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## **INNOVATION ACTIVITIES IN THE FOOD MARKET**

*At present, the food market in Poland is characterised with significant intensity of competition, caused by high saturation of consumers' needs. In response to market requirements, producers offer innovative product lines and diversified marketing activities. The article discusses the main trends related to initiating innovation activities in the segment of new generation products (dairy desserts and dessert concentrates). It has been concluded that innovation activities focus above all on changed product compositions, use of additives, form of consistence, offer diversification in terms of product weight, modification of packaging design and focus on distinguishing product positioning, as well as creation of unique segmentation and advertising strategies. Market leaders in terms of innovative product offers are large concerns and large processing plants. This is connected with high capital requirements of innovation activities. The dominant view is that innovation of the whole dairy industry in Poland is low. On the other hand, the situation in the segment of dessert concentrates is much better in this respect. Innovative activities ought to allow rationalisation of manufacturing costs, better quality and health characteristics of products.*

### **Introduction**

Nowadays, in the competitive food market, undertaking of pro-innovation activities, ensuring maintenance of a stable market position, is essential. In order to meet market requirements, producers offer innovative product lines and conduct diversified marketing activities. The article discusses the main trends related to initiating innovative activities in the segment of new generation products (dairy desserts and dessert concentrates). The starting point of the analysis is presentation of the situation in the Polish food industry, with particular focus on the scale of incurred investment expenditures. Next, a general division and overview of innovation strategies is provided. There follows an overview of the trends and examples of activities undertaken by enterprises representing the segments of dairy product processing and dessert concentrates.

### **Research methodology**

Two industries – of processed dairy products and dessert concentrates – characterised with a diversified level of innovation activities were selected for the research.

The analysis uses secondary sources of information. The sources of data were reports of Institute SMG/KRC Millward Company, results of the questionnaire survey – anonymous internet survey conducted on the sample of 301 respondents, and data of the Central Statistical Office (GUS).

## Investment expenditures in the food industry in Poland

Dynamic development of the food industry after EU accession evidences good preparation of Poland for operating within the integrated market. Polish companies of the food industry are increasingly gaining competitive advantages as compared with other developed European countries [Szwacka-Mokrzycka, Kociszewski 2011]. Building of the competitive advantage in the EU market is not only based on price advantages, but also on the high quality of offered products. To improve the competitiveness of Polish products in the EU market, agricultural producers and processing enterprises undertake numerous investments allowing adaptation of their businesses to European standards (table 1).

Pro-innovation activities include introduction of new technologies, product manufacturing techniques as well as activities connected with packaging of the products and building their market image. At the same time, it ought to be emphasised that the enterprises' ability to compete differs depending on management methods used. A high and efficient management level is typical of the sector leaders. Obviously, growth in management efficiency and development of new technologies are closely related to the amounts of investment expenditures incurred. A considerable growth in investment expenditures in the food industry was observed in years 2008-2012, although the scale of growth was diversified. In food processing, the average annual increase in expenditures during the analysed period was equal to 5-13%. To compare, beverage producers incurred investment expenditures in the range of 9-14% during the analysed period. A deviation from the presented regularity was only observed in the year 2009. As compared with 2008, the year 2009 saw a decrease in investment expenditures both in the overall food industry and in the beverages segment (table 1).

**Table 1. Investment expenditures in the food industry in years 2008-2012**

Specification	2008/2007	2009/2008	2010/2009	2011/2010	2012/2011
Manufacture of food products	109.5	82.3	107.7	112.8	105.1
Manufacture of beverages	113.8	50.5	108.8	109.2	113.5

Source: Rocznik statystyczny przemysłu (*Industry statistical yearbook*). (2013). Central Statistical Office, Warsaw.

At the same time, it ought to be emphasised that reduction of the investment gap between Poland and other EU countries has been considerably influenced by foreign direct investments and participation of strategic foreign investors in Polish enterprises. As a result of such activities, many Polish manufacturers have become parts of foreign corporations. They have become involved in the process of economy globalisation and specialisation within the global economy internationalisation processes. Consolidation activities allow implementation of new technologies, modification of manufacturing processes and initiation of innovation activities related to products and marketing activities.

## **Notion and division of innovation**

Innovation means practical implementation of a new solution, mainly meaning technical innovations and their economic impact [Schumpeter 1995].

Ch. Freeman – innovation is: “...first commercial implementation (use) of a new product, process, system or device:

- manufacturing of a new product or market launch of goods with new characteristics,
- introduction of a new production method,
- opening of a new sales market,
- acquisition of new raw material sources,
- introduction of a new organisation of business processes [Freeman 1982].

Innovations – implementation of a new or significantly improved product (goods or services), a new or significantly improved process, a new marketing method or a new organisation method in the area of business practices, organisation of the workplace or relation with the external environment.

Product innovation – implementation of a product or service which is new or significantly improved from the point of view of functional characteristics or usable purposes the product is supposed to serve. In particular, this includes improvements of the technical characteristics, components and materials used as well as software constituting an integral part of the product or improvements facilitating use of the product by the user, i.e. so-called user friendliness [Matusiak 2011].

Marketing innovation – implementation of a new marketing method involving significant changes in terms of:

- design and packaging – e.g. changes with respect to form and appearance of the product which do not alter its technical and usable parameters, changes in the packaging of such products as food, beverages, cleaning products, cosmetics, in whose case the packaging is the main element of their “appearance”;
- sales methods applied to goods and services – new sales channels (excluding methods related to logistics, such as first launch of the franchising system, direct sales or product licensing);
- application of new product presentation concepts (e.g. sales of furniture at special, thematically arranged retail points of sale);
- promotion of goods and services;
- product placement – demonstration of the company’s products as requisites in films or television programmes;
- branding – introduction of a completely new brand symbol in order to win a new market or give a new image to the product;
- acquisition for the company’s products of “celebrities” and statements of well-known persons (mainly television/film stars) or introduction of a personalised information system, e.g. using loyalty cards, in order to adapt product presentation methods to individual customers’ needs;

- methods of product and service pricing – e.g. first-time introduction by the company of a product and service pricing differentiation method depending on the demand (if the demand is low, the price is low, too).

### **Innovation strategies**

An innovation strategy is pursued by an innovative enterprise which is able to create, absorb, develop and sell new products (services) and demonstrates the ability to continuously adapt to changes in the surrounding environment. A division of innovation strategies may be performed based on four criteria, including [Świtalski 2005]:

- innovation carrier or object,
- innovation significance or importance,
- innovation priority or originality,
- source or kind of incentive to undertake the innovation project.

#### ***Criterion of the innovation carrier or object***

The following innovations may be distinguished based on the criterion of innovation carrier or object: product-, process- or organisation-related innovations. Tangible and intangible products may be distinguished within product-related innovations. Innovations related to tangible products include:

- innovations in final products purchased by households,
- innovations in products purchased by companies as capital goods,
- innovations in products purchased by companies as procurement goods.

Innovations related to intangible products include:

- innovations in services purchased by households,
- innovations in services purchased by companies as components of non-current assets,
- innovations in intangible products purchased by companies as production or supporting services.

Process-related innovations may be divided into:

- innovations in manufacturing processes,
- innovations in the processes of service, manufacturing, distribution and sales of products,

Organisation-related innovations include:

- innovations related to the size and organisation structure,
- innovations related to methods of function performance.

#### ***Criterion of innovation significance or importance***

The following innovations may be distinguished considering this criterion: breakthrough, incremental and supplementary innovations.

### ***Criterion of innovation priority or originality***

The following innovations may be distinguished considering the criterion of innovation originality:

- original or absolute innovations,
- secondary or imitative innovations.

### ***Criterion of the source or kind of incentive to undertake the innovation project***

The following innovations are distinguished considering the criterion of source:

- innovations developed as a result of implementing R&D results,
- innovations resulting from market and buyer preference research,
- innovations developed as a result of the innovator's work,
- innovations introduced as a result of unexpected events,
- innovations constituting copies of innovations implemented by other entities.

Innovation strategies may be divided into two groups: introvert and extravert [Antoszkiewicz 1996]:

The introvert group includes:

- product attractiveness strategies,
- product strategies important for the added value,
- human capital and capital resources productivity strategies.

The group of extravert innovation strategies includes:

- offensive strategies,
- defensive strategies,
- contra-offensive strategies.

A division of innovative development strategies may be performed based on the amount of expenditures on research and development within the given business entity; consequently, the following strategies may be distinguished: offensive, defensive, imitative, dependent, traditional and opportunistic strategies [Antoszkiewicz 1996].

According to another typology [Drucker 1993], three criteria of innovation strategy typology may be distinguished:

- material effects (product, technology, organisation system),
- market effects,
- ecological, including values approved by consumers.

Criteria of the innovative development strategies typology may constitute basis for evaluating effects of an enterprise's innovation activities. Innovative development strategies take into account such fundamental components as objectives, measures, methods of implementation, as well as entry methods [Janasz, Leśkiewicz 1995]:

The following factors underlying selection of the enterprise's innovation strategy be distinguished:

1. market,

2. internal resources of the enterprise,
3. proper innovation culture,
4. material capabilities of the enterprise,
5. financial capabilities of the enterprise,
6. sector specifics,
7. impact of the local environment.

Factors related to selection of the innovation strategy may act in various directions and at various intensity. The same factor, at specific conditions and time, may be stimulating, whereas in other conditions it may demonstrate hindering impact onto innovation activities within the enterprise.

### **Trends related to undertaking innovation activities in the market of dessert concentrates**

Conducted analyses demonstrate that the share of innovations in creating product development and implementation of new technologies in the dessert concentrate market is relatively high [Kociszewski 2010].

As far as main trends related to activities in the area of product innovations are concerned, one ought to emphasise:

- enhancement of product sensory value (improvement in terms of natural taste, colour, consistence of the product),
- use of natural flavours or colorants (use of natural fruit and vegetable powder, addition of fruit pieces),
- addition of flavour and smell enhancing substances in the product formula,
- increased vitamin content in products.

The following items ought to be enumerated in the area of undertaken technological innovations:

- product differentiation of dessert concentrates (content of fruit pieces in dessert concentrates),
- greater product diversification,
- diversification of the packaging colour range depending on dessert concentrate flavour,
- use of ingredients accelerating preparation of instant desserts.

### **Trends related to undertaking innovation activities in the market of dairy products**

The majority of innovation activities in the market of dairy products is undertaken in the product area. The following categories of activities may be listed:

- introduction of new product groups and lines (manufacturers of fancy dairy products),
- changes in product composition and various product improvements (functional, usable),
- changes within product packaging – design, weight/cubic content.

Relatively, the highest number of innovative activities is undertaken in the market of yoghurts. The category of yoghurts includes: drinking, natural flavoured, fruit flavoured, creamy, breakfast and hybrid yoghurts. The market of yoghurts in Poland is dominated by Danone (40% market share), Zott – owner of the Jogobella brand (20% market share).

In the category of fermented beverages (in particular, of drinking yoghurts), there occurs priority in terms of innovation implementation; e.g. enriching the product composition with probiotics (Danone and Zott with such brands as Actimel and Activia). The domestic dairy industry also offers innovative products of this category (Spółdzielnia Mleczarska (SM) Mlekpól - Milko brand, GK Mlekovita – Jogurty Polskie, Łódzka Spółdzielnia Mleczarska (ŁSM) Jogo – Jo Go! product line, Okręgowa Spółdzielnia Mleczarska (OSM) Krasnystaw –Calpro yoghurts, OSM Kościan – Frez brand and OSM Wart – Milk – probiotic yoghurts). Mlekovita and Bakoma provide innovative products for children, enriched with B and D groups vitamins and calcium, as well as anti-cholesterol products such as Benecol or Danacol.

A novelty introduced to the market by producers, helping build the satisfaction of most conscious consumers, is the bio yoghurt range (milk from cows bred on organic pastureland – containing pieces of fruit growing without artificial fertilisers). In this segment, the leading role is played by the following companies: Olma, EkoLukta, Granarolo.

This category includes as well fruit yoghurts made from goat's milk (Agro Danmis), ŁSM Jogo - Jogo Max 0% fat, yoghurts with fruit mousse, mixture of cereals and dried fruit in a separate box – Activia –Danone.

A special offer for men has also appeared in the market of dairy products - 7 Zbóż Men - Bakoma and spicy yoghurts to be served with meat and vegetable dishes: Dr. Oetker – Zaziki – creamy yoghurt with fresh cucumber and garlic, Zott and Mevgal –Tzatziki.

Another important trend related to innovation activities concerns segmentation strategies. The above results from the fact that positioning and psychographic segmentation are becoming increasingly important in the development of marketing strategies.

## **Examples of innovation activities undertaken in industries selected for analysis**

The present section of the paper presents results of research related to undertaking product and technological innovations in the sector of dessert concentrates and segmentation innovations in the sector of dairy products.

### ***Dessert concentrates sector***

#### ***Product innovations***

Conducted analyses show that the most important product innovation, from the point of view of consumers, is presence of fruit pieces in dessert concentrates (22.2%) – [Kociszewski 2010]. On the other hand, use of flavours or colorants was considered

important by 18.1% and 17.3% respondents, respectively. According to respondents, development of the product offer was at the greatest extent influenced by such innovations as use of natural fruit powder (evaluated at 2.19 in the scale from 1 to 3) and addition of fruit pieces (2.17) - (figure 1).

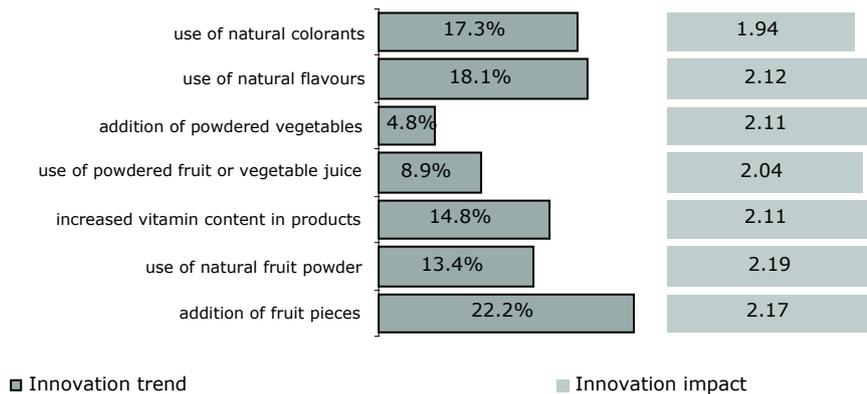


Figure 1. Product innovation trends  
Source: [Kociszewski 2010].

**Technological innovations**

The most important technological innovation was considered by respondents to be the product differentiation of desserts (32.3%). From the point of view of dessert concentrates consumers, other important factors include innovations related to adjustment of instant dessert packaging content to be suitable for one cup (23.1% respondents) as well as use of ingredients accelerating instant dessert preparation and differentiation of packaging colour depending on the dessert flavour (21.9% and 21.4%, respectively). On the other hand, impact onto the consumer market was highest for the following innovations: increased product diversity and differentiation of packaging colours depending on the dessert concentrate flavour (both innovations evaluated at 2.16 in the scale from 1 to 3 – figure 2).

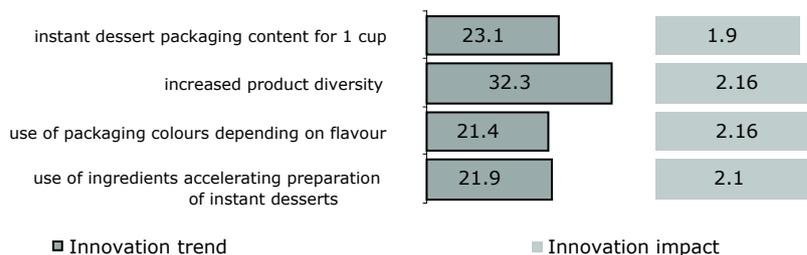


Figure 2. Trends and impact of technological innovations  
Source: [Kociszewski 2010]

### ***Sector of dairy products***

The present section of the paper presents examples of innovation activities undertaken in the market of dairy desserts, in terms of segmentation strategies.

Until 1997, segmentation studies conducted in Poland were based on analyses of demographic, social and economic trends [Kusińska 2009]. However, since 1998, studies are based on psychographic segmentation. Selection of the segmentation criteria may be based on two alternative procedures: *a priori* procedure or empirical analyses [Bazarnik, Grabiński, Kąciak, Mynarski, Sagan 1992]. The *a priori* procedure involves earlier selection of the segmentation criteria. In particular, the procedure is applicable if the potential buyer may be identified based on the buyer's objective characteristics (descriptive variables).

The practice of segmentation activities of the food industry companies applies both procedures: descriptive and behaviouristic, as they are complementary. The descriptive approach is more justified in case of greater uniformity of needs and market transparency (basic food products). In case of high differentiation of the needs and low market transparency (luxury food products), behaviouristic procedures are more suitable. Descriptive criteria present objective characteristics of consumers: socioeconomic, biological, demographic and psychosocial [Szwacka-Salmonowicz 2003]. The socioeconomic criteria (e.g. education, degree of professional activity of women) may constitute the basis for separating the group of consumers of ready food products, so-called convenience foods, whereas demographic criteria (e.g. age) may constitute the basis for separating market segments of baby foods, foods for children of various ages or elderly persons. In the marketing practice of companies, various criteria are usually combined. As a rule, socioeconomic and demographic criteria are used at the same time (age, gender, income, family development stage, place of residence). Socioeconomic and demographic criteria are supplemented by psychosocial criteria. The psychosocial criteria are playing an increasingly important role in the food market segmentation process, especially with respect to high quality, modern, highly processed food products.

The discussed study used the following behaviouristic criteria for segmentation: category of users with division into heavy, medium and light users, frequency of use, loyalty towards the product brand (tables 2, 3, 4).

In years 1998-2008, the market of dairy desserts recorded a relatively low share of heavy users, at 14.86%. In the light of consumers' declarations, a heavy user consumes the analysed product categories every day or 5-6 times a week. In the analysed market, the share of light users who consume dairy products the least frequently, e.g. once a week or less often, was relatively the highest. As far as evaluation of the consumers' purchasing loyalty is concerned, one ought to note the relatively highest share of consumers declaring selection of a single brand (on average 19%), which evidences their growing loyalty towards a product brand [Szwacka-Mokrzycka 2013].

Table 2. User categories and frequency of dairy dessert consumption in years 2009-2012[%]

Dairy desserts	Heavy	Medium	Light
User categories [%]	18.75	22.52	58.74
Consumption frequency [%]	18.75	22.52	58.74

Note: \* Heavy, medium and light user

Source: Own analysis based on SMG/KRC 2013.

The situation changed significantly in subsequent years. In the light of data contained in table 1, one may claim that the category of heavy users accounted for 18.75% of the market of dairy desserts in years 2009-2012, with this share growing by 4% as compared with the years 1998-2008 as a result of reduction of the light users' category share [Szwacka-Mokrzycka 2013 and table 2]. Results of the analysis indicate the relatively lowest share of the dairy desserts category in the market of dairy products and, at the same time, they evidence considerable capacity of the market.

In terms of the share of leading brands in the analysed market in years 2004-2008, the most preferred brands were: Monte-Zott, Deser z Koroną - Zott, Satino Pudding - Bakoma, Budyń Kremowy - Dr. Oetker, Satino Deser - Bakoma. Presented study results for years 2009-2012 confirm the purchasing preferences of consumers, favouring the Zott and Bakoma brands in preceding years [Szwacka-Mokrzycka 2013 and table 3].

Table 3. Most frequently consumed brands of dairy desserts in years 2009-2012 [%]

Brands	2009-2012	2009	2010	2011	2012
Monte - Zott	14.89	14.39	14.35	14.30	16.74
Deser z Koroną - Zott	12.06	13.28	12.06	11.32	11.61
Satino Pudding - Bakoma	9.67	12.32	10.41	10.47	4.91
Budyń Kremowy - Dr. Oetker	9.01	9.80	8.59	7.71	x
Satino Deser - Bakoma	8.12	8.22	8.55	9.11	6.35

Note: x – Data not available

Source: Own analysis based on [SMG/KRC 2013].

Analysis of the level of price and quality indices is important for evaluation of purchasing preferences in terms of price and quality (product brand). The index analysis was carried out based on buyers' associations connected with the given brand. That allowed evaluating importance of the brand and of the price to the consumer.

Diversification of consumers clearly focused on the quality and price occurred in years 2004-2008 in the discussed product markets. Years 2009-2012 saw reversal of trends observed in the area of purchasing loyalty in the dairy desserts market (table 3). Whereas diversification of consumers clearly focused on product quality and price

occurred in years 2004-2008, the subsequent period (2009-2012) was marked with an increased share of consumers oriented on the product price along with a decrease in the share of consumers focused on quality. This is evidenced by the obtained price (110) and quality (91) indices in 2012 (table 4). Obtained results may evidence growth in the consumers' demand for relatively cheap brands in the market of dairy desserts (especially in connection with development of a broad range of private label brands). It ought to be emphasised that analyses of dairy product (including dairy desserts) consumers' orientation in years 2009-2012 were conducted with respect to the total category, not in terms of particular product brands [SMG/KRC 2013].

Table 4. Level of dairy dessert buyers' orientation on product price and brand in years 2009 and 2012

Buyer orientation level	2009	2012
Price oriented	93	110
Brand oriented	111	91

Note: Value > 100 means increase with respect to the base index of 100%, whereas value < 100 denotes decrease with respect to the base index of 100%.

Source: Own analysis based on [SMG/KRC 2013].

## Summary

The article presents the main trends related to innovation activities in the segment of new generation products (dairy desserts and dessert concentrates). Conducted analyses evidence that the scale of innovations undertaken in the analysed sectors is diversified.

Innovativeness of the dairy industry in Poland is relatively low. At the front of the offer of innovative fancy dairy products are large concerns and large milk processing plants with the Polish capital. Among others, this results from high capital requirements related to product innovation activities and to other marketing activities in the areas of segmentation, promotion and sales methods. The segmentation analysis conducted in the market of dairy products evidences growing the importance of psychographic segmentation. Psychosocial criteria are playing an increasingly important role in segmentation of the market of high quality, modern, highly processed food products.

A completely different situation is typical for the dessert concentrates sector, where product and technology innovations underlie development of its competitive position. High product and technological innovation is referred to as the fundamental factor of building a lasting competitive advantage of the dessert concentrates sector.

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