

MANUFACTURE OF DAIRY PRODUCTS IN POLAND AS AN EXAMPLE OF A FRAGMENTED INDUSTRY

IRENEUSZ JANIUK

Abstract: *Fragmented industries constitute an important element of the economy of developed countries. In Poland manufacture of dairy products can be considered a good example of a fragmented industry. It is an industry characterized by strong globalization pressure and increasing competition. Despite the ongoing processes of concentration, milk processing still possesses the features of a fragmented industry. The aim of this paper is to describe the development of manufacture of dairy products in Poland and to attempt to estimate the role of its largest firms in the process of industry consolidation. Firstly, on the basis of management literature, the work discusses the issue of the industry's evolution and explains fundamental terminology. Secondly, on the basis of the available research and statistical data the development of dairy manufacturing was discussed. Furthermore, the paper presents main observations concerning the process of dairy market concentration. Statistical data and the ranking of the largest firms in Poland (Lista 2000. Polskie Przedsiębiorstwa) served as a basis for the author's own research concerning concentration of manufacture of dairy products. The study involved an analysis of the dairy market and identified firms generating the largest sales revenues. This made it possible to present the changes in market shares of such enterprises as SM Mlekoop, SM Mlekovita, Danone, and OSM Łowicz. The next step was the analysis of the observed changes and an attempt to assess the role of the largest firms in the process of industry consolidation. The final part of the paper contains a general description of the development perspectives for the dairy manufacture. The research results specified in the paper also became a foundation for general conclusions.*

Keywords: *industry evolution, fragmented industry, consolidation, manufacture of dairy products.*

JEL Classification: M11

1. INTRODUCTION

Literature on management contains a number of concepts and models dealing with industry evolution. The typical life cycle of an industry consists of three phases: introduction, growth, maturity and decline. As the industry goes through these phases, its characteristic features change. They cause variations in the level of attractiveness of the industry and in the strategic behaviour of firms. The model of an industry life cycle was the basis of the concept of M.E. Porter. When analyzing such factors as: industry concentration, state of industry maturity and exposure to international competition, Porter distinguishes different types of industry environments. The generic types of industries in which enterprises operate are: fragmented, emerging, the transition to industry maturity, declining and global industries. These types of environments reflect the attractiveness of an industry and condition the functioning of enterprises. Some types of industries are mutually exclusive. An industry may emerge or enter the decline phase, but not do both at the same time. Other types of industries, however, do not exclude one another. For instance a global industry can be at the same time fragmented and at the transition to maturity stage [9, p. 189-190].

Theoretical models of industry evolution take into account a variable degree of concentration. The literature on the subject does not, however, specify one and binding definition of a fragmented industry. In accordance with Porter, it is assumed that a fragmented industry is *a part of a business in which the total market share of top four largest firms does not exceed the 40% of revenues of all the enterprises operating in the entire industry. It usually*

comprises a large number of small and medium enterprises, including many privately held. None of the companies possesses a significant market share, neither is it able to strongly influence the whole industry's results [9, p. 191-192].

In the course of analyzing the matter of industry evolution it is necessary to define the term *industry*. Relevant literature contains many approaches to defining the essence of this economic notion. According to a commonly accepted definition *an industry is a part of a business comprising enterprises producing goods and services that serve similar purpose. The products are sold on the same geographic market. A particular industry is distinguished on the basis of the fact that its participants use the same supply sources and satisfy the needs of the same group of customers. Establishing product and geographic borders of an industry can be used not only to precisely determine its basic parameters such as size, dynamics, age, past and current profitability, but also to identify existing industry participants* [4, p. 94]. The size of an industry is a reflection of the total revenues obtained from the sale of a given group of products on a particular area in a given year.

When discussing industry evolution, particular significance of the research by Porter should be noted. His strategic analyses of an industry and its structure concern the economy of the USA. The researcher points out that fragmented industries appear in such fields as: services, retailing, metal and wood processing or agricultural production. The study concludes that the evolution of an industry can be attributed for instance to the behaviour of enterprises. Generic competitive strategies (*overall cost leadership, differentiation and focus*) strengthen

competitiveness of an organization. They facilitate the growth of a firm, which occurs as a result of the rivalry on the market aimed at achieving competitive advantage. Analyses show that effective implementation of competitive strategies leads to the weakening of intensity of competitive power in a given industry [9, p. 35 and further]. In his research, Porter does not, however, describe typical strategies for fragmented industries. He presents examples of actions, known from the theory of management, which can be used to adapt the competition strategy to the particular conditions of a fragmented industry. These actions aim at gaining a more favourable competitive position within one industry. Also G. Hamel and C.K. Prahalad analyse the conditioning of strategic choices from the perspective of gaining a better position in an industry. At the same time the scholars stress the importance of core competencies of a corporation [5]. In order to effectively strengthen market positions, firms operating in fragmented industries must also possess sufficient capital and production potential. When seeking development alternatives these enterprises may engage into expansion involving overcoming the consequences of fragmentation. In such a situation, the actions of firms are connected with technological advancement and higher capital intensity.

Porter's research shows that apart from the fact of lowering the intensity of the competitive power, overcoming fragmentation may contribute to industry concentration as well. Examples of evolution can be found in such industries as *beef cattle industry* or *mushroom farming*. The strategies of enterprises in these industries required the economies of scale, considerable capital investment and the use of new technology. They were connected with technological progress and growing capital intensity. The behaviour of firms led to capital and organizational concentration. As a result, the actions of particular firms consolidated the analyzed industries [9, p. 201 and further]. From the perspective of an industry, the discussed research reveals that behaviour of enterprises may be related to overcoming fragmentation. It may also lead to gradual consolidation of the industry.

2. THE EVOLUTION OF THE MANUFACTURE OF DAIRY PRODUCTS IN POLAND (RESULTS OF SELECTED RESEARCH)

When discussing industry evolution it should be pointed out that until the end of 1980s manufacture of dairy products was a state-owned industry in Poland. It concentrated in enterprises consisting of many plants. The first stage of political system transformation brought gradual transition into market economy. In 1990s, as a result of political system transformation, dairy production was subjected to radical changes. Attractive products from abroad started successively enter domestic market. Raw milk production became not very desirable. The necessity to compete with imported dairy products increased. There also appeared problems with selling domestic dairy products. Many dairies stopped purchasing milk from producers, they also limited production. The modifications introduced in the industry included adjusting the structure and quality of the range of products to the requirements of more and more demanding customers. In the face of the lack of financial resources and neglected infrastructure, many plants did not

have the possibility to undertake restructuring. As a consequence, in the first stage of political system transformation many production sites were closed.

As a result of financial difficulties or bankruptcy of dairy cooperatives many small and medium privately held firms, operating mostly for the needs of local customers, came to life. The new plants called *regional dairy cooperatives (Okręgowa Spółdzielnia Mleczarska (OSM))* separated from former multi-plant enterprises. Changes triggered by free market mechanisms resulted in decentralization of dairy production. Manufacture of dairy products became highly fragmented and its production diversified. There also appeared disproportions in the amount of assets possessed by individual dairies. As a consequence of market transformations, most of the enterprises are units small and very small in terms of the number of employees and the amounts of assets. Medium and large enterprises appear relatively rarely in the industry structure.

In the course of discussing the evolution of the manufacture of dairy products it is worth bringing up the research on the processes of concentration. Research on production concentration and market behaviour of enterprises shows changes in the level of production concentration as well as their influence on the power of competition in Polish industrial sectors. The research revealed that in 1990s dairy production was a fragmented industry [10, p. 119-135]. Other studies confirm this fact as well. In 1994 the share of four largest enterprises in the industry's net sales on the dairy market amounted to 7%, while in 1998 it rose to 15% [8]. Both studies point to the fact that none of the firms operating on the dairy market possessed a significant market share. In dairy production the share of four largest companies did not exceed 40%. This signifies that there were no firms in the industry which could strongly affect the industry's results. As far as the evolution of dairy production is concerned, it is worth noting that the findings of the quoted research show that the initial phase of dairy industry consolidation commenced.

When analysing manufacture of dairy products it should be highlighted that out of the total number of dairy firms, those which develop most dynamically are primarily large and partly also medium size enterprises. Examples include: *Spółdzielnia Mleczarska SM Mlekoopol in Grajewo*, *Spółdzielnia Mleczarska Mlekovita – Wysokie Mazowieckie*, *OSM Łowicz*, *SM Spomlek in Radzyń Podlaski*, *SM Gostyń*, *OSM Chełm* or *OSM in Giżycko*. These are firms which have a sufficient amount of accumulated investment means at their disposal, which allows them to introduce necessary modifications. They successively modernize production lines and specialize in segments of particular products. What is more, they gradually increase their scale of production as well and expand their range of products and gain access to a larger number of customers. At the same time, they strengthen their market positions.

Also significant enterprises with the share of foreign capital started to invest or take over production of particular manufacturers on the Polish market. Well-known international corporations operating in the manufacture of dairy products (including ice cream production) are: *Danone* (France), *Nestle* (Szwajcaria), *Hochland* (Germany), *Dr Oetker* (Germany) or *Unilever*. Foreign capital is present in

enterprises such as: *Polindus sp. z oo. Węgrzyce, Bakoma SA Warszawa, Mlekoma sp. z oo. Warszawa, Polser sp. z oo. Siemiatycze* or *Polmlek Raciąż*. The flow of foreign capital contributed to faster modernization of production base of particular firms.

The entrance of well-known global brands into the Polish market involves the introduction and more comprehensive use of market economy mechanisms. From the perspective of development of dairy products manufacture this is directly reflected in the range of goods offered it becomes more varied and matches the demand better. New directions of manufacturing emerge as well. They include for instance: production of yoghurts, snacks, desserts, soft drinks and juices. What is more, there is a considerable improvement in the quality of products, their aesthetic value and packaging. As a result, Polish firms are forced to compete with their rivals. They further modernize their production plants, which is usually connected with an extension or partial change of their production profiles.

The aforementioned development trends observed in the course of analysis of the Polish dairy production industry are consistent with those common in developed countries. There is a clear tendency to allocate particular areas of production. Purchasing milk and its processing as well as manufacture of traditional products are dominant in small and medium enterprises, while the so-called deep processing of the material is a domain of large firms. Deep processing requires the use of modern technologies. Due to its capital intensity it is usually out of reach for smaller entities. Large producers possess, apart from their accumulated financial resources, elaborate distribution channels. Because of this, they are able to effectively use the economies of scale. The fact that big dairy products manufacturers modernize their processing potential shows their awareness of the need for capital and organizational concentration. Mergers and acquisitions are an observable sign of their development. These phenomena are typically connected with taking over small and medium manufacturers by larger entities. The largest mergers and acquisitions on the dairy market in the years 1994-2011 are the following:

- *OSM Chełm takes over: OSM Włodawa (1994), OSM Hrubieszów (1996) and OSM Łaszczów (2001);*
- *SM Mlekpól - Grajewo merges with: OSM Elk (1995), SM Kurpanika in Kolno (1999), OSM Mrągowo (2000), SM Sejny (2002), OSM Augustów and OSM Zambrów (2003), SM Osowa in Bydgoszcz (2005), SM Somlek in Sokółka as well as SM Rolmlecz in Radom (2008);*
- *SM Mlekovita – Wysokie Mazowieckie takes over: SM in Morąg, SM in Chrzanów, SM in Kowalewo Pomorskie, SM in Zakopane, OSM in Piłica (2008), SM Sudowia in Suwałki (2009), as well as OSM in Kościan (2011).*

Mergers and acquisitions bring about capital and organizational concentration. By restructuring, stronger firms incorporate smaller entities into their structures. In entities which were absorbed a reduction of unnecessary factors of production takes place. Modifications involve further modernization of production lines and specialization in chosen segments of production. This makes it possible to adjust a firm's offer to new needs of consumers. Through the use of mergers and acquisitions, dairy manufacturers form groups of enterprises functioning on given local

markets. By doing so they expand their distribution channels and gain access to new markets. *SM Mlekpól* and *SM Mlekovita* make good examples of the use of mergers and acquisitions. These enterprises engaged into industry consolidation, gradually increased their market shares and strengthened their competitive positions. For more information on *SM Mlekpól* see: [3, p. 53-69].

The evolution of manufacture of dairy products brings our attention to the changes in the degree of concentration of this industry. Further research on the consolidation of dairy products manufacture states that in 2001 year the largest firms in the Polish milk processing were: *SM Mlekpól, SM Mlekovita, Danone* and *Bakoma*. These enterprises generated 23.2% of the share in manufacture of dairy products. In 2004 year the share of four largest firms rose to 26.9%, while in 2007 year it reached 32.5%. The biggest dairy business enterprises are firms whose turnover was similar to the average one recorded in the EU. However, they are many times smaller than the largest European enterprises, including those investing in Polish dairy manufacture [2, p. 252-254]. The research discussed above confirms that manufacture of dairy products evolves and gradually concentrates. The changes taking place are also connected with the need to meet standards of operation within the EU. They necessitate further modernization of production plants and the use of new technologies.

The evolution of manufacture of dairy products goes in the direction of modern western dairy production. Restructuring the industry involves technological progress and higher capital intensity. Modifications of production lines are performed the fastest in large enterprises. Step by step they adjust their structure and range of products to the requirements of more and more demanding customers. By means of satisfying the needs of customers, the firms gradually increase their market shares. The most dynamically developing ones use their elaborate distribution channels to enter foreign markets as well. The situation of many small and medium manufacturers is considerably less favourable. Frequently their potential is insufficient for them to perform the necessary modifications. These firms have smaller chances for modernization and complying with the EU requirements. As a result of not being able to fulfill increasing demands, some entities are liquidated. Firms possessing potential for development, however, are absorbed by larger enterprises by means of mergers and acquisitions.

Despite the fact that manufacture of dairy products displays features of fragmentation, it is an important area of Polish food manufacturing industry. According to the data of CSO (Central Statistical Office), manufacture of dairy products (NACE 10.5) is on the second position among all food production industries. A comparison between the value of sold production of dairy manufacturers in 2012 year (23.3 bn PLN) and the value of the sold production of manufacture of food products (155.4 bn PLN) shows that the sales in manufacture of dairy products constituted 15% of the sales of the food manufacturing industry. This puts it on the second position, losing only to processing of meat (30.2%) [7].

Manufacture of Dairy Products in Poland as an Example of a Fragmented Industry

3. CONCENTRATION OF MANUFACTURE OF DAIRY PRODUCT IN POLAND (THE AUTHOR'S OWN RESEARCH FINDINGS)

The aforementioned research reveals that since 1990s manufacture of dairy products has been a fragmented industry. This means that the largest firms in the business are still not strong enough to trigger events important for the entire industry. The analyses also show that the concentration processes commenced before still continue. The studies described above served as a basis for further research on the matter of concentration of enterprises in the manufacture of dairy products. *The aim of the research is to estimate the role of the largest firms in the industry consolidation process.*

The available statistical data allowed for a presentation of the number of enterprises. In analyses provided by CSO (*in accordance with NACE*) manufacture of dairy products (NACE 10.5) includes operation of dairies (10.51) and manufacture of ice cream (10.52). Particular analyses used statistical data concerning the total number of enterprises as well as the value of sold production in the manufacture of dairy products (NACE 10.5) in the years 2010-2012. Subsequently, the research drew used information included in *Lista 2000. Polskie Przedsiębiorstwa* (Polish enterprises) drawn up by the newspaper *Rzeczpospolita*. Observation of enterprises listed in *Lista 2000* made it possible to distinguish entities operating in the manufacture of dairy products in 2012. Additional data from the years 2010 and 2011 facilitated conducting analyses concerning the changes in the size of sales revenues. Further in-depth analyses concern the largest dairy manufacturers and changes in their market shares. A presentation of market shares provided the basis for preliminary estimation of the role of the largest firms in the industry consolidation process.

In the course of study on concentration processes taking place in manufacture of dairy products it should be noticed that they are experienced by all members of the industry.

Variations in the number of dairy products manufacturers in the years 2010-2012 are presented in Table 1.

Data published by CSO in 2010 informs that the manufacture of dairy products (NACE 10.5) included 1072 dairy manufacturers. With regard to the number of employees, the industry can be divided into four groups of enterprises. The largest one (744 entities) is made of firms employing up to 9 persons. Employment between 10 and 49 people was reported by 145 organizations, while 141 enterprises employed between 50 and 249 persons. 42 firms employed over 250 people (see Table 1).

At the end of 2012 year there were 1144 entities operating in the manufacture of dairy products. In comparison to 2010 these are 72 firms more. In 2012 year the largest group among dairy manufacturers was still the one containing enterprises employing up to 9 people. The number of the smallest firms rose by 108. Only in this group new entities could be observed. This signifies that despite a relatively small scale of operation, manufacture of dairy products may be profitable. It is connected with the specialization of the smallest firms and focusing on selected segments of production. Nevertheless, the issue of the emergence of new firms requires more detailed analyses.

The industry is dominated by very small firms. There is also a smaller proportion of small and medium ones. Large dairy manufacturers make up the least numerous group. When we look into the processes taking place in the dairy industry, it is worth turning our attention to the groups of enterprises in which the number of entities declines. Some small entities are liquidated as a result of failing to comply with increasing demands. The observed changes in the number of enterprises in particular groups also confirm the workforce rationalization, which is a consequence of the implementation of modern technological solutions in the course of production and processing of materials.

Table 1 Manufacturers of dairy products in Poland in 2010-2012

YEAR	DAIRY PRODUCTS MANUFACTURERS	Employing up to 9 people (micro-enterprises)	Employing between 10 and 49 people (small enterprises)	Employing between 50 and 249 people (medium)	Employing over 250 people (large)	Total number of entities in manufacture of dairy products (NACE 10.5)
2010		744	145	141	42	1072
2011		825	144	134	39	1142
2012		852	129	125	38	1144

Source: author's own work: [1]

Table 2 The largest dairy manufacturers in Poland in 2010-2012

ENTERPRISE	Type of ownership	Sales revenues (mln PLN) and market share					
		2010	Share (%)	2011	Share (%)	2012	Share (%)
SM Mlekpól	Private (domestic)	2 476.4	11.83	2 946.0	12.85	3 209.6	13.74
SM Mlekovita	Private (domestic)	2 331.5	11.14	2 910.1	12.69	3 028.1	12.97
Danone	Foreign	1 724.6	8.24	1 691.0	7.37	1 529.1	6.55
OSM Łowicz	Private (domestic)	1 017.1	4.86	1 246.2	5.44	1 369.0	5.86
Total sales revenues of 4 largest firms and their market share		7 549.6	36.07	8 793.3	38.35	9 135.8	39.12
Revenues of remaining dairy manufacturers and their share in manufacture of dairy products		13 380.4	63.93	14 135.7	61.65	14 215.2	60.88
Total sales revenues in manufacture of dairy products NACE (10.5)		20 930.0	100.0	22 929.0	100.0	23 351.0	100.0

Source: Author's own work on the basis of [6; 7].

Capital intensity in the manufacture of dairy products constantly increases. This brings on gradual elimination of human labour as a factor of production. In consequence, many firms reduce employment and so, in terms of the number of employees, they are categorized as members of a different group. The falling number of enterprises is also influenced by the ongoing capital and organizational concentration processes. Large and medium enterprises carry out mergers and acquisitions. By means of restructuring, they incorporate smaller entities into their structures. Such undertakings involve firms which display potential for growth. They also make it possible for the firms to function collectively in the form of corporate groups.

With regard to the evolution of manufacture of dairy products, the author's research deals with changes in the size of sales revenues. *Lista 2000. Polskie Przedsiębiorstwa* ranking provided information about 36 firms operating in the manufacture of dairy products in 2012 year. Their annual sales ranges from 141.7 million to 3.2 billion PLN. In terms of revenues, the biggest turnover was recorded in the case of such enterprises as: *SM Mlekpól*, *SM Mlekovita*, *Danone* and *OSM Łowicz*. Other dairy manufacturers included in *Lista 2000* are for example: *OSM Piątnica*, *Lactalis*, *Hochland*, *Polmlek*, *SM Spomlek*, *Polindus* or *Bakoma*. Their revenues are significantly lower than those of the largest dairy enterprises and put them on further positions in the ranking [6]. The analysis of the 36 dairy manufacturers identified 4 largest entities in terms of sales revenues. The biggest enterprises and their market shares are shown in Table 2 below.

Further observation shows that (according to CSO) the value of sold production in dairy manufacture in 2012 year totalled 23,351.0 mln PLN. In terms of sales revenues, the list of top enterprises has included *SM Mlekpól*, *SM Mlekovita*, *Danone* and *OSM Łowicz* for a few years now. In 2012 year the sales revenues of *Mlekpól* and *Mlekovita* amounted to 3,209.6 mln and 3,028.1 mln PLN respectively. These firms are entities representing private domestic ownership. The next position in the ranking belongs to *Danone*. In 2012 year the firm generated 1,529.1 mln PLN in revenues. *Danone* is an enterprise representing foreign capital. Subsequent position belongs to *OSM Łowicz*, which is a privately owned domestic enterprise generating revenues amounting to 1,369.0 mln PLN. See Table 2.

As can be seen in Table 2 above, the largest revenues are generated by *SM Mlekpól Grajewo*. In 2012 year the firm achieved 13.74% market share. *SM Mlekovita* is the runner up with its 12.97% market share. These two are enterprises which were created in the process of slow concentration. Their growth is a result of numerous mergers and acquisitions of smaller firms in the years 1994-2011. Subsequent positions are occupied by *Danone* and *OSM Łowicz*. In 2012 year these enterprises achieved 6.55% and 5.86% market share respectively (see Table 2). These firms keep their market positions stable. However, they still possess only one digit market share.

The author's own research involved the analysis of concentration processes taking place in the manufacture of dairy products in Poland. The findings described above predominantly concern the number of enterprises, revenues and market shares. The analyses show that in 2012 year the

annual turnover on the dairy market exceeded 23 billion PLN. The industry is dominated by micro-enterprises. Large firms are the least numerous group. The most important fact, however, is that there are four firms in the industry whose total revenues generate over 39%. The study indicates that *Mlekovita* and *Mlekpól* are the most dynamic in terms of increasing market share. They are enterprises which have carried out mergers and acquisitions for years. By means of restructuring, they reduce unnecessary factors of production. They also focus on their core competencies and specialize. Moreover, they strengthen their competitive positions and take part in the gradual consolidation of the industry.

4. CONCLUSIONS

Fragmented industries consist mainly of numerous small and medium enterprises usually operating on local markets. Industry fragmentation increases competition between firms and raises market requirements as well. The large number of small enterprises and often also their low level of competitiveness result in the fact that relatively few of them record growing sales dynamics. Enterprises from fragmented industries frequently encounter barriers and have limited possibilities of increasing their market share. With regard to industry evolution, during the initial stage of consolidation no single enterprise possesses a significant market share, neither can it strongly affect the results of the entire industry. Nevertheless, the number of enterprises is not the only indication of fragmentation. Another characteristic of a fragmented industry is the absence of leading firms which could create important events.

Manufacture of dairy products has been an industry characterized by fragmentation since 1990s. Changes taking place within it are connected with concentration of enterprises and lead to the evolution of this industry. The analyses conducted by the author identified changes in the degree of its fragmentation. Dairy manufacturing goes through particular stages of consolidation and gradually concentrates. The studies show that this process is largely shaped by the activities of the largest firm on the market. Their strategies involve increasing market share with the use of mergers and acquisitions. The best way to do that is to take over weaker competitors. On the basis of the analyses it could be claimed that *Mlekpól* and *Mlekovita* increase their market shares the fastest. They are firms which are ahead of other dairy producers. They continue the processes of capital and organizational concentration and consistently overcome fragmentation of manufacture of dairy products. They also begin to create significant events on the market. Strategic behaviours of weaker firms contribute to the evolution of the industry as well as to its passing over to more and more advanced stages of development. The process of consolidation and taking over firms has not ended. In spite of the fact that dairy manufacturing still displays features of fragmentation, further mergers and acquisitions may contribute to the occurrence of important changes in the industry structure.

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Dr Ireneusz JANIUK, Ph.D., Assistant Professor.

Department of Basics and Strategies of Management, Economics and Management Faculty, University of Białystok

Ul. Warszawska 63, 15-062 Białystok, Poland

e-mail: irekj@interia.eu