

## SELECTED ASPECTS OF INNOVATIVENESS IN POLISH ENTERPRISES

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**Abstract:** The article aims to fulfill the following two objectives: determine and critically assess the percentage of innovative enterprises within the total number of both Polish industrial enterprises and Polish service enterprises; verify the research hypothesis that the universality of innovation implementation is relatively low, that innovation is diversified in industrial and service enterprises, and that innovation depends on the size of the enterprise and the type of innovation. The article was prepared using the following research methods: cognitive and critical analysis of the literature on the subject, statistical and comparative analysis of empirical secondary material from the Polish Central Statistical Office (GUS), and the projection method. The innovativeness of enterprises was analyzed in terms of enterprise size and type of innovation. Innovation was treated as an indirect measure of the level of managerial activity in shaping innovation policy. In order to verify the hypothesis, the empirical secondary material of the Polish Central Statistical Office was used to analyze the innovative activity of enterprises between 2012 and 2014 and between 2015 and 2017. The results of the analysis confirmed the research hypothesis.

**Keywords:** innovativeness, innovation, enterprise, development, management.

### 1. Introduction

Contemporary enterprises need to determine their main objective, as this sets the direction of the activity of the enterprise in the short and long term. This objective should focus on progressive development, and this development should be at the stage of progress. The main objective thus requires the chief management not only to think and act strategically, but also to seek and apply creative methods and tools. Creative methods undoubtedly include strategic management, knowledge management, innovation management, and management through innovation. Creative tools include systemically acquired and implemented product innovations and business process innovations (OECD/Eurostat, 2018, p. 70).

Innovations are given key significance by politicians, economists, sociologists and managers in debates and decision-making processes concerning the systemic shaping of dynamic economic development in the era of the globalization of competition, dynamic technological development and serious fiscal and demographic challenges (Bibi, Jadoon, 2018, p. 1). The globalization era has opened the door to very high competition. Strong global competition and rapid technological changes should encourage governments, enterprises and other organizations to look for effective tools to maintain or even increase a competitive advantage (Lee, Hidayat, 2018, p. 23). Nowadays, innovations are treated as an important instrument for increasing competitiveness, as well as for survival and growth in the global business world (Ri, Wang, Zhang, 2018, p. 38). As a driver of economic growth, innovation has become an important determinant of business competitiveness – a hot topic for all organizations operating in a competitive environment (Aschbacher, Sablik, 2019, p. 45, Krusinskas et al., 2015, p. 123). Such organizations need to develop and put in place development strategies based on innovations, as this can lead to the rapid economic development of countries and the enterprises operating in those countries (Guo-Zhong, 2018, p. 9). It should be emphasized that the innovation capacities of enterprises largely depend on knowledge. Therefore, knowledge and innovative activity must be reasonably managed and rewarded at all levels of the economic structure so that enterprises become more innovative.

If innovations are so important in the development of enterprises, it seems reasonable to want to know the real level of innovation of Polish enterprises in order to determine the rationality of pursuing innovation at all levels of the economic structure. Therefore, this article aims to fulfill the following objectives:

- 1) identify and critically assess the percentage of innovative enterprises within the total number of both Polish industrial enterprises and Polish service enterprises,
- 2) verify the research hypothesis that the universality of innovation implementation is relatively low, that innovation is diversified in industrial and service enterprises, and that innovation depends on the size of the enterprise and the type of innovation.

The following research methods were used for developing the article: cognitive and critical analysis of the literature on the subject, statistical and comparative analysis of the empirical secondary material from the Polish Central Statistical Office (GUS), and the projection method. The percentage of innovative enterprises within the total number of industrial enterprises and service enterprises between 2012 and 2014 and between 2015 and 2017 was calculated.

## **2. Innovative enterprises between 2012 and 2014 and between 2015 and 2017**

According to the classification presented in the Oslo Manual, there are four types of innovations (Manual, 2008, p. 19): product innovations, process innovations, organizational innovations, and marketing innovations. These types of innovations are also identified in statistical surveys by the Polish Central Statistical Office (GUS), as they form the basis of statistical and comparative analysis of selected aspects of innovation in Polish enterprises. Therein, the statistics of the Polish Central Statistical Office distinguish innovatively active enterprises and innovative enterprises in terms of product innovations and process innovations, as well as organizational and marketing innovations.

An innovative enterprise in terms of product innovations and process innovations is an enterprise that introduced at least one product or process innovation (a new or significantly improved product or process) during the analyzed period (Działalność, 2018, p. 21). This measure is characterized by the degree of the enterprise's involvement in the setting up of the innovation. According to the Oslo Manual, organizational innovations concern the implementation of new organizational methods in the operating principles of an enterprise, in the organization of the workplace, or in the relationship of an enterprise with the environment (Handbook, 2008, p. 53). Marketing innovation is the establishing of a new marketing method, including significant changes in the product design, construction, or packaging, product promotion and distribution, and the methods or strategies of price formation for products and services (Podręcznik, 2008, p. 52).

As can be seen from Table 1, between 2012 and 2014, for industrial and service enterprises, the percentage of enterprises that put in place product or process innovations within the total number of enterprises was 17.5% and 11.4%, respectively. However, between 2015 and 2017, these percentages were 18.5% and 10.4%. Thus, a slight increase of one percentage point was recorded for industrial enterprises and a decrease of one percentage point was recorded for service enterprises. In comparison with the service sector, the percentage of innovative enterprises in the industrial sector was higher by 6.1 percentage points between 2012 and 2014, and by 8.1 percentage points between 2015 and 2017.

**Table 1.**

*Percentage of enterprises that implemented product, process, organizational, or marketing innovations between 2012 and 2014 and between 2015 and 2017*

Specification	Percentage of enterprises that implemented innovations:			
	2012-2014		2015-2017	
	Enterprises		Enterprises	
	Industrial	Service	Industrial	Service
Type of innovation:				
Product and process	17.5	11.4	18.5	10.4
Organizational	8.4	9.7	8.4	7.0
Marketing	7.6	7.9	7.5	6.9

Source: own study, based on (Działalność, 2015, pp. 36, 49, 57; Działalność, 2018, pp. 26, 37, 44).

In addition to product innovations and process innovations, Polish enterprises also brought to the fore organizational and marketing innovations. Between 2015 and 2017, 8.4% of industrial enterprises put in place organizational innovations, which is the same percentage as between 2012 and 2014, and 7% of service companies implemented organizational innovations, which is 2.7 percentage points less than between 2012 and 2014. While between 2012 and 2014, the percentage of service enterprises that established organizational innovations was higher than industrial enterprises by 1.3 percentage points, between 2015 and 2017 the opposite situation can be noted, as the difference in the percentage of innovative enterprises was 1.4% higher for industrial enterprises. In general, organizational innovations in the analyzed periods remained at the same level for the industrial sector and decreased in the service sector, which is a negative phenomenon.

Between 2015 and 2017, marketing innovations were undertaken by only 7.5% of industrial enterprises, i.e. 0.1 percentage points less than between 2012 and 2014, and by 6.9% of service companies, i.e. one percentage point less between 2012 and 2014. Between 2012 and 2014, the percentage of industrial enterprises that generated marketing innovations was lower than the service sector by 0.3 percentage points, but this situation reversed between 2015 and 2017, i.e. the percentage of industrial enterprises implementing marketing innovation was 0.6 percentage points higher than service enterprises establishing marketing innovation.

### **3. Universality of implementing product and process innovations**

As already mentioned, the innovativeness of enterprises may be expressed through the creation of product innovations, process innovations, or both. Therefore, it would be interesting to analyze the universality of the implementation of those categories of innovations. As can be seen from Table 2, both between 2012 and 2014 and between 2015 and 2017, process innovations were established slightly more frequently in both industrial and service enterprises.

**Table 2.**

*Innovative enterprises between 2012 and 2014, and between 2015 and 2017 according to type of innovation*

Specification	Percentage of enterprises that implemented innovations			
	2012-2014		2015-2017	
	Enterprises		Enterprises	
Type of innovation	Industrial	Service	Industrial	Service
Product innovations	11.7	6.8	12.0	5.4
Process innovations	12.9	8.4	15.3	8.3
Product and process innovations	7.2	3.8	8.8	3.3

Source: own study, based on: (Działalność, 2015, p. 42; Działalność, 2018, p. 31).

Between 2012 and 2014, process innovations were introduced by nearly 13% of industrial enterprises. In the subsequent period, this percentage increased by 2.4 percentage points, which is a positive phenomenon. In service enterprises, between 2012 and 2014, process innovations were implemented by 8.4% of companies. However, between 2015 and 2017 this percentage decreased by 0.1 percentage points. Slightly fewer enterprises decided to put in place product innovations. Moreover, slightly less than 12% of industrial enterprises undertook product innovations between 2012 and 2014. Between 2015 and 2017, this percentage increased by 0.3 percentage points. A much worse situation occurred in service enterprises. Between 2012 and 2014, product innovations were implemented by 4.9% less service enterprises than industrial enterprises. Between 2015 and 2017, the difference amounted to 6.6 percentage points. Both product and process innovations in the analyzed periods were established by the smallest percentage of industrial and service enterprises. While an upward trend by 1.6% was observed among industrial enterprises, which is a positive phenomenon, the percentage of service enterprises that implemented product and process innovations decreased by 0.5 percentage points, which is a negative phenomenon.

In general, both between 2012 and 2014 and between 2015 and 2017, the percentage of innovative enterprises was higher in industry than in services for product innovations, process innovations, and both product and process innovations. While slight increases in the percentage of innovative companies were observed in industry, the percentage dropped in services for product innovations, process innovations, and both product and process innovations.

#### **4. Universality of implementing innovations in small, medium and large enterprises**

One area to analyze in terms of innovation is the size of enterprises measured by the number of employees. These are small, medium, and large enterprises. Undoubtedly, it is interesting to learn about the universality of implementing specific types of innovations in different sized enterprises. This allows the widely held opinion that small and medium companies are more innovative than large companies to be confirmed or refuted.

As can be seen from Table 3, between 2012 and 2014, less than 11% of small industrial enterprises implemented at least one product or process innovation. This percentage increased by 0.6 percentage points between 2015 and 2017. A worse situation occurred for service enterprises. Between 2012 and 2014, only 9.1% of small enterprises were innovative, and between 2015 and 2017, only 7.1%.

The percentage of innovative enterprises increased along with the size of enterprise measured by the number of employees. Among medium-sized industrial enterprises, slightly more than 31% of companies were innovative between 2012 and 2014, and slightly more than 32% between 2015 and 2017. Thus, an increase in the percentage of innovative companies by one percentage point was recorded. Between 2012 and 2014 in the service sector, less than one in five enterprises adopted product or process innovations. In contrast, between 2015 and 2017, almost one in four medium-sized service enterprises were innovative companies. Thus, the amount of innovative enterprises increased by 4.2 percentage points, which is a positive phenomenon. The highest percentage of innovative enterprises was recorded for large industrial enterprises and service enterprises. Between 2012 and 2014, almost 58% of all industrial enterprises and slightly less than 43% of all service enterprises were innovative. Between 2015 and 2017, this increased by 1.5 percentage points for industrial enterprises and decreased by 0.4 percentage points for service enterprises.

**Table 3.**

*Percentage of enterprises that implemented innovations between 2012 and 2014 and between 2015 and 2017*

Specification	Percentage of enterprises that implemented innovations			
	2012-2014		2015-2017	
	Industrial	Service	Industrial	Service
Size of enterprise	Product innovations or process innovations			
Small	10.7	9.1	11.3	7.1
Medium	31.3	19.4	32.3	23.6
Large	57.8	42.7	59.3	42.3
Size of enterprises	Organizational innovations			
Small	5.4	8.7	5.5	5.7
Medium	12.6	12.1	12.2	11.3
Large	35.3	27.8	31.3	23.2
Size of enterprise	Marketing innovations			
Small	5.4	6.7	5.5	5.7
Medium	10.8	12.2	10.2	10.6
Large	27.1	25.7	24.2	22.6

Source: own study, based on: (Działalność, 2015, pp. 37, 50, 57; Działalność, 2018, pp. 26, 38, 44).

In general, both among industrial enterprises and service enterprises, the percentage of innovative enterprises increased with the increase in size of enterprise. At the same time, in the analyzed periods of time, industrial enterprises implemented more product or process innovations in comparison with service enterprises. For small companies, the differences between industrial enterprises and service enterprises amounted to 1.6 percentage points between 2012 and 2014, and 4.2 percentage points between 2015 and 2017. In the group of medium-sized enterprises, the differences between industrial enterprises and service enterprises

amounted to 11.9 percentage points between 2012 and 2014 and 8.7 percentage points between 2015 and 2017. For large enterprises, the differences between industrial enterprises and service enterprises were 15.1 percentage points for 2012 and 2014 and 17 percentage points for 2015 and 2017, respectively. Between the analyzed periods of time, there was a slight increase in the percentage of innovative industrial enterprises and a decrease in the percentage of innovative service enterprises, with the exception of medium-sized companies, where the percentage of innovative enterprises increased by 4.2 percentage points.

In addition to product and process innovations, Polish enterprises also put in place organizational and marketing innovations. In the industrial and service sectors, organizational innovations were most often implemented by large enterprises, and the least often by small enterprises. Between 2015 and 2017, almost every third large industrial enterprise and only 5.5% of small enterprises introduced at least one organizational innovation. In the service sector, slightly more than 23% of large companies and less than 6% of small enterprises adopted organizational innovations. Compared to the period between 2012 and 2014, the percentage of enterprises that took up organizational innovations increased by 0.1 percentage points for small industrial companies, decreased by 0.4 percentage points for medium-sized industrial companies, and decreased by 4 percentage points for large industrial companies. In the services sector, the percentage of enterprises that implemented organizational innovation between 2015 and 2017, compared to the period between 2012 and 2014, decreased by 3 percentage points for small enterprises, by 0.8 percentage points for medium-sized enterprises and by 4.6 percentage points for large enterprises. These data indicate a decrease in interest in adopting organizational innovations in both industrial and service enterprises.

Similar tendencies were observed in relation to the universality of implementing marketing innovations. Small enterprises were the least innovative in this respect. The percentage of innovative enterprises increased with the increase in their size. Between 2015 and 2017, only 5.5% of small industrial enterprises and 5.7% of small service enterprises undertook marketing innovations. In comparison to the previous period, this percentage increased by 0.1 percentage points in the sector of small industrial enterprises and decreased by 1 percentage point in the sector of small service enterprises. Marketing innovations were more popular in medium-sized enterprises. Between 2015 and 2017, marketing innovations were implemented by slightly more than 10% of industrial and service companies. However, compared to the period between 2012 and 2014, the number decreased by 0.6 percentage points in industry and by 1.6 percentage points in services. The largest percentage of enterprises putting into place marketing innovations was recorded among large, industrial and service enterprises. Between 2015 and 2017, marketing innovations were introduced by slightly more than 24% of all industrial enterprises and less than 23% of all service enterprises. In comparison to the previous period, the percentage decreased by 2.9 percentage points for industrial enterprises and by 3.1 percentage points for service enterprises.

## 5. Conclusions

This article attempted to identify universality in implementing innovations in Polish industrial and service enterprises. A basic measure of innovation was used, which was the percentage of enterprises that adopted product and process innovations within the total number of enterprises. The article showed that in the analyzed periods, product and process innovations were put in place by less than 19% of all enterprises in the industrial sector and less than 12% in the service sector. This illustrates the relatively low innovativeness of Polish enterprises. One cannot talk about growth trends in this area, as although in the industrial sector, the percentage of innovative enterprises increased by 1 percentage point in the analyzed periods, in the services sector, there was a decrease by 1 percentage point.

Polish enterprises showed even less interest in undertaking organizational and marketing innovations. This is confirmed by the relatively low and declining indicators illustrating this state of affairs. Enterprises implemented process innovations slightly more often than product innovations, and they were the least likely to introduce both product and process innovations. The innovativeness of industrial enterprises was slightly larger than that of service enterprises.

The analysis of the source material clearly indicates that the universality of implementation of particular types of innovation varied depending on the size of enterprises measured by the number of employees. Between 2012 and 2014 and between 2015 and 2017, product or process innovations were implemented by slightly more than 10% of all enterprises in industry and less than 10% of all enterprises in services. In large enterprises, this percentage increased to around 32% in industry and around 20% in services. The largest percentage of innovative companies was recorded among large enterprises. Nearly 60% of all industrial companies and about 42% of all service companies met the criterion of an innovative company.

Similar tendencies in the universality of innovation implementation occurred for organizational and marketing innovations. Between 2012 and 2014 and between 2015 and 2017, organizational and marketing innovations were adopted by significantly less than 9% of all small enterprises, slightly more than 10% of all medium-sized companies and about 30% of all large enterprises, which confirms the hypothesis.

In general, the analysis and critical assessment of the empirical material indicates relatively low and diversified innovation in both industrial and service enterprises. Innovativeness is limited by internal barriers, which are dependent on management, and external barriers, which are independent of management. The barriers are political, legal, economic, social, organizational, mental and managerial. More specifically, these barriers include the lack of financing for innovation from the company's own resources or from external sources, the lack of personnel capable of creating and implementing innovations, difficulties in obtaining public funds for innovation, the lack of cooperation partners, uncertain market demand for company innovations, and too much competition on the market (Działalność, 2015, p. 120). Barriers also



include an intuitive, conservative approach to management, ignorance of modern management methods, management concentrating on operational problems, marginalization of strategic management aimed at acquiring knowledge materialized in innovations, avoiding systemic actions leading to integration between science, technology, production and distribution, the lack of ability to shape the following: culture of innovation, the social capital of innovation, management based on innovation models, and innovation management models. Elimination of these barriers may contribute to the growth of innovativeness in enterprises, the dissemination of rational management methods for future-oriented enterprises, and the progressive development of enterprises (Baruk, 2009, p. 128 and further, Baruk, 2018, pp. 83-110).

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