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Specificity of innovation in the service sector: the example of Poland

Abstract: The discussion that has taken place in recent years on innovativeness in services is connected, on one side, with their growing role in the economy. On the other, it results from an increase in innovation as the main socio-economic development factor of countries and regions. Innovation is seen as an essential link in developing a strong economy, and its shortcomings may lead to an economic crisis. Innovations have become a new element playing a crucial role in crystallising a new economic model, particularly in developed countries. The growing role of services in the modern economy has led to an increased interest in service activities and service innovations. This paper aims to present the specificity of innovations in the service sector compared to the manufacturing industry based on Poland's example. In the empirical analysis, data from the Central Statistical Office in Poland and EUROSTAT was used. An analysis of innovativeness in the service sector, based on traditional innovation measurement indicators, concludes that it is much lower than in the manufacturing industry. In the entire analysed period, the percentage of innovative enterprises in the service sector was lower than in the manufacturing industry by several percentage points. According to service sector type, organisation and marketing are more critical in terms of innovation. In their cases, the differences between manufacturing and services are minimal; however, it is more significant in products and processes.

Keywords: innovativeness; organisational innovation; Poland; service sector

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Introduction

The discussion on innovation in services in recent years is related to the growing role of services in the economy and the growing importance of innovation as the main socio-economic development factor of countries and regions. Innovation is perceived as a vital link in developing a strong economy, and its shortcomings may lead to an economic crisis (Hausman, Johnston, 2014). Innovation has become an element that plays a crucial role in crystallising the new economic model, especially in developed

countries where population and consumption growth are difficult to achieve (Chursk et al., 2018; Kowalski, 2011). Returning to a development path requires structural changes aimed at modern activities with high productivity in manufacturing and services (Rodrik, 2009). The research results indicate that innovative services can play the role of 'driving wheels' of the economy (Felipe et al., 2007). Previously considered a consumer of innovation, services are starting to play an increasingly active role in the innovation system. Until recently, the literature considered this issue mainly from the point of view of production activities; service innovation was marginal (Miles, 2000). However, the growing role of services in the modern economy has led to an increased interest in service activities and service innovations.

Innovation in the service sector is slightly different from innovation in the manufacturing sector and is related to service specificity, as activities that do not lead to the creation of tangible products usually require lower investment outlays. It should also be emphasised that the service sector is very diverse, which has a significant impact on levels of innovativeness; these will depend on whether services are traditional or modern, with the latter being more susceptible to innovation. Therefore, it is necessary to investigate the specificity of innovation in the service sector.

The aim of this work is, therefore, to answer the following research questions:

1. What is the level of innovation in the service sector compared to manufacturing in Poland relative to other EU countries?;
2. What are the differences in the types of innovation in both sectors of the economy?;
3. Does the service sector stands out in terms of expenditure on innovative activities and to what extent? The analysis was based on traditional indicators from data published by the Central Statistical Office and EUROSTAT[1]. The analysis used data mainly from 2018, but unfortunately, there was only a limited opportunity to compare previous results.

Innovation in services in the subject literature

Innovation in services can be considered in many ways. Hertog (2002) distinguishes four aspects of innovative activity, including:

- the idea or concept of a service (e.g. creating a network of company stores or call centres);
- contact with a customer (e.g. using the internet as a new distribution channel, the functioning of portals enabling contact with a customer, replacing direct contacts),
- service delivery system (e.g. home delivery shopping system, e-commerce);
- technological possibilities (the use of ICT, e.g. an ordering system that allows for automatic placing of orders when the quantity of goods on the shelves reaches a critical value).

Service innovation can be a combination of these four dimensions. A completely new service will usually, in addition to a new idea, include a delivery system, customer contact and technological change (de Jong et al., 2003).

Various classifications of service innovation can be found in the subject literature. One of the most general typologies is the classification due to extent. According to this

[1] The last shortened edition of the survey as part of the Community Innovation Survey (CIS) based on the methodology developed by Eurostat and OECD, resulting from the Oslo Manual.

criterion, innovations in services can be divided into (1) major, radical - including complex changes in service activities; and (2) secondary, incremental – innovations with a smaller range (Gallouj, Weinstein, 1997).

Innovations in services can also be divided according to their initiator (De Jong et al., 2003):

1. supplier-initiated innovation, often seen as the dominant type in services. It lies in the use of new products resulting from innovations in industrial production, e.g. microwave ovens in gastronomy;
2. innovations initiated by the service companies themselves. These are technological or non-technological and implemented in a company, often for strategic reasons, e.g. a new formula for stores in commercial companies;
3. customer-initiated innovations – these are a response to defined customer needs from service companies, e.g. door to door transport;
4. service-initiated innovation is found when service companies influence the innovation process that takes place in their customers. This type of innovation mainly concerns business-to-business services;
5. paradigmatic innovation – comprehensive innovations in which suppliers, customers and service companies all participate, e.g. replacing overground public transport with an underground.

As previously mentioned, initially, the theory of innovation referred only to production activities. The importance of services in innovative processes was relegated to being a passive recipient of technological innovations from the manufacturing sector (Niedzielski, Rychlik, Markiewicz, 2008). As a result of the growing role of the service sector in the economy and shifting the burden of perceiving innovative phenomena from strictly technological areas towards "softer" ones such as marketing or organisation and management, the approach to innovation in services has evolved. Today, the analysis of innovativeness in the economy is carried out for both production activities and the area of services.

The literature on the subject shows three approaches to analysing innovation in services (cf. Coombs, Miles, 2000; Drejer, 2003). The first one, represented by Gallouj and Weinstein (1997), postulates an approach identical to the methodology already developed for researching innovation in production processes. In the subject literature, this is referred to as the assimilation approach. According to the second one, a particular approach to service innovation is necessary, known as demarcation. It considers that service innovation is significantly different from manufacturing and requires new theories and research tools (Bernardt, 2000). According to the third approach, the research methodology already developed in industrial production, after appropriate adaptation to the specificity of services, may become the basis for formulating a concept of innovation in the service sector (synthetic approach).

According to Tokarz (2009), the main differences between manufacturing and service innovation are length and complexity. Industry most often absorbs new technical thought by implementing new production technologies. The service sector usually introduces new technology, leading to constant transformation, improvement, and adaptation to customers' needs. In service enterprises, human resources play a crucial role in innovation processes. De Jong et al. (2003) consider the most critical differences between innovation in services and industrial production in three ways: (1) the subject of innovation, (2) the degree of innovation, (3) the dimension of innovation. Considering

the subject of innovation in industry, product and process innovations are most often distinguished. In services, this border is blurred as product and process innovations very often coincide. Besides, new services are often supported by new methods of distribution, quality control and customer contact.

Regarding novelty, there is a lower degree of innovation in the service sector where features are merely replaced or added without changing the service's essence. The dimension of innovation may come down to perceiving it as a new service in the company – a process that usually occurs through the adaptation of services already existing on the market or introducing a completely new service. In the service sector, both dimensions of innovation often coexist.

Summing up, it can be stated that the specificity of service innovations lies in the fact that they usually include minor changes, which are often an adaptation of those previously introduced by other service companies (de Jong et al., 2003). "The service sector is becoming more and more active in terms of innovative activities. Innovative activity in the service sector is evolving in the direction of the manufacturing sector. Service enterprises increase their expenditure on research and development (as indicated by research conducted in this area) and play a significant role in regional innovation processes. It mainly applies to such areas as consulting, specialised construction design and engineering services, environmental protection, software and IT systems, research and development projects" (Niedzielski, Rychlik, Markiewicz, 2008).

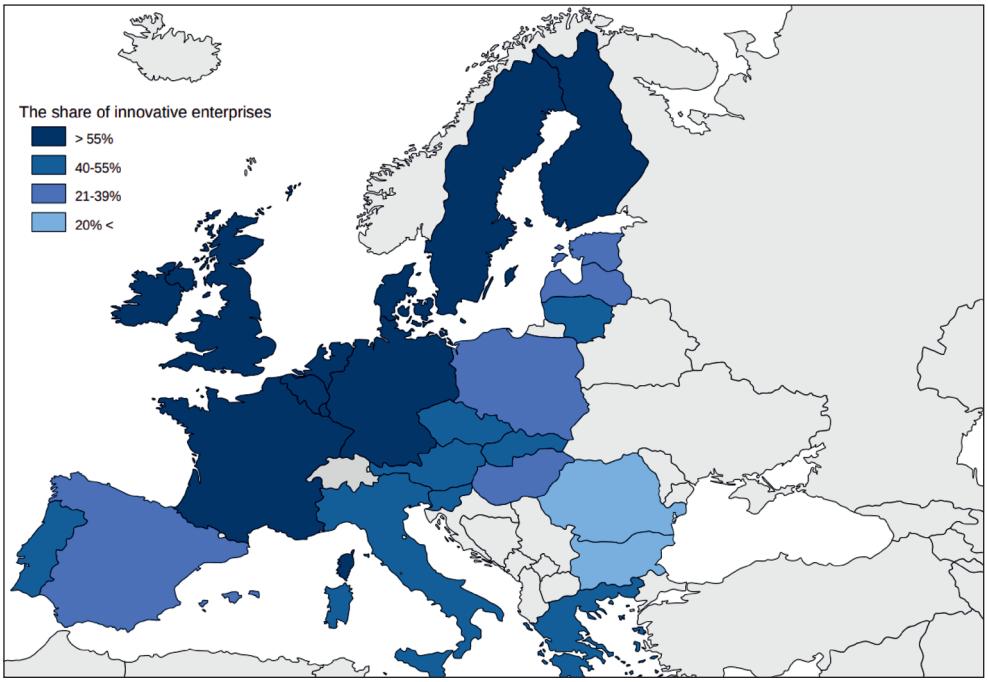
Innovativeness in the Polish economy compared to the EU

Compared to other European Union countries, Poland shows a low level of innovation in enterprises, both in general and in the service sector. Among EU countries, in terms of the percentage of innovative enterprises, Poland (21%) ranks as almost the last, ahead only of Romania and Bulgaria. Western European countries remain leaders, such as Germany (67.0%), Belgium (64.2%), Luxembourg (66.1%), the UK (60.2), Ireland (61%), Austria (59.5%) and the Scandinavian countries (Figure 1). Similar conclusions can be drawn from an analysis of the European Innovation Scoreboard (EIS). According to EIS data in 2019, the innovation index was highest in Sweden (153.12) and lowest in Romania (34.4). Among innovation leaders, apart from Sweden, there are Denmark, Finland, the Netherlands, the UK and Germany. With an indicator of 64.07, Poland was considered a so-called moderate innovator, as most Central, Eastern and Southern European countries. The innovation index's lower values were recorded only in Croatia, Bulgaria and Romania (Figure 2).

The Polish economy's low innovativeness translates into a low level of innovation in the service sector (Figure 3). In 2016–2018, the percentage of innovative enterprises in this sector (sections G-N of PKD 2007) was 21% and was relatively low compared to other EU countries. Only Romania had a lower percentage of innovative service enterprises, while the highest levels were recorded in Sweden and Denmark (over 56%).

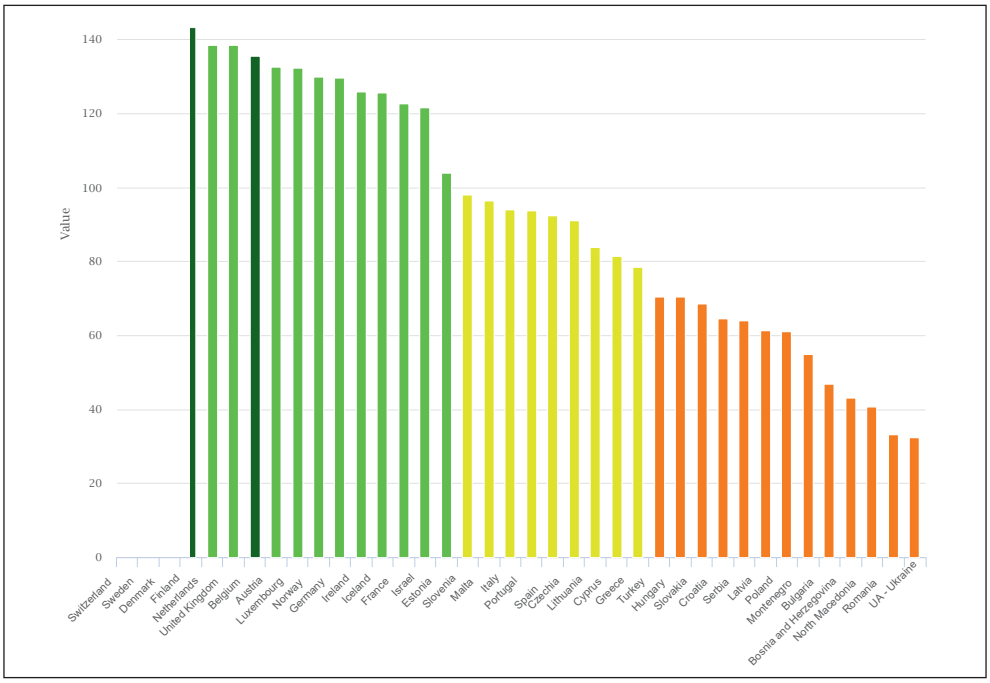
The low level of innovativeness in Poland is related to its structure in which traditional services (trade, transport, and others) still have a relatively large share and are much less susceptible to innovation than the so-called knowledge-based services. The relatively low share of modern services in Poland, combined with the generally low level of innovativeness in the Polish economy, results in a very low position concerning innovation in the service sector compared to other EU countries.

Figure 1. The share of innovative enterprises in the EU countries in 2018



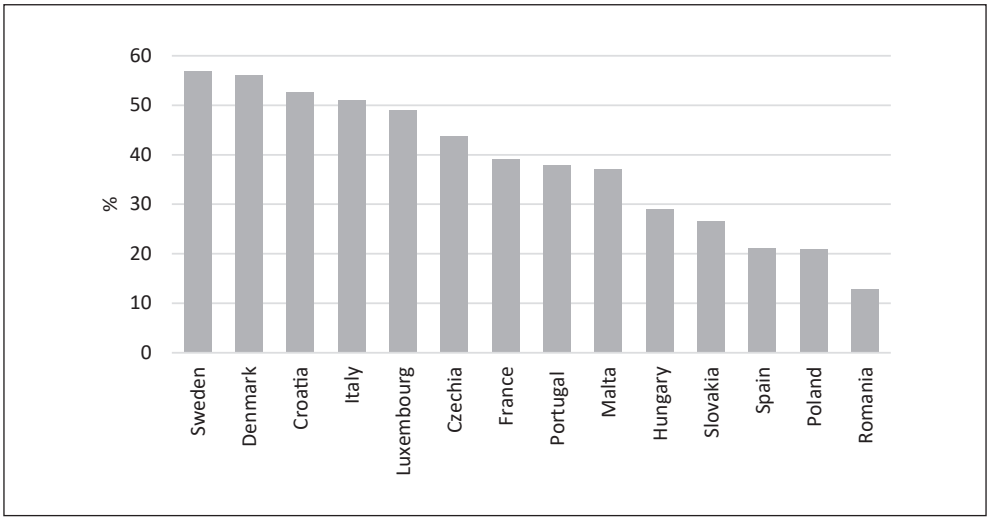
Source: Dominiak (2019)

Figure 2. Innovation index in 2019



Source: https://interactivetool.eu/EIS/EIS_2.html

Figure 3. Percentage of innovative enterprises in the service sector (sections G-N PKD 2007) in 2016–2018 in selected EU countries



Source: author based on the EUROSTAT database

THE SPECIFICITY OF INNOVATIONS IN THE SERVICE SECTOR IN POLAND IN COMPARISON WITH THE MANUFACTURING SECTOR

The analysis of the service sector's innovativeness based on traditional innovation measurement indicators concludes that it shows a much lower level than the manufacturing sector. In 2008–2018, the percentage of innovative enterprises in the service sector was lower by several percentage points (4 to 8 pp). In the initial period, this difference decreased (2008–2012), but from 2013 it started to increase until 2016 when it decreased again.

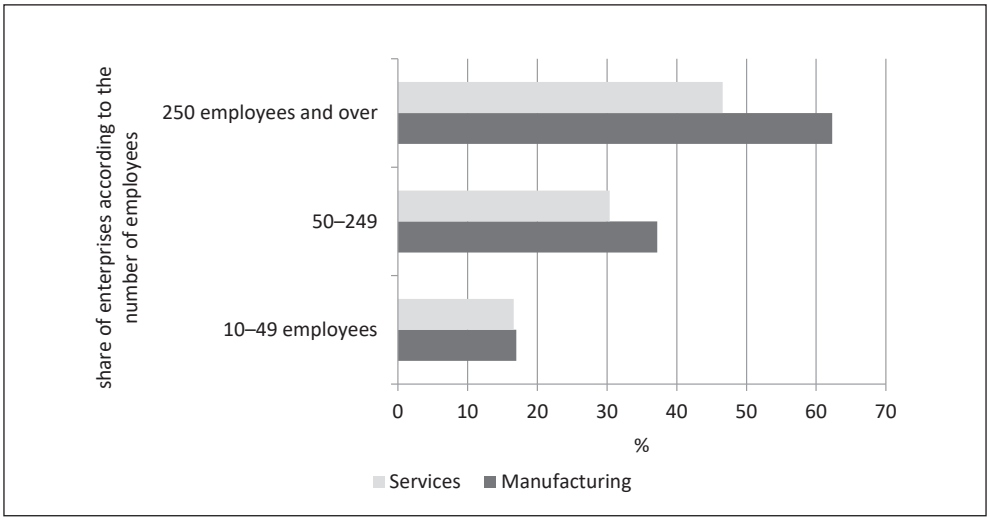
The share of innovative industrial and service enterprises in 2016–2018 in the total number of these enterprises was, respectively, 24.0% and 19.6%. Product or business process innovations were often introduced by entities employing 250 people and more (62.3% of industrial enterprises and 46.6% of service enterprises). Innovative activity is the domain of large enterprises with appropriate organisational facilities (research departments) and material conditions that give them more significant opportunities to finance innovations, usually costly, than small and medium-sized enterprises. The lowest level of innovative activity is found in small enterprises with up to 49 employees. Although EIS studies are not fully comparable over time, the results of previous ones indicate that although the share of these enterprises increased in the period 2009–2018, it was still at a low level. In the services sector, its share increased from 9.1 to 11.0%. Medium-sized enterprises show a significantly higher percentage of the innovatively active, and in the same period, their share increased from 19.6% to 21.9% in the services sector. The highest percentage of innovative activity was recorded by large enterprises with more than 250 employees. However, the innovative share in this category decreased in the service sector from 44 to 42.3% in the period analysed (Table 1, Figure 4). This relationship between the size of an enterprise and its innovative activity does not apply solely to Poland.

Table 1. Innovative enterprises by size in Poland

Enterprises according to the number of employees	Share of innovative enterprises in the service sector		
	2009–2011	2014–2016	2016–2018
Small (10–49 employees)	9.1	11.0	16.6
Medium (50–249 employees)	19.6	21.9	30.4
Large (250 employees and over)	44.0	42.3	46.6

Source: GUS. (2018). Działalność innowacyjna przedsiębiorstw w latach... Retrieved from https://stat.gov.pl/obszary-tematyczne/nauka-i-technika-spoleczenstwo-informacyjne/nauka-i-technika/dzialalnosc-innowacyjna-przedsiebiorstw-w-latach-2017-2019,2,18.html (Accessed on 18.03.2021)

Figure 4. Share of innovative enterprises in 2016–2018 by size



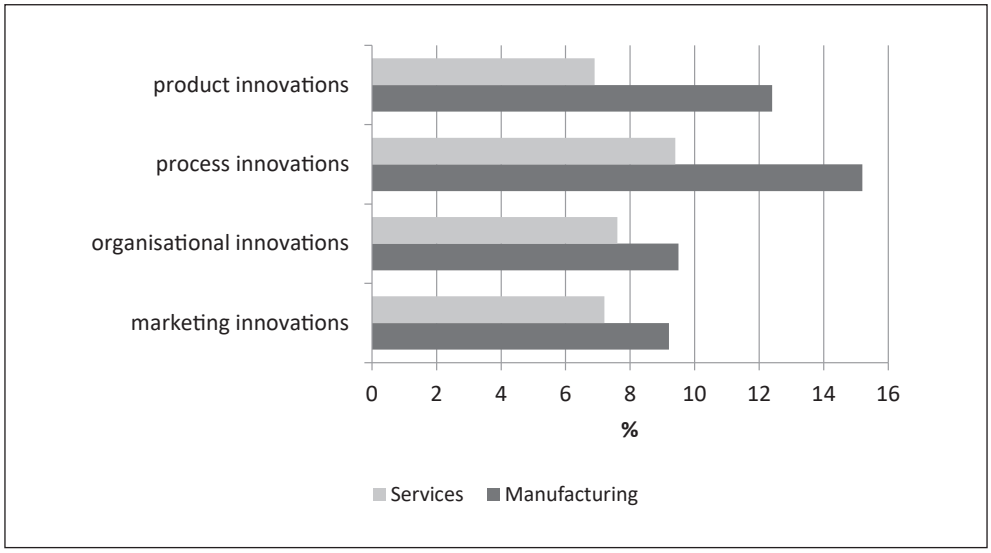
Source: author based on GUS. (2018). Działalność innowacyjna przedsiębiorstw w latach... Retrieved from https://stat.gov.pl/obszary-tematyczne/nauka-i-technika-spoleczenstwo-informacyjne/nauka-i-technika/dzialalnosc-innowacyjna-przedsiebiorstw-w-latach-2017-2019,2,18.html (Accessed on 18.03.2021)

In the service sector, organisational and marketing innovations are more important. In these cases, the difference between the manufacturing and service sectors is minimal and amounts to only 1–2 pp. However, it increases to 5.5–6 pp in the case of produce and process innovations (Figure 5).

In the service sector, the most innovative companies were those operating in the following areas: insurance (77.6), research and development (58.5), software and IT consulting (43.5). The smallest share of innovative enterprises was among transport and trade enterprises (12.7–16.7%)

The outlays of enterprises on innovative activities in the service sector are lower than in the manufacturing sector. In 2016, they amounted to PLN 10 706.2 million in the service sector, while in the industrial sector, it was PLN 28 304.7 million. It is undoubtedly related to differences in the kinds of innovation introduced in both sectors. Enterprises from the service sector showed a lower level of innovation in introducing product and process innovations related to service activity specificity and the predominance of organisational and marketing innovations. These are not as expensive as

Figure 5. The share of innovative enterprises by type of innovation in 2016–2018



Source: author based on GUS. (2018). Działalność innowacyjna przedsiębiorstw w latach... Retrieved from https://stat.gov.pl/obszary-tematyczne/nauka-i-technika-spoleczenstwo-informacyjne/nauka-i-technika/dzialalnosc-innowacyjna-przedsiebiorstw-w-latach-2017-2019,2,18.html (Accessed on 18.03.2021)

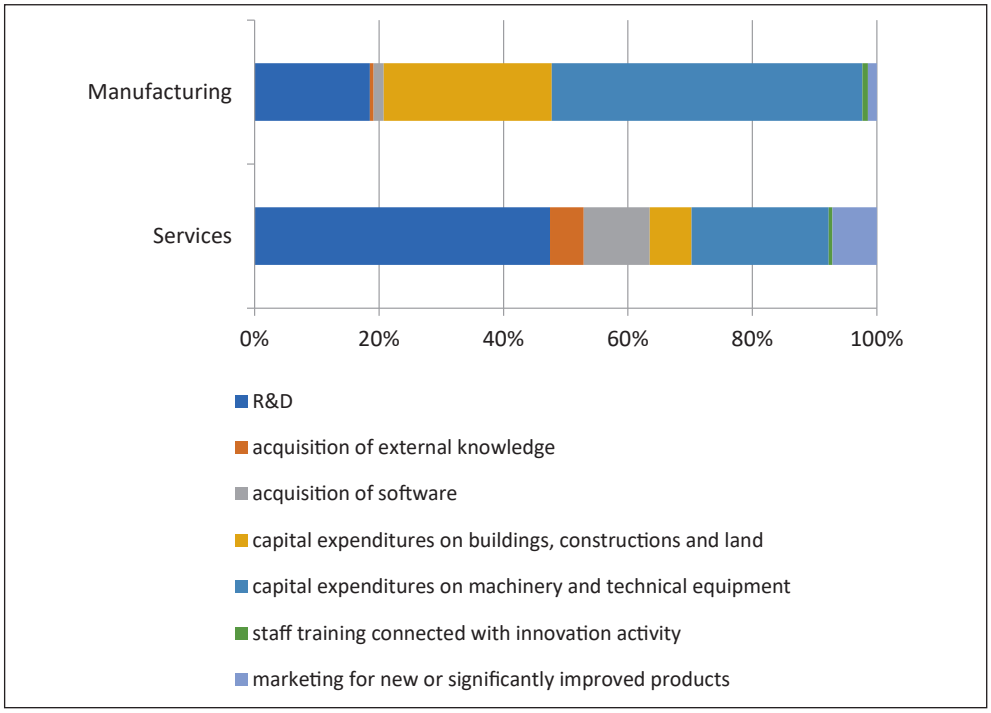
product and process innovations (hence much lower expenditure on innovative activities in the service sector). As a result, small service enterprises (up to 49 employees) introduced product and process innovations and organisational and marketing innovations more often than small industrial enterprises. In the largest enterprises, the situation is the opposite, and they are more innovative in manufacturing than service companies. Concerning expenditure on innovative activities, service enterprises recorded a much higher share of funds allocated to research and development (41% compared to 18.3%) and the purchase of knowledge from external sources (4.7% compared to 0.6%). On the other hand, enterprise innovative activity from the manufacturing sector was mainly related to investments in buildings, structures and land, and machinery and technical devices (Figure 6).

Service enterprises (partly due to lower innovation costs) based their innovative activity on their resources more often than industrial enterprises. In the case of service companies, this accounted for 88.2% of total expenditure, compared to 71.6% in the manufacturing sector.

Significant differences were also noted concerning cooperation in innovative activities between enterprises from the service sector and industry. According to Central Statistical Office (GUS) data, in 2018 6.6% of enterprises from the manufacturing sector cooperated in such activities, compared to 3.6% of enterprises from the service sector. Large enterprises undertook such cooperation much more often both in the service sector and industry. This indicator's values were 30.3% for industrial enterprises and 15.7% for service enterprises.

Differences in the innovativeness of the service sector and industry are also noted in the context of economic indicators. The share of net revenues from the sale of new or improved products introduced to the market in 2016–2018, in 2018 amounted to 9.1%

Figure 6. Division of expenditure on innovative activities in enterprises from the industrial and service sectors in 2016



Source: author based on GUS. (2018). Działalność innowacyjna przedsiębiorstw w latach... Retrieved from https://stat.gov.pl/obszary-tematyczne/nauka-i-technika-spoleczenstwo-informacyjne/nauka-i-technika/dzialalnosc-innowacyjna-przedsiebiorstw-w-latach-2017-2019,2,18.html (Accessed on 18.03.2021)

for industrial enterprises and only 3.2% for service entities in total sales revenues. As in other cases, the largest share of revenues from selling new or improved products in total revenues was achieved by the entities of 250 employees or more which concerned both manufacturing (11.3%) and service enterprises (5.1%). In the revenue division from the sale of innovative products, revenues from the sale of new or improved products only for the enterprise (65.1% each) had a more significant share than the market. There were no differences in this respect between entities from the service and manufacturing sectors. In the services sector, enterprises conducting research and development (28.3%) and telecommunications (20.5%) had the largest share of net revenues from selling new or improved products.

Summary

Despite the increasing importance of innovation in the modern economy's development, innovative activity among enterprises in Poland's service sector is low and does not show growth. The Polish economy's innovativeness analysis showed that, based on traditional indicators of innovation measurement, the service sector had a much lower level of innovation than the manufacturing sector. In 2008–2018, the percentage of innovative enterprises in the service sector was lower by several percentage points

(4 to 8). Simultaneously, due to its relatively more significant heterogeneity, the service sector also shows high differentiation in innovation.

It should also be remembered that innovative enterprise activity (not only the service sector) changes over time. Innovations do not have to be introduced continuously. Hence fluctuations in the value of indicators (e.g. the percentage of innovative enterprises) over time are significant. It is also an activity significantly dependent on a company's financial condition and, thus, indirectly on the market's economic situation.

However, the lower level of innovation in the service sector resulting from the data analysis presented here does not mean a low service innovation level. In a new analytical approach, taking into account the functional approach (Dominiak, 2019), which includes the emergence of new services, new innovative changes in the organisation of service activities, contact with customers, methods of service distribution, marketing, and are not limited to the service sector as traditionally defined, indicate a much higher level of activity.

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