



The role of smart specialiation in improving the competitiveness of the food sector in Poland

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Abstract

Company growth depends on competitiveness and innovation, which are largely contingent on the scale and scope of research and development undertaken. In the new EU financial framework for 2014-2020, R&D funding is contingent on compliance with research planned with regional smart specialisations. The article reviews the literature on factors in competitiveness, as well as the importance of smart specialisation in shaping the development of the food sector in Poland. The main objective of the article is to present the role and importance of smart specialisation for companies in the food industry seeking to build a competitive position.

Keywords

food sector, smart specialisation, competitiveness, innovation

Academic Discipline And Sub-Disciplines

Social sciences, Economics

Subject Classification

HD41 Competition

HD9000-9495 Agricultural industries

Type (Method/Approach)

Literary Analysis

Introduction

Today, smart specialisations are a tool to define and strengthen the position of companies in the knowledge-based economy, and the basis for building a sustainable competitive advantage among companies in the food industry. Increasing competition in the food industry leads companies to undertake innovative activities that promote the acceleration of knowledge-based economic development. The main objective of this article is to present the role and importance of smart specialisation in creating the competitive position of companies in the food industry in Poland.

The research method and our sources of information

The article is based on secondary sources of information, mainly derived from Central Statistical Office (CSO) statistical analyses, Partnership Agreements on the Development Strategy for Smart Specialisation implemented by Poland's individual voivodships, the National Strategy for Smart Specialisation, and other relevant literature. The data on companies' innovative activities and economic aspects of this activity are presented based on the results of research on industrial companies that produce food and beverages. In CSO surveys (conducted in accordance with the EU and OECD methodology presented in the Oslo Manual), selecting entities for research is done using the Polish Classification of Activities (PKD) 2007, which is consistent with the Statistical Classification of Economic Activities in the European Union. The data published for the period 2011-2014 on innovative products, processes, organisational and marketing solutions were used for the analysis.

Determinants of food sector competitiveness in Poland

Long-term consolidation processes continue by means of M&A in Poland's food industry.

A number of factors determine the scale and intensity of competition within the food sector. Key among them are:

1. the number and size of companies;
2. the diversity of companies;
3. product diversification;
4. the degree of market saturation;
5. technological progress.



Ad.1. There is a continued trend towards consolidation as a result of both vertical (backward or forward) and horizontal (on the same level) integration in the Polish food industry.

Ad. 2. In terms of size and market share, there is a wide range of companies in the country, from general ones (which compete using the same methods and means) to the more specialised.

Ad.3. Among the factors affecting the ability to diversify food products, of particular importance are the number of the product elements and significant differences in preferences of particular groups of clients.

Ad. 4. The varying degrees of market saturation in the food product market affects the shape and intensity of competition in this market. Companies compete both directly to entice each other's customers away (for basic products in saturated markets) and indirectly by attracting new buyers to the market of highly processed products described as new generation products.

Ad.5. Rapid technological changes in the food market have boosted innovative processes and also been behind the introduction of new products on the market and changing means of distribution and promotion.

The directions of innovative activity in the food industry is moving in

Between 2012 and 2014, the nationwide share of actively innovative companies in Poland's industrial sector rose to 18.6% from the 18.4% registered in the 2011-2013 period. Actively innovative companies are those that introduced at least one innovative product or process in the period.

In the food and beverage industries, the innovations mainly included the introduction of new technologies, product manufacturing techniques, product packaging and brand building activities on the market. It also should also be emphasized that the ability of companies to compete varies and depends on the methods of management applied. Sector leaders are characterized by effective, high-quality management. Increased management effectiveness and the development of new technologies are obviously closely linked to the amount of investment expenditure. Investment in the food industry increased significantly between 2008 and 2014, though the scale of the increase varied.

Continuing a trend that had characterized the 2009-2012 period [Žmija 2014], process and product innovations predominated in the food and beverage industry throughout the country in 2011-2013.

The companies classified as being high-tech and medium-high tech often introduced product innovations, while medium-low and low-tech companies—agri-food companies among them—were more process-oriented in their innovations. However, organisational innovations were introduced by a fifth of the high-tech companies (20.1%) and a sixth of their medium high-tech counterparts (15.7%). The low-tech companies came in with the relatively lowest rate, at only 5.4%. When it comes to the types of marketing innovations implemented in 2011-2014, industrial companies most commonly introduced changes to product design/construction or packaging innovations.

The share of revenues from sales of new or significantly improved products in the value of total sales revenues was used as an indicator to investigate the effects of the innovations companies employed. In 2014, the share of revenues of industrial companies from sales of new or significantly improved products in total sales revenue in manufacturing food products was 3.4%, which accounted for only a 12% share of the industry with the highest revenues from manufacturing (the production of other transport equipment) - [Innovative activity of companies in 2012-2014, 2015]. To put that in perspective, the increase was only 0.2% in 2013. However, over the longer 2010-2014 horizon, companies producing food from sales of new or significantly improved products endured a steady decline in revenue relative to total sales revenue. The figure came in a percentage point and a half lower in 2014 than the 4.9% observed in 2010 (Table 1).

Table 1. Share of revenues of food industry companies from sales of new or significantly improved products in total sales revenue, 2010-2014

| Item | 2010 | 2012 | 2013 | 2014 |
|-----------------|------|------|------|------|
| Food production | 4.9% | 2.8% | 3.2% | 3.4% |

Source: The authors, based on: Innovative activity of companies in 2010-2012. Information and statistical analysis. CSO, Warsaw 2013. Innovative activity of companies in 2011-2013. Information and statistical analysis. CSO, Warsaw 2014. Innovative activity of companies in 2012-2014. Information and statistical analysis. CSO, Warsaw 2015.

The size and structure of expenditure on innovative activities are essential to the present study, which included current and investment expenditure on innovative products and processes incurred in the reporting year and work on them was successfully completed, others not fully implemented (work was ongoing), and still others that were interrupted or abandoned before completion. It should be noted that as regards the relationship between the type of business and the size of expenditure on innovative activity, the correctness described earlier demonstrated that in high-tech areas of production that rely on the heavy use of technology, the outlays were the highest in 2014 and the preceding years. In contrast, in low-technology production (the manufacture of food products, beverages, tobacco products) costs were, at 2212.0 mln PLN, relatively low [Innovative activity of companies in 2012-2014, 2015].

In 2014, industrial companies and those providing services sank the highest share of their funds into machinery and technical equipment, transportation, tools, instruments, movables and equipment used in innovative activities. These



expenditures accounted for 57.5% and 32.3% (versus 54.0% and 34.2% in 2013) of industrial companies' total expenditure on innovative activities.

The main source of funding for innovative activities was the companies' own resources. In 2014, they accounted for 69.2% of all expenditure in industrial companies (1.9% less than in 2013) and 67.0% in companies providing services (12.7% less).

Among the industrial companies classified by level of technological advancement, the highest expenditure on innovative activities attributable to one company was recorded in medium-high tech companies (6.4 million PLN). In the high-tech companies, expenditure was about 0.1 million PLN lower, while in the lower-tech levels it was almost twice lower.

In 2014, all of the companies on all of the technology levels spent more on innovation than they did in 2013. [Innovative activity of companies in 2012-2014, 2015]:

- high-tech - about 0.9 million PLN more,
- low-tech - about 0.5 million PLN,
- medium-low tech- about 0.4 million PLN,
- medium-high tech - about 0.2 million PLN.

In terms of the expenditures incurred by the companies actively innovating in the European countries surveyed, industrial and service companies in Germany in the years 2010-2012 had the highest expenditures.

The premises of smart specialisation

The document Europe 2020 - A strategy for smart, sustainable and inclusive growth – called for Member States to reform their national and regional R&D&I systems for business with the aim of fostering excellence and smart specialisation [Programming ... 2015].

The concept of smart specialisation was developed by the Expert Group on Knowledge for growth, chaired by J. Potocnik, the propagator, and D. Foray, an expert on the concept of smart specialization. This is a tool to be used for countries and regions to endogenously formulate an innovation strategy. Smart specialisation enables regional competitiveness analysis to be linked to the process of determining priorities in science and technology policy [Kardas 2011]. Smart specialisation is a tool to define and build the present and future position of a region or country in the knowledge-based economy [P. David et al. 2009].

It is based on four main premises [Kardas 2011]:

- first, a necessary condition for smart specialisation is to create a research and innovation area that enables many competitors to compete. The European Research Area is an example, which should allow for the optimal use of the scale effect, and the scope and dissemination of smart specialization.
- second, according to D. Foray, if all European regions or countries compete for the leading position – in the same fields of science, for example – most will fail to achieve that goal due to the lack of critical mass, scale effect and scope. He indicates that the best solution in this case is to concentrate activities on those areas of science and innovation that are complementary to each region's assets and will contribute to the creation or strengthening of its comparative advantages;
- third, the essence of smart specialisation is defined by the so-called generally applied technologies. They play the role of support technologies by creating opportunities for development instead of complete, final solutions;
- the last premise focuses on how smart specialisation is implemented, with a particular focus on the role public administration plays.

Focusing on areas of endogenous character will enable the development of distinctive and original areas of expertise and the achievement of the scale effect.

Smart specialisation and the sector's competitiveness

In a market economy, competing economically with others is an essential part of each entity's business [Misala, 2007]. Innovativeness is one of the main factors affecting a company's competitiveness. It describes the ability, motivation and attitude of entities to carry out research as well as to conduct scientific, technical, organisational, financial and commercial activities aimed at developing and improving methods for implementing products or services on the market or introducing another application in economic practice [Świtalski 2004].

The innovativeness of Polish enterprise in the agri-food sector, while modest in comparison to some countries, has exhibited steady growth (see Fig. 1).

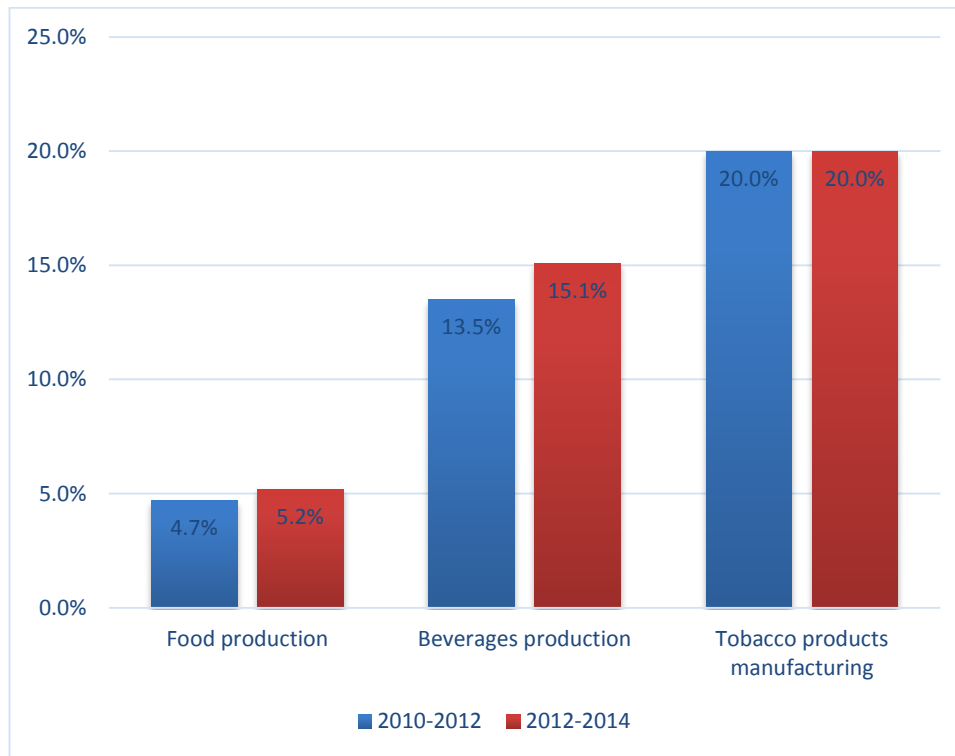


Figure 1. Companies that have implemented innovations (%)

Source: The authors, based on: the Innovative activity of companies in 2010-2012. Information and statistical analysis. CSO, Warsaw 2013; the Innovative activity of companies in 2012-2014. Information and statistical analysis. CSO, Warsaw 2015.

The share of innovative companies in the total number of companies in the food industry increased in 2012-2014 compared to the years 2010-2012 for all sectors of the industry except tobacco production, for which it remained unchanged. This is probably due to legal restrictions on the sale and advertising of tobacco products, which affect the ability to introduce new products in the sector and undertake effective advertising. Introducing new products brings companies additional benefits only for a short time due to the costly and complicated process of replicating and diffusing innovation [Szwacka-Mokrzycka, Measure 2013].

Increased innovativeness in the agri-food sector will be enabled by investment outlays on research and development. This will pick up the pace of research on technologies in the food industry, expanding essential R&D infrastructure and enhancing co-operation between companies and academia with the business community [Szwacka-Mokrzycka, Miara 2016]. In Poland, there is still too little money spent on research, prompting policy makers to include the issue in the Europe 2020 strategy. Its strategic objectives are binding for Poland and require the country to increase R&D expenditure to up to 1.7% of GDP in 2020 [Programming ... 2015]. Such expenditure currently stands at ca. 1% of GDP, among the lowest in the EU. The top spot goes to Finland, which spends 3.31% of GDP [Eurostat]. The EU statistical office also includes in its analyses non-EU countries. For the sake of comparison, Japan spends 3.38% of GDP, South Korea 4.04% and Russia lays out 1.11% of GDP, also besting Poland.

To increase R&D expenditure while concentrating public spending on industries that may contribute to competitive advantage, EU funds will be allocated only to R&D projects that fit the national or regional smart specialisation agenda.

The financial framework for 2014-2020 earmarked 8.4 bln euro for R&D financing [Programming ... 2015]. This raises the question of whether the agri-food sector can be a high-development, highly competitive one. Analysis of the smart specialisations suggests that it is, meaning R&D-bound EU funds will be forthcoming.

Smart specialisations are divided into regional and national ones. The National Smart Specialisations (NSS) were divided into five groups, one of which directly applies to the agri-food sector. It includes three sub-categories:

1. Innovative technologies, processes and products in the agri-food and timber industries.
2. Healthy food (of high quality and ecological production).
3. Biotechnological processes and specialised chemical products; environmental engineering.



The main criterion qualifying a research subject for the National Smart Specialisations is that it comply with the PKD code. Analysis of NSS shows that the scope of possible activities is so wide that each of them has the opportunity to receive financing.

The National Smart Specialisations determine the obtainment of financial support from the national programmes (eg. The Smart Development Operational Programme). The drawback of these programmes is that the value of the projects and the level of innovation tend to favour medium and large companies with a high potential for innovation and competitiveness. Small businesses must seek funds in regional programmes.

The European Commission requires each of Poland's voivodships to have its own specific specialisations, but only some have chosen the agri-food industry. Among the sixteen regions, only—or indeed as many as, depending on your point of view—nine of them set out the broadly understood agri-food industry as their specialisation. These include: Kujawsko-Pomorskie, Wielkopolskie, Warmińsko-Mazurskie, Lubelskie, Podlaskie, Mazowieckie, Opolskie, Świętokrzyskie and Łódzkie¹. Companies from other regions can rely on R&D funding, which determines innovativeness and consequently competitiveness, only from the national programmes.

Conclusion

Achieving high quality, long-lasting competitive advantage involves a variety of factors. The most important for establishing effective future activities appears to be understanding smart specialisation as a tool for achieving sustainable advantage. The basis for future action must be to concentrate projects that boost innovation. Increased innovation in the agri-food sector will be enabled by expenditure on research and development, which in the food industry will intensify research more than technology, enhance co-operation between companies, academia and the business environment, and increase the competence of food company employees. The increase in spending on research will also drive up expenditure on the R&D infrastructure. The above would not be possible if the agri-food sector were not one of the main National Smart Specialisations and therefore entitled to support from the EU funds.

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