organic agricultural production and organic food processing, one can identify the leading regions with high concentration and proof of the formation of cluster structures.

Keywords: organic food market, cluster, marketing chain, location quotient

INTRODUCTION

The global organic food market is constantly evolving. In 2015, there were 2.4 million organic producers, and the organic agricultural land covered an area of 50.9 million hectares (including conversion areas), representing 1.1% of the entire agricultural land in the world (in Europe: 12.7 million hectares and 2.5%, respectively). The value of the global market for organic

food was EUR 75 billion. Europe and North America accounted for 90% of organic food sales; the leading countries were the United States, Germany and France, with a total sales value of such foodstuffs reaching EUR 50 billion. At the same time, the highest per capita consumption was recorded in Switzerland (EUR 262), Denmark (EUR 191) and Sweden (EUR 177) (Willer and Lernoud, 2017).

In 2015, Poland was ranked 14th in the world in terms of organic farmland area, and 5th in Europe as regards the share of organic farming in the total agricultural land. Also, Poland is ranked 6th in number of organic producers. The sales of organic food in Poland amounted to EUR 167 million (14th place in Europe) while per capita consumption was EUR 4.4 (Willer and Lernoud, 2017).

The development of the Polish organic food market is determined by many factors. It was established and has evolved as a result of changes in the structure of demand, with green products beginning to play an increasingly important role. It is true that compared to other European countries, organic food consumption in Poland is much lower. However, this part of market is supposed to change in the future due to a variety of contributing circumstances. To make a deal more appealing to the consumers, the adequate organization of the marketing chain may be used. In addition, when it comes to the evolution of cluster structures in the market,

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business operators on the supply side can strengthen their competitiveness.

CLUSTER AS AN ELEMENT OF THE ECONOMY

At the turn of the 1980s and the 1990s, there were first signals of the growing interest shown by the scientific mainstream community in spatial economic science. Krugman (1991) was one of the precursors of re-intensification of research on economic geography. While this was a re-initiation of previously discussed topics, it followed a new direction evolving around the concept of clusters thanks to Porter (1998) and other contributors. Today, geographical clusters of interconnected companies and suppliers, service providers, companies active in related industries and institutions form the environment where competition and cooperation processes become increasingly intense.

The development of cluster structures is conducive to the occurrence of positive effects for companies and other market participants. An example is the professional development of qualified personnel in the local market, or the development of related and supporting industries. Another scenario of importance for the development of competitiveness is that where the cluster is attributed to its impact on innovation, facilitated by geographical proximity, transfer of intangible assets and the density of information flow networks (Figiel et al., 2013).

Clusters can be developed irrespectively of the industry profile, and therefore they are also found in the agri-food sector. This is because of the uneven distribution of economic activity; some locations are characterized by spatial concentration and the related specialization. As a result, the generated effects can translate into the development of enterprises and industries, and thus improve their competitiveness. Between some of the cluster participants, relationships exist that comprise the marketing chain, and the structure of such relationships affects the functioning of the market.

CONCEPT OF THE MARKETING CHAIN FOR THE ORGANIC FOOD MARKET

The purpose of building the competitive edge of producers active in the market is to meet the consumers' endless needs addressed with the use of economic processes

aimed at transforming resources, including productive inputs intended for the manufacturing of products or services. The effectiveness of such exchange processes is determined by mutual adjustments between producers and consumers and by the organization's integration dependencies underpinned by economic and institutional links.

The market's efficiency and development opportunities are determined by trade integration links in the production process and by relationships between different markets. This form of vertical integration between producers and consumers (including the coordination of streams of productive inputs, information and financial resources, and facilitating the exchange processes) is referred to as the marketing chain (Hamulczuk, 2015).

The essence of the food marketing chain is similar to the concept of the food supply chain, according to which the flow of materials, goods and information takes place within and between organizations. The economic processes are performed within the framework of the developed structures, including producers, processors, suppliers, agents and service organizations, all of them committed to optimize the quality and costs and to increase the value added (Gołębiewski, 2010; Witkowski, 2010). The food marketing chain is a structure that emerges automatically in order to improve the efficiency of specific market actors by making it easier for individual market participants to pursue their interests. Competitive equilibrium is not achieved if the market structure deviates significantly from perfect competition and some actors have a strong negotiating position (Rembisz, 2007).

The marketing chain evolves over time in terms of both the number and meaning of links. In the economy characterized by a shortage of raw materials, agricultural producers were the central element of the chain. Meanwhile, in the market economy, the center of gravity shifts towards the processing industry or (at the final stage of the demand-oriented evolution) towards the recipient or the final consumer (Chechelski, 2015). Globalization processes are one of the key drivers of changes in the marketing chain: the trade liberalization and the growing importance of transport corporations resulted in accelerating the integration processes and changes to the structure and functioning of the food chain.

The food supply chain, linked to the marketing chain of the food market, brings together three important sectors of the economy, i.e. agriculture, food processing

and distribution, which have a significant impact on economic prosperity and on the social and environmental situation of the citizens (Czyżewski, 2001). A variety of steps that make up the economic processes are performed within the chain (Witkowski, 2010). In the structure of the food chain, different types of entities may be identified, such as farmers, food industry operators, and food wholesalers and retailers. The relevant literature provides more examples (Kos and Szwacka-Salmonowicz, 1997; Lazzarini et al., 2001), including agricultural producers, buyers of agricultural products, food industry companies, secondary wholesalers, retailers, final buyers and supporting institutions (Karasiewicz, 2001). By analyzing the structure of the food supply chain, it is important to consider the actors involved in the chain, what their roles are and what chain configurations are possible (Lambert and Cooper, 2000). What also should be considered is the organizational structure, contract types, resources involved (IT, people, technology) and the integration degree between participants of the chain.

The food marketing chain can also be analyzed through the contribution of specific links to creating added value. In the long run, the share of agricultural products in consumer spending is on a continuous downward trend. More and more added value is generated by the processing companies, traders and service companies, while the contribution of agricultural producers gets increasingly smaller (Czyżewski et al., 2006). The relationships in the marketing chain enable agreeing on the commodity structure, managing the time and space, and developing the structure of products, manufacturers and suppliers. Vertical integration can be a process that streamlines the functioning of the market through simultaneous processes of building relationships at the level of specific links. Factors which justify strengthening the mainstream integration, as cited in the literature, include (Carlton and Perloff, 2005) the reduction of fixed costs, transaction costs and acquisition costs; the minimization of supply risk; brand building; gaining a competitive edge; entrepreneurship development; and sector development.

Both in Europe and elsewhere in the world, the market of foods made from raw materials delivered by organic farms is becoming increasingly popular with consumers. Also, more and more people in Poland want to purchase organic food (Komorowska, 2009). While the Polish market for organic products has its history, it still should be considered as a developing

one (Grzybowska-Brzezińska, 2008). There is an observed increase in the number of farms and in the area of ecological crops. The same is true for processors of agricultural produce and distributors who sell more and more of such foodstuffs. It can be expected that in the coming years, the organic food market in Poland will become a significant component in the food production mix and sales turnover (Szymona, 2005). The organic food market can operate smoothly and grow, provided that the supply of raw materials and finished products is optimized. The emergence of eco-friendly farms offering higher quality products, developed in line with the principles of organic farming, with a strong reduction in the use of agrochemicals, while at the same time institutionally supporting the food marketing organizations, may increase the importance of this category in the food industry. The specific nature of organic farming is much more labor-intensive and much less productive than intensive farming, which translates into higher prices for products made by organic farms. Concentration and standardization of production may be an opportunity to reduce the production and distribution costs of raw materials or finished products. Identifying the mechanisms and processes that improve the functioning and development of the organic food sector is a very important issue. Therefore, it is necessary to conduct research on the functioning of the organic food marketing chains due to the confrontation of Polish agri-food companies and a strong competition from other member states. Despite the potential of this sector (with compensating agricultural commodity prices in the European Union), an improvement in its efficiency is necessary. Due to the specific nature of the organic food supply chains, especially the time shift between supply and demand, the quality requirements and the need to exchange relevant information, marketing chain cooperation may prove to be important in the context of improving market efficiency. A major issue is to present the tools that enable analyzing the concentration of individual links in the chain and identifying the directions for action.

MATERIAL AND RESEARCH METHOD

The development of clusters is the consequence of a strengthened concentration of economic activity focused on a specific industry profile in a geographic area. Clusters are identified by grouping entities with a similar profile (in the case of the organic food market: the

green production methods). In this study, the measure used to determine the degree of supply concentration in the organic food market is the Location Quotient. LQ is applied in research on regional concentration of economic activity, laying emphasis on comparing the descriptive data of territorial units. It enables comparing local characteristics with reference areas, i.e. comparing a specific area to the whole territory (Moineddin et al., 2003). Also, LQ is used to measure the degree of relative concentration of a particular activity, thus making it possible to compare its share in a given area to the corresponding share in a certain aggregate base (Thrall et al., 1995).

Classic location quotient formula:

$$LQ = \frac{x_{ij}}{x_j} \div \frac{x_{in}}{x_n}$$

with:

- x_{ij} – value of the sub-variable in dimension i in area j ;
- x_j – total value of the analyzed variable in area j ;
- x_{in} – value of the sub-variable in dimension i in reference area n ;
- x_n – total value of the analyzed variable in reference area n ;

the above variables were used to identify the regional differences in organic food market concentration for two links of the marketing chain: organic agricultural production and organic processing.

DEVELOPMENT OF CLUSTERS IN THE POLISH ORGANIC FOOD MARKET IN THE CONTEXT OF THE MARKETING CHAIN

In the agri-food market, just as in any other market, links exist between different types of entities within a cluster. Some of them are part of relationships that make up the marketing chain. In the case of the organic food market, the first link are the agricultural producers while another is represented by organic food consumers. Because of the specific nature of this market, the core of the organic food cluster is composed of agricultural producers and processors. Their existence and development are important for the functioning of the cluster. On the other hand, the development of any cluster, regardless of its industry profile, depends on the coexistence of an adequately large group of recipients (in this case, consumers) who

purchase the products through available distribution channels.

In Poland, some aspects of the organic food market (assessed against the background of their potential) lag behind the leading EU markets. In 2015, Polish organic food processors represented 0.96% of all organic food processors in the EU, which ranks them 13th. Their number has increased steadily since 2002, with the majority being located in Italy (25.12%), Germany (24.47%) and France (20.29%) (KE, n.d.).

The organic food market in Poland is undergoing constant changes. By 2015, the number of organic producers reached 23,015 (an increase by 89.9% compared to 2007), with a decrease compared to two years ago. The distribution of organic producers varies between NUTS-2 regions (Fig. 1). In 2015, the largest share was recorded in Warmińsko-Mazurskie voivodeship (4,054 producers, 17.61%) while the smallest was reported in Opolskie voivodeship (73 producers, 0.32%). The cumulative annual growth rate for 2007 and 2015 was negative in three cases (Podkarpackie, Małopolskie and Świętokrzyskie voivodeships).

According to the Central Statistical Office, in 2014, the area of organic farming in Poland was 36,317 ha which represents 0.19% of the total agricultural land area. Compared to 2002, a growth of 131.8% was recorded, and the cumulative annual growth rate (CAGR) for 2002–2014 was 7.3%. The highest increase in organic land was recorded in 2005 (by 25.3% compared to 2004). However, in recent years, the expansion of organic farming in Poland has been slowing down. In 2002, the following voivodeships reported the highest absolute values of organic farming acreage: Kujawsko-Pomorskie (3,409 ha, 21.8% of total organic farming land in Poland), Zachodniopomorskie (1,954 ha, 12.5%) and Dolnośląskie (1,931 ha, 12.3%). Twelve years later, that ranking changed as follows: Kujawsko-Pomorskie (5,022 ha, 13.8%), Lubelskie (4,879 ha, 12.6%) and Zachodniopomorskie (4,391 ha, 12.1%). The dynamics of area changes varied from one region to another. The voivodeships with the highest growth rates of organic farming area compared to the 2002 initial figures were Podkarpackie, Opolskie and Łódzkie.

The LQ_L and LQ_{POW} values (Table 1, Table 2) were estimated based on the number of organic farms, the number of farms holding agricultural land, the area of organic farming land and the agricultural land.

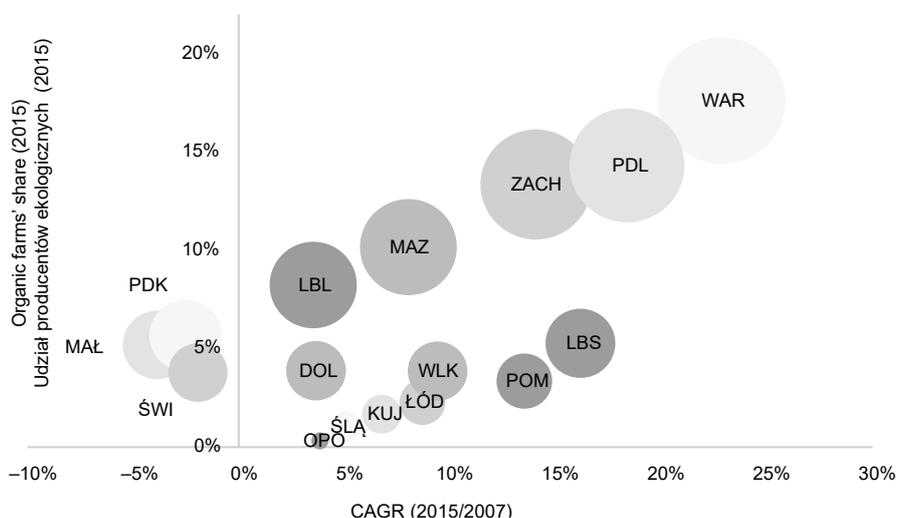


Fig. 1. Organic farms' shares in regions in Poland and their changes in 2007–2015

Source: own research based on: IJHARS, n.d.

Rys. 1. Regionalna struktura rozmieszczenia producentów ekologicznych w Polsce i dynamika jej zmian w latach 2007–2015

Źródło: badania własne na podstawie: IJHARS, b.d.

Table 1. Organic farming location quotients in voivodeships in 2005, 2010, 2015 (certified farms)

Tabela 1. Wskaźniki lokalizacji ekologicznej produkcji rolnej według województw w latach 2005, 2010, 2015 (działalność z certyfikatem)

Voivodeship Województwo	Year – Rok					
	2005		2010		2015	
	LQ _L	LQ _{POW}	LQ _L	LQ _{POW}	LQ _L	LQ _{POW}
1	2	3	4	5	6	7
Dolnośląskie	1.17	1.67	1.28	1.32	0.94	0.88
Kujawsko-Pomorskie	0.74	0.41	0.46	0.28	0.35	0.26
Lubelskie	0.93	0.86	0.95	0.84	0.65	0.59
Lubuskie	0.50	0.67	1.72	2.15	3.56	2.91
Łódzkie	0.22	0.16	0.25	0.18	0.23	0.25
Małopolskie	1.34	2.27	1.08	1.35	0.57	0.63
Mazowieckie	0.96	0.57	0.78	0.62	0.62	0.67
Opolskie	0.42	0.11	0.19	0.21	0.15	0.13
Podkarpackie	1.13	2.61	1.09	1.81	0.63	0.73
Podlaskie	1.24	0.77	1.76	0.89	2.50	1.33
Pomorskie	0.83	0.70	1.01	0.75	1.13	0.84
Śląskie	0.16	0.12	0.17	0.38	0.23	0.47

Table 2 cont. – Tabela 2 cd.

1	2	3	4	5	6	7
Świętokrzyskie	3.00	1.97	1.15	0.85	0.69	0.64
Warmińsko-Mazurskie	2.14	1.98	2.68	1.63	5.61	2.71
Wielkopolskie	0.26	0.39	0.50	0.58	0.42	0.51
Zachodniopomorskie	1.60	2.00	4.82	3.24	6.78	3.59

Source: own research based on; IJHARS, n.d.; BDL, n.d.
 Źródło: badania własne na podstawie: IJHARS, b.d.; BDL, b.d.

Table 2. Organic farming location quotients in voivodeships in 2005, 2010, 2015 (certified farms and farms under conversion)
Tabela 2. Wskaźniki lokalizacji ekologicznej produkcji rolnej według województw w latach 2005, 2010, 2015 (działalność z certyfikatem oraz w okresie konwersji)

Voivodeship Województwo	Year – Rok					
	2005		2010		2015	
	LQ _L	LQ _{POW}	LQ _L	LQ _{POW}	LQ _L	LQ _{POW}
Dolnośląskie	1.16	1.61	1.27	1.23	0.92	0.86
Kujawsko-Pomorskie	0.52	0.33	0.41	0.21	0.35	0.25
Lubelskie	1.02	0.71	0.84	0.73	0.64	0.59
Lubuskie	1.38	1.48	2.15	2.37	3.60	2.97
Łódzkie	0.33	0.22	0.28	0.23	0.24	0.26
Małopolskie	1.26	1.51	0.84	0.99	0.53	0.60
Mazowieckie	0.93	0.74	0.77	0.68	0.63	0.70
Opolskie	0.22	0.10	0.20	0.18	0.16	0.15
Podkarpackie	1.07	2.04	0.88	1.37	0.63	0.73
Podlaskie	1.64	0.76	2.16	1.20	2.58	1.34
Pomorskie	0.98	0.88	1.18	0.83	1.15	0.82
Śląskie	0.15	0.36	0.15	0.38	0.24	0.47
Świętokrzyskie	2.03	1.31	0.97	0.71	0.65	0.60
Warmińsko-Mazurskie	2.30	1.47	3.87	2.13	5.80	2.84
Wielkopolskie	0.41	0.65	0.51	0.73	0.42	0.50
Zachodniopomorskie	2.35	2.71	5.47	3.06	6.46	3.44

Source: own research based on; IJHARS, n.d.; BDL, n.d.
 Źródło: badania własne na podstawie: IJHARS, b.d.; BDL, b.d.

The evolution of location quotients over the period analyzed illustrates the process of progressive specialization and ecological concentration of agricultural production in selected voivodeships. In 2005, the regions

with the most ecological agricultural holdings were Dolnośląskie, Małopolskie, Podkarpackie, Podlaskie, Świętokrzyskie, Warmińsko-Mazurskie and Zachodniopomorskie. Apart from the Podlaskie voivodeship,

all of them were also characterized by a high share of organic agricultural land in the total area of agricultural land. Five years later, that situation changed. The largest share of organic farms in the total number of farms (with agricultural land) was reported in the Zachodniopomorskie ($LQ_L = 6.78$) and Warmińsko-Mazurskie ($LQ_L = 5.61$) voivodeships. Only in three other voivodeships, the location quotient was 1 or higher. As regards the ratio of organic farming area to agricultural land, the highest shares in the country's average level in 2015 were recorded in the Zachodniopomorskie ($LQ_{POW} = 3.59$) and Lubuskie ($LQ_{POW} = 2.91$) voivodeships.

The second link of the marketing chain, analyzed in terms of the development of clustering structures, was organic food processing (Table 3). The point of

Table 3. Location quotients for organic food processing by voivodeships in 2010 and 2015

Tabela 3. Wskaźniki lokalizacji przetwórstwa ekologicznego według województw w latach 2010, 2015

Voivodeship Województwo	Year – Rok	
	2010 LQL	2015 LQL
Dolnośląskie	0.57	0.63
Kujawsko-Pomorskie	0.89	0.74
Lubelskie	2.54	1.94
Lubuskie	0.70	0.69
Łódzkie	0.69	0.93
Małopolskie	1.00	0.94
Mazowieckie	1.05	1.39
Opolskie	0.36	0.26
Podkarpackie	1.78	1.49
Podlaskie	0.85	1.38
Pomorskie	0.88	1.02
Śląskie	0.37	0.31
Świętokrzyskie	1.08	1.14
Warmińsko-Mazurskie	1.24	0.87
Wielkopolskie	1.10	0.95
Zachodniopomorskie	1.65	1.37

Source: own research based on: IJHARS, n.d.; BDL, n.d.

Źródło: badania własne na podstawie: IJHARS, b.d.; BDL, b.d.

reference for the discussions was the number of operators classed in Chapters 10 and 11 of the Polish Classification of Activity 2007. Compared to 2005 (where 99 operators were classed as organic producers), five years later, their number tripled (293 operators), and reached 562 in 2015. In 2010, organic processors accounted for 0.87% of all entities classed in Chapters 10 and 11. Five years later, it was already 1.59%.

In absolute terms, most of the organic food processors are located in Mazowieckie, Wielkopolskie and Lubelskie voivodeships. In 2015, they accounted for 42.7% of all operators engaged in this business. In relative terms, the highest value of the location quotient was recorded in the Lubelskie voivodeship (1.94), although it was a decrease compared to 2010. In a total of seven voivodeships, the location quotients were equal to or higher than 1. Note that in 2015, the coexistence of agglomerations at the level of both organic agricultural production and organic processing with $LQ \geq 1$ was observed in two voivodeships (Podlaskie and Zachodniopomorskie) only. These regions are characterized by a high potential which is properly tapped, providing a basis for strengthening their competitive edge. The important driver of this process is the intensification of market competition which results from the development of clustering and the establishment of cooperation that can take place within the marketing chain.

CONCLUSIONS

In Poland, the organic agricultural production and organic food processing sectors, representing the links of the marketing chain in the organic food market, are characterized by regional spatial concentration. Based on the retrospective approach, regional clusters of entities were identified as a preliminary step for concluding that spatial clustering takes place. As regards organic farming, the highest values of the location quotient (LQ_L) were identified in the following voivodeships: Zachodniopomorskie (6.46), Warmińsko-Mazurskie (5.80), Lubuskie (3.60), Podlaskie (2.58) and Pomorskie (1.15). In the second part of the marketing chain under consideration, the highest values were recorded in the Lubelskie (1.94), Podkarpackie (1.49), Mazowieckie (1.39), Podlaskie (1.38), Zachodniopomorskie (1.37), Świętokrzyskie (1.14) and Pomorskie (1.02) voivodeships.

While the functioning of clusters certainly provides many opportunities, the ability to seize them depends on

an appropriate arrangement of conditions. The effects generated by cluster structures include the consequences of competitive and cooperative relationships between market participants. Therefore, it seems that the further development of the organic food market in Poland will depend, on the one hand, on the intensification of competition between market players and, on the other, on their cooperation within the existing marketing chain and beyond. A significant condition for the growth of sales in the market under consideration is therefore to design an appropriate marketing strategy and to market products in line with the preferences of the target group.

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ROZWÓJ KLASTRÓW W KONTEKŚCIE FUNKCJONOWANIA ŁAŃCUCHA MARKETINGOWEGO NA RYNKU ŻYWNOSCI EKOLOGICZNEJ W POLSCE – UJĘCIE RETROSPEKTYWNE

Streszczenie. Rynek żywności ekologicznej w Polsce podlega ciągłym przekształceniom. Akcesja do Unii Europejskiej była istotnym akceleratorem jego rozwoju, który może być oceniany w kontekście koncentracji działalności związanej z produkcją i przetwórstwem ekologicznym w ujęciu regionalnym. Celem artykułu jest ocena stopnia rozwoju klastrów na rynku żywności ekologicznej w Polsce w kontekście łańcucha marketingowego. Celem ten zrealizowano przy wykorzystaniu wskaźnika lokalizacji, na podstawie którego wyodrębniono regiony o najwyższym potencjale z punktu widzenia teorii klastrów. W toku przeprowadzonych analiz wykazano, że zarówno na poziomie produkcji rolnej, jak i przetwórstwa istnieją przesłanki do zidentyfikowania wiodących regionów, w granicach których zachodzą bardziej intensywne procesy koncentracji, a więc kształtują się struktury klastrowe.

Słowa kluczowe: rynek żywności ekologicznej, klaster, łańcuch marketingowy, wskaźnik lokalizacji

Accepted for print – Zaakceptowano do druku: 05.09.2017