

## Barriers to the Innovative Activities of Lower Silesian Enterprises

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**Abstract:** The innovation of enterprises and regions constitutes one of the key foundations in building a competitive advantage. In this context, innovative activity, its determinants and barriers become of particular importance. This article focuses on the barriers to innovation, comparing the source literature with the solutions offered by official statistics in terms of the relevant terminology and the distribution of constraints to innovation. The empirical research aimed to identify the major barriers to the innovative activities of Lower Silesian enterprises, and capture possible differences in the perception of obstacles to innovation in the environment of industrial and service enterprises viewed from the perspective of 2019 and 2021. The analyses indicate that regional manufacturers and service providers face similar barriers to innovation (e.g. cost factors), but that these are much more frequently observed in the industrial sector. The research procedure employed the methods of source literature critical analysis and descriptive statistics.

**Keywords:** barriers to innovative activity, Lower Silesian enterprises, Oslo Manual (OM)

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### 1. Introduction

Innovativeness – expressed as the ability of enterprises and regions to create, as well as absorb, new or significantly improved products and business processes – constitutes one of the key foundations for building a competitive advantage (Calantone et al., 2002; Dworak, 2020; Hult et al., 2004; Jin et al., 2004; Panek, 2009). From this perspective, the development of economic entities and territorial units would seem to be significantly conditioned by innovative activity. Many studies have addressed the search for its determinant (Cohen, 1995; Guevara et al., 2020; Henard & Szymanski, 2001; Jakimowicz & Rzeczowski, 2019; Montoya-Weiss & Calantone, 1994; Restrepo-Morales et al., 2019). Considerably less attention has been paid to the barriers to innovation (García-Quevedo et al., 2020; Iammarino et al., 2007; Mohnen et al., 2008; Silva et al., 2007). This disproportion is unjustified, as activities aimed

at implementing innovation almost always involve not so much exploiting opportunities as they arise, as overcoming the barriers that appear. These can be of a varying nature (e.g. cost, market or knowledge-based factors), and can be viewed differently by enterprises from various sectors of the economy, both those that are actively and passively innovative.

The research goals aimed to identify the most significant barriers to innovative activity among Lower Silesian enterprises, and capture any differences in the perception of obstacles to innovation in the environment of industrial and service enterprises viewed from the perspective of 2019 and 2021.

## **2. Statistical Approach to Barriers to Innovative Processes and the Output of Source Literature**

In the Oslo Manual 2018, a differentiation is made between ‘barriers’ and ‘obstacles’ to innovation. A barrier, in the wording of the Oslo Manual (OM), is described as the complete or partial cessation of innovative activity, where the complete cessation of innovation processes takes place in non-innovative companies, and partial cessation relates to entities that are innovatively active and that cease the implementation of only certain types of innovation. In contrast to barriers, obstacles to innovation are viewed in the category of hindering factors – increasing costs and causing technical problems – that can often be overcome (OECD/European Union, 2018). This differentiation would not seem to be justified, as the consequence of certain barriers/obstacles occurring should not be encapsulated in their names but rather in their degree of severity (e.g. very high, preventing innovative activity). Interestingly, in the previous 2005 edition of the Oslo Manual, the barriers to innovative activity were considered to be identical to the factors hindering such activity, which may be the reason for innovative processes not being undertaken at all, the cause of the slowing down of such activity, or the driving force behind expected results not being achieved (OECD/Eurostat, 2005). In this approach, the factors that prevent or hinder innovative activity are, as in the literature, terminologically interchangeable with the concepts of barriers and obstacles to innovation (Iammarino et al., 2007; García-Quevedo et al., 2020; Silva et al., 2007; Mohnen et al., 2008). Other synonyms sometimes used for barriers are the factors that inhibit or weaken innovative processes, or that constrain innovativeness (Madeira et al., 2017; Woźniak-Malczewska, 2016). It is therefore worth noting that the differentiation of the concepts of barriers and obstacles to innovation, and the search for differences with their other terms, will probably not lead to terminological clarity, but will more probably create greater interpretive chaos. In the context of previously conducted considerations, it should be assumed that barriers to innovative activity comprise the properties of enterprises and their surroundings whose activity leads to the cessation of innovative processes, or the delay or distortion of their results (Carvache-Franco et al., 2022; Mirow et al., 2007; Pellegrino, 2018).

A definitional approach to barriers to innovative activity indicates that obstacles to innovation can lead to various consequences. In the pessimistic version, they become reasons for the abandonment of the innovative process before it has begun, while in the optimistic scenario they are overcome without any detrimental effect on innovation, both in terms of the implementation deadline as well as the relation between the planned expenses and the expected effects. Other consequences of the effect of these factors also cannot be excluded, such as: delay to the implementation of innovations; suspending the innovation process while it is in progress; obtaining worse effects than expected; achieving the expected results at a greater expense. With this multiplicity of effects, it would seem justified – in the author’s opinion – to view barriers to innovative activity in the category of the factors whose effect inhibits or makes impossible conducting the activities aimed at developing and implementing innovations. At the same time, such difficulties may lead to failure, only partial success, or retaining a neutral position with regard to the innovative process.

In the process of identifying barriers to innovative activity, it is important not only to clearly define them, but also to classify them appropriately. In the literature, it is usually proposed that obstacles to innovation be divided into revealed and deterring obstacles, and internal and external obstacles.

The revealed barriers are registered on the basis of the experiences of enterprises undertaking activities oriented towards implementing innovations, irrespective of the final effect of their activity (success, full or partial failure). Their direct opposite are the deterring obstacles, which are identified before the innovative process has begun and are decisive in it being abandoned (D'Este et al., 2012; de-Oliveira & Rodil-Marzábal, 2019; Hvolkova et al., 2019). Identifying the barriers to innovative activity, along with a differentiation between innovatively active and passive enterprises, is of crucial importance as these entities have a different view of the obstacles to innovation, both in terms of the category of the identified factors and the strength of their effect (Arundel, 1997; Baldwin & Lin, 2002; Galia & Legros, 2004; Hartono & Kusumawardhani, 2019; Łukiewska, 2019). These views were taken into account in the Oslo Manual suggestions, although approached differently in each of its subsequent editions. In 2005, it was proposed that questions related to barriers to innovative activity be asked in "enterprises that conduct innovation, as well as in those that do not conduct such activity" (OECD/Eurostat, 2005). Meanwhile, in 2018, it was stated that "when collecting data on barriers or obstacles to innovation, it is necessary to guarantee that all questions are applicable both to enterprises that are innovatively active, as well as to those that are non-innovative" (OECD/Unia Europejska, 2018). The output in the literature, reflected in the Oslo Manual 2005, appears to connect revealed barriers with enterprises that are innovatively active, while deterring factors are associated with entities that are passively innovative. This division is in conflict with the distinction between the concepts of barriers and obstacles to innovation in the Oslo Manual 2018. From this perspective, deterring barriers can be identified not only by enterprises that are passively innovative, but also those that are actively innovative, whereas in the case of the latter, this only refers to specific types of innovation and not innovative activity in its entirety. It would seem that barriers ('obstacles' in the wording of the OM 2018) retain an unchanged character and can be overcome in the innovative process. These can be identified solely by enterprises that are innovatively active, and are thus revealed obstacles. In critically evaluating these proposals, it is worth maintaining the order in public statistics and in gathering information on factors that halt or hinder innovative activity, as well as clearly linking deterring and revealed barriers with enterprises that are innovatively passive and active. This proposal takes on particular importance as the statistical data provided refers to industrial and service enterprises as a whole, without a further division into those actively and passively innovative (see GUS, 2019; GUS, 2021). It is worth adding that the structure of reports on innovation in industry and the service sector (GUS: PNT-02, PNT-02/u) makes it possible to selectively gather information together with its division into the entities conducting innovative activity, and those not engaged in such processes.

Assuming that the barriers to innovative activity comprise prevailing conditions in the company and its environment that hinder the development of innovativeness (Carvache-Franco et al., 2022; Pellegrino, 2018), the total obstacles to innovation can be divided into internal and external (de Faria et al., 2020; Duarte et al., 2017; Dziurski & Sopińska, 2020; Hadjimanolis, 1999; Liebert & Trzeciak, 2016; Mohnen & Rosa, 2002; Tourigny & Le, 2004; Segarra-Blasco et al., 2007). The factors located inside the enterprise may potentially include, among others: no possibility to finance innovations from the firm's own funds, the excessively high costs of innovative activity, inadequate skills among personnel, insufficient innovative potential (R&D, design work), organisational fossilisation, and no need to develop innovations due to new or significantly improved solutions implemented previously. These obstacles can be negatively compounded by unsuitable external conditions in the form of: no possibility for financing innovations from external sources; inclusion of high risk capital and public assistance funds; staffing gaps on the market; problems in acquiring partners for cooperation; uncertain demand for innovative products; weak property rights; non-amicable legal regulations etc. (Segarra-Blasco et al., 2007).

The Oslo Manual 2005 notes the internal and external nature of conditions that prevent or hinder the conducting of innovative activity, but this is not fully reflected in the structured specification of the barriers to innovation (OECD/Eurostat, 2005). Its core contains a division of obstacles into cost, market, institutional and knowledge-based factors, as well as other reasons for not conducting innovative

processes. This classification lists the barriers with a direct indication of their nature (e.g. lack of financial means within the company, lack of external financial means, lack of qualified personnel in the company or on the job market), or it leaves this to intuitive interpretation (e.g. lack of information about markets), although this may not always be unambiguous (e.g. lack of information technology). A clearer separation between the factors related to the enterprise and those related to the surroundings is suggested in the Oslo Manual 2018. In this solution, the total external barriers/obstacles are systematised into three areas (the market, public policy and society), but it does not list specific factors, considering that they are antonyms of the list of stimulants to innovation (e.g. public infrastructure – unsuitable public infrastructure; OECD/Unia Europejska, 2018). This approach is supported by some research results, which indicate that the same conditions can be a determinant of innovation in one enterprise, but in another can constitute a barrier to innovative activity (Duarte et al., 2017). Potential internal barriers are equally not specified. In the recommendations of the Oslo Manual 2018, it is merely indicated that they can be the subject of observation, and example factors are listed, among others from the 2005 edition.

In the process of gathering information on the factors preventing or hindering innovative activity, based on reports about innovation in industry and the service sector (GUS: PNT-02, PNT-02/u), the suggestions of the OM 2018 regarding the division of barriers into internal and external were not taken into account. The data were gathered according to the recommendations of the Oslo Manual from 2005.

### 3. Statistical Data and Research Method

Information on the innovative activity of Polish enterprises was obtained from reports on innovation in industry and the service sector (Central Statistical Office forms: PNT-02, PNT-02/u). These reports are collected yearly, but issues related to constraints on innovation are not raised in every edition. In the last ten years (2014-2023), this occurred in 2015, 2017, 2019 and 2021, and always referred to a three-year period of statistical observation, respectively: 2012-2014, 2014-2016, 2016-2018, 2018-2020 (GUS, 2015a; GUS, 2015b; GUS, 2017a; GUS, 2017b; GUS, 2019a; GUS, 2019b; GUS, 2021a; GUS, 2021b)<sup>1</sup>. The relatively meagre set of data is additionally narrowed down due to its incomparability or incomplete comparability. This comparability depends on changes in the assessment scale of the importance/meaning of individual obstacles for innovation. In 2015 and 2017, the participating enterprises assigned the factors that hinder or prevent innovation activity a high, medium or low degree of importance, or alternatively stated that a given factor was of no importance. In the following two editions of the research (2019 and 2021), the four-point assessment scale was retained, but individual obstacles were rated as very important, important, of low importance and not important. Less significant differences were found for the observed factors, but in this case also, it would seem to be justified to narrow down the comparative analysis to 2019 and 2021.

This research aimed to find answers to the following questions:

- What are the most significant barriers to innovative activity among Lower Silesian enterprises?
- Is there a difference in the perception of obstacles to innovation in the regional environment of industrial and service enterprises?
- Are the key constraints to innovation growing in strength (alternatively weakening) in the Lower Silesian voivodeship?

Defining the criteria for identifying the most significant barriers to innovation processes was not an easy task, as in the forms PNT-02 and PNT-02/u, the Central Statistical Office (GUS) uses an imprecise, subjective and – as a consequence – ambiguous assessment scale. The enterprises studied do not know what is meant by a very important, important, of low importance and not important degree of the

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<sup>1</sup> Periods of statistical observation should not overlap in subsequent editions of the research.

importance of the obstacles considered, as they did not correlate these value judgements with the effects of specific barriers. Such freedom of evaluation may lead to different enterprises viewing the same obstacle to innovation in a different way, e.g. as very important or important, although in effect it leads to identical consequences (for example – delaying the innovation process). The ‘antidote’ used in this research to the imperfection of this solution was the combination of evaluations which cannot not be unequivocally distinguished from one another (meaning: very important and important). In the next step, it was arbitrarily assumed that the principal barriers to innovative activity were those obstacles that:

- occupy the first, second and third positions in terms of the greatest combined number of indications by enterprises of ‘very important’ and ‘important’,
- include at least 20% of the units studied in the total evaluations of ‘very important’ and ‘important’.

In addition, the identification of the principal barriers to innovative activity was complemented by the analysis of the direction of change (2021/2019) in the proportion of enterprises that considered the specified obstacles as very important and important. Here, differences equal to at least 5 percentage points were considered to be significant deviations.

The research process used the method of descriptive statistics.

#### 4. Obstacles to Innovation in the Perception of Lower Silesian Enterprises

In the period 2016-2018 (from the perspective of 2019), the principal barrier to innovation among Lower Silesian industrial enterprises was the shortage of workers with the appropriate skills, assessed by 37.5% of the respondents as a very important or important factor (1 – very important: 13%; 2 – important: 24.5%). An almost equally significant obstacle were the excessively high costs of innovative activity (35.5% of ratings 1 and 2, including 1 – 14.3% and 2 – 21.2%), which would seem to be connected with the considerable number of indications of serious constraints on innovation in the form of the lack of possibility to finance innovation from internal or external sources, including the difficulty in obtaining public funding or subsidies (Table 1). Third on the list of principal difficulties for innovative processes was uncertain demand for new ideas. These concerns were shared by 26.5% of production units, of whom 7.0% indicated they were very important, and the remaining 19.5% as important. In the subsequent edition of the research (2021), for the statistical observation period covering the period 2018-2020, the dominant barrier to innovative activity was the excessively high cost of these processes. Their very important (12.9%) or important (24.0%) significance was indicated by 36.9% of industrial enterprises, which similarly to the remaining costs factors, was a higher percentage than in 2019 (Table 1). As a result of these changes, two limitations related to cost were found in the three most significant obstacles to innovation, namely the excessively high costs of innovative activity (first place) and lack of the possibility to finance innovation from internal sources (third place, ratings: 1 – 8.9%, 2 – 17.7%, combined 1 and 2: 26.6%). This list of the three most significant obstacles included in second place the shortage of workers with appropriate skills (32.3% of ratings 1 and 2, in which 1 – 9.6%, 2 – 22.7%), which was considered to be the principal barrier in 2019. It is worth adding that uncertain demand for new ideas (third place in 2019), was experienced by almost the same percentage of enterprises in the two subsequent editions of the research. Additionally, it is not particularly uplifting that many other obstacles to innovation were indicated by more than 20% of enterprises as very important or important, both in 2019 and in 2020 (Table 1).

In the sector of Lower Silesian service enterprises, the principal barriers to innovative activity did not change, both in terms of the type of identified obstacles as well as their position, in the two subsequent editions of the research (2019, 2021; see Table 2), whilst all the factors constraining innovation were observed to be of a lower intensity in 2021. The excessively high costs of innovative activity were first on the list (2019: ratings 1 and 2 – 31.7%, including 1 – 13.5%, 2 – 18.2%; 2021: ratings 1 and 2 – 27.2%, including 1 – 12.6%, 2 – 14.6%), which seem to reflect all of the indications for the remaining cost-related barriers (lack of possibility to finance innovation from internal and external sources, and difficulties in obtaining public funding or subsidies).

Table 1. Barriers to innovative activity among Lower Silesian industrial enterprises

Barriers to innovative activity	2019 observation period 2016-2018			2021 observation period 2018-2020			Deviation (6) – (3)
	very important	important	very important /important	very important	important	very important /important	
	(1)	(2)	(3)	(4)	(5)	(6)	
Lack of possibility to finance innovation from internal sources	9.1	16.6	25.7	8.9	17.7	26.6	0.9
Lack of possibility to finance innovation from external sources	5.1	15.5	20.6	5.9	16.3	22.2	1.6
Difficulties in obtaining public funding or subsidies	8.6	15.0	23.6	8.4	17.4	25.8	2.2
Excessively high costs of innovative activity	14.3	21.2	35.5	12.9	24.0	36.9	1.4
Shortage of workers with appropriate skills	13.0	24.5	37.5	9.6	22.7	32.3	-5.2
Lack of partners for cooperation	5.3	14.4	19.7	4.3	15.0	19.3	-0.4
Lack of access to external knowledge	2.8	13.6	16.4	2.4	13.5	15.9	-0.5
Uncertain demand for new ideas	7.0	19.5	26.5	5.8	20.5	26.3	-0.2
Too much competition on the market	5.7	20.6	26.3	5.3	19.2	24.5	-1.8
Divergent priorities in the enterprise	1.8	12.2	14.0	3.3	10.1	13.4	-0.6

Source: own elaboration on the basis of (GUS, 2019; GUS, 2021).

Table 2. Barriers to innovative activity among Lower Silesian service enterprises

Barriers to innovative activity	2019 observation period – 2016-2018			2021 observation period – 2018-2020			Deviation (6) – (3)
	very important	important	very important /important	very important	important	very important /important	
	(1)	(2)	(3)	(4)	(5)	(6)	
Lack of possibility to finance innovation from internal sources	11.7	11.9	23.6	5.1	12.2	17.3	-6.3
Lack of possibility to finance innovation from external sources	10.3	9.9	20.2	5.7	8.9	14.6	-5.6
Difficulties in obtaining public funding or subsidies	12.7	13.1	25.8	10.6	11.2	21.8	-4.0
Excessively high costs of innovative activity	13.5	18.2	31.7	12.6	14.6	27.2	-4.5
Shortage of workers with appropriate skills	12.3	14.2	26.5	8.9	14.0	22.9	-3.6
Lack of partners for cooperation	5.3	10.2	15.5	3.4	8.3	11.7	-3.8
Lack of access to external knowledge	6.5	7.5	14.0	1.3	10.0	11.3	-2.7
Uncertain demand for new ideas	10.1	14.1	24.2	2.5	17.1	19.6	-4.6
Too much competition on the market	11.0	19.3	30.3	6.3	18.4	24.7	-5.6
Divergent priorities in the enterprise	7.1	6.0	13.1	2.2	3.4	5.6	-7.5

Source: own elaboration on the basis of (GUS, 2019; GUS, 2021).

The second most significant obstacle to innovation was shown to be too much competition on the market. In 2019, this was indicated as very important or important by 30.3% of service providers (ratings 1 – 11.0%, and 2 – 19.3%), and in 2021 – 24.7% (ratings 1 – 6.3%, and 2 – 18.4%). Along with the cost and market-related factors, the third most significant difficulty indicated by Lower Silesian

service enterprises was the shortage of workers with appropriate skills (2019: ratings 1 and 2 – 26.5%, including 1 – 12.3%, 2 – 14.2%; 2021: ratings 1 and 2 – 22.9%, including 1 – 8.9%, 2 – 14.0%).

Comparing the research results for Lower Silesian industrial enterprises in the period 2019 and 2021, it can be seen that there was a significant, positive change in the intensity of indications (above 5%) for only one barrier. This deviation was for the shortage of workers with appropriate skills, which was indicated as a very important or important constraint on innovation by 37.5% of producers in 2019, and 32.3% in 2021. For the remaining factors, the differences in indications ranged from –1.8 to 2.2 percentage points.

The situation in the sector of Lower Silesian service enterprises was somewhat different. As mentioned earlier, collectively, all the barriers to innovativeness weakened, with significant deviations (2021/2019) found for four obstacles to innovation, such as divergent priorities in the enterprise (–7.5 p.p.), lack of possibility of financing from external sources (–6.3 p.p.) and from internal sources (–5.6 p.p.), and too much competition on the market (–5.6 p.p.).

Referring to the indicated deviations, both in the distribution of industrial and service enterprises, it should be underlined that positive changes do not equate to a positive assessment, as none of the cases demonstrated a significant enough weakening of barriers which could be considered as marginalised. This was especially true for the principal obstacles.

The differences in the perception of barriers to innovative activity were often due to the features of individual enterprises. From this perspective, it is worth examining the principal obstacles to innovation identified by Lower Silesian industrial and service enterprises (Tables 3 and 4).

Table 3. Principal barriers to innovative activity among Lower Silesian industrial and service enterprises from the perspective of 2019

Position	2019 observation period – 2016-2018	
	industrial enterprises	service sector
First	shortage of workers with appropriate skills	excessively high costs of innovative activity
Second	excessively high costs of innovative activity	too much competition on the market
Third	uncertain demand for new ideas	shortage of workers with appropriate skills

Source: own elaboration on the basis of Tables 1-2.

Table 4. Principal barriers to innovative activity among Lower Silesian industrial and service enterprises from the perspective of 2021

Position	2021 observation period – 2018-2020	
	industrial enterprises	service sector
First	excessively high costs of innovative activity	excessively high costs of innovative activity
Second	shortage of workers with appropriate skills	too much competition on the market
Third	lack of possibility for financing innovation from internal sources	shortage of workers with appropriate skills

Source: own elaboration on the basis of Tables 1-2.

In 2019, Lower Silesian industrial and service enterprises faced a highly similar set of key barriers to innovative activity, although individual obstacles were perceived with varying intensity and were positioned differently. Among industrial enterprises, the principal difficulty was shown to be the shortage of workers with appropriate skills, perceived as a very important or important constraint by 37.5% of entities covered by the research (ratings: 1 – 13.0%, 2 – 24.5%). In the service sector, this factor came in third position in terms of the highest percentage of indications (ratings 1-2: 26.5%,

including 1 – 12.3%, 2 – 14.2%), behind excessively high costs of innovation activity in first place, which 31.7% of service providers perceived as a very important or important barrier to innovativeness (ratings: 1 – 13.5%, 2 – 18.2%). A higher percentage of such ratings was also noted among industrial enterprises (ratings: 1-2 – 35.5%, including 1 – 14.3%, 2 – 21.2%), although this barrier came in second place in terms of the intensity of its occurrence. The list of principal barriers was completed differently by market-related factors. Among industrial enterprises, such a barrier was considered to be uncertain demand for new ideas (third place, 26.5% of ratings 1-2, including 1 – 7.0%, 2 – 19.5%), while in the service sector it was – too much competition on the market (second place, 30.3% of ratings 1-2, including 1 – 11.0%, 2 – 19.3%).

In 2021, Lower Silesian industrial and service enterprises most often encountered barriers in the form of excessively high costs of innovative activity. However, this problem was highlighted with decidedly different intensity. In the industrial sector, it was indicated as very important or important by 36.9% of all entities (ratings: 1 – 12.9%, 2 – 24.0%), while in the service sector the figure was 27.2% (ratings: 1 – 12.6%, 2 – 14.6%). Another equally principal obstacle to innovation, although differently positioned, was the shortage of workers with appropriate skills. This factor took second place among producers (32.3% of indications, including 1 – 9.6%, 2 – 22.7%), and third place among service providers (22.9% of indications, including 1 – 8.9%, 2 – 14.0%). The list of principal barriers to innovative activity concluded with different obstacles. In industry it was the lack of possibility of financing innovation from internal sources (third place, 26.6% of indications, including 1 – 8.39%, 2 – 17.7%), and in the service sector – too much competition on the market (second place, 24.7% of indications, including 1 – 6.3%, 2 – 18.4%). It is worth noting that there were two cost-related factors among the barriers to innovation processes for Lower Silesian industrial enterprises, namely the excessively high costs of innovative activity and the lack of possibility to finance innovation from internal sources.

## 5. Conclusion

The considerations and analyses in this research allow several recommendations to be formulated which are worth taking into account in the shaping of future regional policy and public statistics. The first of these indicate the need to implement action to weaken the barriers to conducting innovative activity among Lower Silesian enterprises, while the second determine desired modifications to the gathering of data on obstacles to innovation.

Regional innovation policy for Lower Silesia should be directed above all to weakening obstacles regarding the following factors:

- cost-related factors (excessively high costs of innovative activity – the barrier with the highest percentage of indications as very important and important in industry and the service sector from the perspective of 2021; the obstacle that ranked first in services and second in industry among the principal constraints to innovativeness in research from 2019),
- knowledge-related factors (shortage of workers with appropriate skills – one of the principal barriers to innovation in industry and the service sector in the two subsequent editions of the research – 2019 and 2021),
- market-related factors (too much competition on the market – the obstacle ranked in second place in the service sector among the principal barriers to innovation from the perspective of the years 2019 and 2021).

The key constraints to innovativeness identified would appear to indicate that industrial and service enterprises encounter similar obstacles to innovation, but that these are considerably more often perceived among producers. Overcoming such obstacles should focus on:

- increasing access to external sources of financing innovation,
- personnel training that takes into consideration the needs of the regional market,



- support for Lower Silesian enterprises, especially in the service sector, in building a competitive position.

In terms of public statistics, it would seem justified to:

- implement form PNT-02 to the planned 2024 statistical research, aimed, amongst others, at identifying barriers to innovative activity,
- regularly, i.e. every two years, gather data on the obstacles to innovation,
- shorten the period covered by statistical observation from three to two years, while at the same time eliminating the overlapping of years covered by the analysis in subsequent editions of the research,
- develop a more precise assessment scale (the terms ‘very important, important, of low importance and not important’ are imprecise and difficult to interpret unambiguously; it would seem justifiable to link the rating of obstacles to innovation with the consequences of their occurrence, i.e. considerably more important, leading to cessation of innovative activity).

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## **Bariery działalności innowacyjnej dolnośląskich przedsiębiorstw**

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**Streszczenie:** Innowacyjność przedsiębiorstw i regionów kształtuje jedną z kluczowych podstaw budowania przewagi konkurencyjnej. W tym kontekście szczególnego znaczenia nabiera działalność innowacyjna, jej determinanty i bariery. W niniejszym artykule skoncentrowano się na przeszkodach dla innowacji, konfrontując dorobek piśmiennictwa z rozwiązaniami statystyki publicznej w zakresie stosowanej terminologii i podziału ograniczeń innowacyjności. Badania empiryczne ukierunkowano na rozpoznanie wiodących barier działalności innowacyjnej dolnośląskich przedsiębiorstw wraz z uchwyceniem ewentualnych różnic w percepcji przeszkód dla innowacji w środowisku przedsiębiorstw przemysłowych i usługowych z perspektywy lat 2019 i 2021. Przeprowadzone analizy wskazują, że regionalni producenci i usługodawcy napotykają podobne przeszkody dla innowacji (m.in. czynniki kosztowe), ale znacznie częściej są one dostrzegane w sektorze przemysłowym. W postępowaniu badawczym posłużono się metodami krytyki piśmiennictwa oraz statystyki opisowej.

**Słowa kluczowe:** bariery działalności innowacyjnej, dolnośląskie przedsiębiorstwa, Podręcznik Oslo

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