

## INDUSTRIAL PROPERTY PROTECTION AS A CONDITION FOR THE INNOVATIVENESS OF THE POLISH ECONOMY

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**Purpose:** The aim of the paper is to show in detail the quantitative dimension of industrial property protection in the form of indexes of the innovative development of the Polish economy in the first two decades of the 21st century.

**Design/methodology/approach:** A review of the literature on the subject as well as other sources in the form of legal acts and statistical data from the Central Statistical Office.

**Findings:** The conducted research allowed for an analysis of changes in the number of notified solutions in the field of industrial property and their interpretation, leading to, regrettably, not very optimistic conclusions as to the limited effectiveness of Poland's innovation policy.

**Research limitations/implications:** The adopted research method of literature review has many limitations and is not a perfect way to obtain data.

**Practical implications:** The conducted research and analysis make it possible to assess not only the level of innovative activity in terms of the number of applications for the protection of industrial property rights, but also changes in the number of approved solutions. On this basis, the conclusion can be drawn that there has been hardly any improvement in the level of innovativeness of the Polish economy, primarily with regard to the achievement of measurable effects. In possible further research, it seems important to attempt a comparative analysis, based on available data on the amount of expenditures on innovative activities.

**Originality/value:** The value of the paper consists in systematising huge data sets (time series) amassed over a period of more than two decades and using them to perform diachronic analyses.

**Keywords:** industrial property law, intellectual property; innovation, innovativeness of the economy.

**Category of the paper:** Review paper.

## 1. Introduction – innovations, innovativeness and innovation policy

The notion of innovation was introduced into the economic sciences by J.A. Schumpeter<sup>1</sup>, who distinguished five cases to which the notion of innovation can be applied: introduction of a new product, introduction of a new production method, opening of a new market, acquisition of a new source of raw materials or semi-finished products, and introduction of a new organisational structure of an industrial sector (Janasz, Koziół, 2007, p. 12). At the same time he put forward a thesis that innovativeness determines economic development to a greater extent than material (capital) resources (Schumpeter, 1960, p. 128).

A similar approach to innovativeness and its importance for economic development was adopted by P.F. Drucker, who regarded it as a specific tool of entrepreneurship, i.e. an activity that provides resources with new opportunities for wealth creation. In his view, innovations relate more to the social and economic sphere than to the technical sphere (although in fact, for individual enterprises, technical innovations are of primary importance) (Drucker, 1992, p. 39).

Thus, innovations should be understood as the practical economic implementation of a new or significantly improved product or process, but also a new marketing or organisational method or organisation of the workplace, or even changes in relations with the environment (Podręcznik Oslo, 2018; 2020, p. 49). The modern definition of innovation goes well beyond the realm of technology, as it occurs when there is an economically successful exploitation of new ideas (Czajkowska-Dąbrowska, 2007, p. 61 et. seq.).

In the broad sense of the term, innovations, constituting an interdisciplinary category described by means of various research methods and techniques (Duraj, Papiernik-Wojdera, 2010, p. 61), can be understood as the introduction of significant changes (Janasz, Koziół, 2007, p. 15). In a somewhat narrower sense, however, all innovations must contain a distinct element of novelty (Czajkowska-Dąbrowska, 2007, p. 61 et. seq.).

Nowadays, such developments can be seen as indispensable entrepreneurial tools that transform an idea into concrete products or services and thus influence economic development. In the Oslo methodology, innovative solutions are not regarded as an impulse or mechanism that triggers the innovation process, but as its effect (Nowak, 2012, p. 157).

The innovativeness of an economy, on the other hand, should be understood as the propensity of entrepreneurs to constantly search for and use (implement) the results of scientific research and development projects, new ideas, concepts and inventions. Innovativeness comprises also improvements in already known production and operation technologies, the application of new solutions in organisation and management, as well as progress in infrastructure development (Janasz, Koziół, 2007, p. 45). In fact, only enterprises that are

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<sup>1</sup> According to his definition, innovation means the introduction of a new solution into practice (Schumpeter, 1960, p. 104; Janasz, Koziół-Nadolna, 2011, p. 11 et seq.).

capable of introducing innovative changes have the potential to maintain their positions in the market (Hejduk, 2018, p. 1367).

The ability of a country to generate and implement innovations is so important because it allows for increasing the efficiency of practically all production factors, and thus stimulates growth and socio-economic development (Pangsy-Kania, 2007, p. 95). Modern states, in order to increase the importance of innovation, have started to implement increasingly intensive innovation policies. An innovation policy is a combination of elements of individual policies in the areas of industry, science and technology, i.e. a set of the state's activities that, by means of specialised legal, institutional and economic instruments, influence innovation processes in the economy in order to achieve goals in line with its overall socio-economic policy (Marciniak, 2000, p. 90).

The European Union recognises innovativeness as one of the most important factors determining economic competitiveness (Janasz, Koziół, 2007, p. 45).

## **2. Challenges to the innovativeness of the Polish economy**

For years, Poland has been regarded as a country still at an early stage of the innovativeness development process (Płowiec, 2008, p. 3). There are, of course, many reasons for this state of affairs, but probably of particular importance is the lack of a clearly targeted and properly implemented state policy supporting the development of innovativeness. Meanwhile, it is the increase in the innovativeness of the Polish economy that should already constitute a priority in the state's economic policy.

Innovative activity includes a whole range of scientific, research, technical and organisational measures aimed at the development of new or significantly improved products or processes, as well as their implementation into economic practice.

The development of an innovative economy requires the creation of new values in the sphere constituting the domain of human intellect, involved in the creation of solutions serving the most important civilisational goals understood primarily as raising the level and quality of life of the society, with simultaneous reasonable protection of natural resources (Zadania UPRP).

In order to pursue such objectives in the conditions of intensifying globalisation, what is required includes, on the one hand, highly advanced technologies and, on the other hand, such economic mechanisms that would make it possible to satisfy constantly growing consumption needs and solve complex socio-economic problems (Zadania UPRP).

Poland's relatively fast economic growth in the period of the so-called transformation cannot hide the fact that its economy is not so much innovative as imitative, which has been and will continue to be a great challenge for both the country's economic policy and the

development strategies of Polish enterprises. Consequently, the problem of providing the economy with a strong impulse towards innovation has not been adequately addressed for many years (Cieślak, 2014, p. 140).

It should be borne in mind that solutions adopted and even well tested in countries with a more developed market economy do not always turn out to be sufficiently effective in countries with even a slightly lower level of development, such as Poland, which are unable to create their own internal mechanisms for generating and implementing innovative solutions (Wiśniewska, Janasz, 2016, p. 187). Thus, although the level of innovativeness depends primarily on the capabilities and capacities of economic entities themselves, the mechanisms for creating and supporting innovativeness do not function properly in Poland. It should be noted, however, that the Polish legislator attaches more and more importance to national regulations and the entrepreneur to internal legal acts that are to regulate the matter of intellectual property and its management (Niewęglowski, 2018, p. 1463).

### **3. Protection of industrial property**

The creation of new technical solutions determining sustainable economic development requires ensuring broadly understood protection of intellectual property, which is equally important as the protection of rights relating to tangible property (Sieńczyło-Chlabicz, 2020, p. 1284 et seq.).

The protection of intellectual property, with regard to technology and the economy, is effected by granting inventors, authors and entrepreneurs the rights guaranteed by law to exercise control of their technical solutions, product forms (designs) or trademarks (Sieńczyło-Chlabicz, 2020, p. 1284 et seq.). This area of intellectual property protection is referred to as the protection of industrial property rights.

Traditionally, industrial property rights are understood in the legal doctrine as subjective rights, characterised by their absolute effectiveness and their holder's exclusive use of the object of the right, in a commercial or professional manner (Nowak-Gruca, 2014, p. 303). These rights are therefore very closely related to the possibility of economic exploitation of intangible property.

A feature of industrial property rights is the possibility to determine their object, although the precise determination of the scope of protection of industrial property rights still remains a contentious issue (Nowak-Gruca, 2014, p. 303).

The traditions of industrial property protection date back to the end of the 19th century. The Paris Convention for the Protection of Industrial Property of 20 March 1883 defined industrial property right as a subjective right or a set of provisions regulating the subjective right to patent inventions, industrial designs, utility models, trademarks, service marks, trade

names, designations of origin or names of origin, as well as to combat and prevent unfair competition. Some researchers are of the opinion that industrial property protection was initiated as early as the 15th century, specifically in the Venetian Law of 1474 (Kostański, Żelichowski, 2020, p. 11).

In Poland, the protection of industrial property also has a long-standing tradition, dating back to the beginning of the Second Republic (Nowak-Gruca, 2014, p. 303). At that time such protection was based on two legal acts: the Act on the Protection of Inventions, Designs and Trademarks<sup>2</sup> of 5 February 1924, subsequently replaced by the Regulation of the President of the Republic of Poland on the Protection of Inventions, Designs and Trade Marks<sup>3</sup> of 22 March 1928.

However, it was the changes in Poland's political system initiated in the 1990s, referred to as systemic transformation, that clearly revealed the need to introduce modern regulations, adequate for the new economic conditions, but also to adjust Polish law to the EU and international standards.

The Industrial Property Act (The Industrial Property Act of 30 June 2000, 2001) of 30 June 2000 (effective as of 22 August 2001), comprehensively regulates the issues of industrial property protection and, pursuant to international agreements (Zadania UPRP) ratified by Poland, covers such subject areas as inventions, utility models, industrial designs, trademarks, geographical indications and topographies of integrated circuits, collectively referred to as inventive designs (Nowak-Gruca, 2014, p. 303).

In public statistics, they are treated as important indexes used to assess the effects of innovative activity.

The new statutory regulations abolished the issuance of certificates of protection for decorative designs; previously protection rights for decorative designs had been granted under the Regulation of the Council of Ministers of 29 January 1963, which was revoked when the Act came into force. Pursuant to The Industrial Property Act, rights resulting from the registration of industrial designs started to be granted as of its effective date. Applications for decorative designs filed and not considered before the effective date of The Industrial Property Act were classified as applications for industrial designs.

The Act has been amended a few times. In terms of measures for the protection of industrial property rights, the most serious changes were introduced by the Amendment to the Act on Copyrights and Related Rights, and Some Other Acts (The Amendment to the Act on Copyrights, 2007) of 9 May 2007. This amendment was primarily aimed at the implementation of the Directive (2004/48/EC) on the enforcement of intellectual property rights (Directive 2004/48/EC of the European Parliament, 2004).

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<sup>2</sup> Journal of Laws, no. 31, item 36, as amended.

<sup>3</sup> Journal of Laws, no. 39, item 384, as amended.

Industrial property rights, i.e. a patent for an invention, a protection right for a utility model, a right resulting from the registration of an industrial design, a protection right for a trademark, a right resulting from the registration of a geographical indication and a right resulting from the registration of topographies of integrated circuits may become (usually are) valuable assets of economic entities, used by them to achieve competitive advantage (Sieńczyło-Chlabicz, 2020, p. 1291). Patent regulations are of particular importance for the chemical industry, as they can affect the profitability of enterprises in this sector (Sieniow, 2018, p. 1545).

The possession of industrial property rights gives their owners the right to the exclusive use of products and services covered by legal protection on the territory of Poland, and thus excludes the possibility of their free use by other competitive entities. This legal arrangement entails the right to prohibit other entities from using, selling, or marketing products and services identical or similar to those covered by legal protection, which significantly increases the market value of an enterprise recognising its industrial property rights as valuable assets (Sieńczyło-Chlabicz, 2020, p. 1292).

This gives such an enterprise an important advantage over its competitors as it becomes the sole provider of an innovative product or service in the market (Sieńczyło-Chlabicz, 2020, p. 1292). Thus, innovation becomes the basis for strengthening its brand, reputation and recognisability.

In Poland, the central body of the state (government) administration responsible for the performance of a wide range of tasks related to the protection of industrial property in Poland is the Patent Office of the Republic of Poland, whose statutory tasks include in particular (Sieńczyło-Chlabicz, 2020, p. 1293 et seq.):

- receiving and examining applications concerning inventions, utility models, industrial designs, trademarks, geographical indications and topographies of integrated circuits, filed for the purpose of acquiring their protection,
- adjudicating on matters concerning the granting of patents and supplementary protection rights for inventions, utility models and trademarks, as well as rights resulting from the registration of industrial designs, geographical indications and topographies of integrated circuits,
- issuing decisions in dispute proceedings,
- maintaining registers for patents, utility models, industrial designs, trademarks, geographical indications and topographies of integrated circuits,
- publishing its official gazette entitled the Patent Office News,
- publishing the Patent Office Bulletin,
- participating in the work of international bodies on matters concerning industrial property, under international agreements entered into by the Republic of Poland, in particular the Paris Convention for the Protection of Industrial Property,
- maintaining a central collection of Polish and foreign patent descriptions.

The main task of the Office is to adjudicate on matters concerning the granting of exclusive rights to objects of industrial property (Kondrat, 2021, p. 55). Adjudications granting exclusive rights are given by independent experts who, within the scope of their decisions, are bound only by the provisions of the Act. Disputes concerning the cancellation or termination of exclusive rights are resolved by the Adjudicating Bodies of the Patent Office (Sieńczyło-Chlabicz, 2020, p. 1296 et seq.).

The representatives of the Patent Office also participate in meetings of the European Commission and the Council of the European Union devoted to the issues concerning the protection of industrial property. Therefore, it is a body that ensures that the Polish economy remains in constant contact with the international system of industrial property protection. Fulfilling its mission in the field of industrial property protection, the Polish Patent Office is one of the most important institutions that influence the shaping of conditions conducive to the development of an innovative economy, characterised by legal security of trade and a high level of competitiveness (Sieńczyło-Chlabicz, 2020, p. 1296 et seq.).

## **4. Forms of industrial property protection**

### **4.1. Invention and patent**

An invention is a novelty that does not constitute a part of the previous state of the art (Nauka i Technika, 2020). There are four categories of inventions: creations, devices, methods and applications (Nowińska, Promińska, du Vall, 2011, p. 28 et seq.).

Irrespective of the field of technology, a patent is granted for an invention that is new, represents an inventive level (i.e. from an expert's point of view, it does not obviously result from the state of the art (Nauka i Technika, 2020) and can have industrial applications (i.e. if an invention may be the source of a technological creation or method used in any economic activity (Czub, 2016, p. 170).

Inventions do not include in particular (Nauka i Technika, 2020):

- discoveries, scientific theories and mathematical methods,
- products of a purely aesthetic nature,
- plans, principles and methods relating to mental or economic activities and games,
- creations for which the impossibility of use can be demonstrated in light of generally accepted and recognised scientific principles,
- programmes for digital machines,
- presentations of information.

A patent for an invention is granted for a period of 20 years from the date of filing an application with the Polish Patent Office (Czub, 2016, p. 186). However, patents are not granted for inventions whose use would be contrary to public policy or moral standards (Nauka i Technika, 2020).

#### **4.2. Utility model**

A utility model is a new and useful solution (Nauka i Technika, 2020), capable of industrial applications (if, based on a given utility model, it is possible to obtain a technological creation, in any economic activity), a solution of a technological nature, pertaining to the shape or structure of an object with a durable form or an object composed of functionally connected parts with a durable form (Czub, 2016, p. 202).

A utility model relates to tangible objects with a durable form, which means that solutions relating, for example, to modes of conduct or applications of substances cannot be the subjects of applications for protection (Czub, 2016, p. 202).

The right of protection for a utility model is granted for a period of 10 years from the date of filing a relevant application with the Polish Patent Office (Czub, 2016, p. 202).

#### **4.3. Industrial design**

An industrial design is a new original (Nauka i Technika, 2020) and individualised form of a product or its part, determined, in particular, by the features of lines, contours, shapes, colours, texture, material and ornamentation of a product (Kępiński, 2010, p. 32). Industrial designs apply to a very wide range of products, from luxurious to everyday ones, as the essence of industrial designs is the protection of their appearance (Czub, 2016, p. 213).

The right resulting from the registration of an industrial design is granted for a maximum period of 25 years (divided into five years' periods), counting from the date of filing a relevant application with the Polish Patent Office (Czub, 2016, p. 226).

#### **4.4. Trademark**

A trademark may be any sign represented graphically or capable of being expressed graphically, enabling the differentiation of the goods (products) of one enterprise from those provided by other enterprises and capable of being represented in the trademark register in a manner that makes it possible to determine the unambiguous and precise subject of the granted protection (Sieńczyło-Chlabicz, 2020, p. 638 et seq.).

The catalogue of representational forms of trademarks is open, and examples of types of trademarks include: word, word and figurative, figurative, spatial, and sonic (Sieńczyło-Chlabicz, 2020, p. 638 et seq.). The most frequently used representational forms are word marks (words or slogans), as well as word and figurative marks (words with graphic elements) (Żelichowski, 2022, p. 12 et seq.).



The right of protection for a trademark is granted for a period of 10 years from the date of filing a relevant application with the Polish Patent Office. Protection may be renewed for further periods of 10 years upon payment of a fee (Żelichowski, 2022, p. 12 et seq.).

#### **4.5. Geographical indication**

A geographical indication is a word indication referring directly or indirectly to the name of a place, locality, region or country (area) which identifies goods as originating from that area; it is used to label food and industrial products (Nowińska, Promińska, Szczepanowska-Kozłowska, 2021, p. 491).

The condition for granting the right resulting from the registration of a geographical indication is the association of a product with a given area, if high quality, good reputation or other distinctive features of goods are primarily attributed to their geographical origin (Nowińska, Promińska, Szczepanowska-Kozłowska, 2021, p. 492).

An individual entrepreneur cannot apply for the protection of a geographical indication. Such an application may be filed by an organisation of producers operating in a given area or a central or local governmental administrative body competent for the area to which the geographical indication refers (Sieńczyło-Chlabicz, 2020, p. 1030).

The Patent Office grants the rights resulting from the registration of geographical indications relating to industrial products only, while separate provisions apply to agricultural products and foodstuffs (Sieńczyło-Chlabicz, 2020, p. 1030).

The right resulting from the registration of a geographical indication is granted for an indefinite period of time (Sieńczyło-Chlabicz, 2020, p. 1030).

#### **4.6. Topographies of integrated circuits**

A topography of integrated circuits is a solution consisting in the spatial arrangement of elements, of which at least one is an active element, and all or some connections of an integrated circuit. Such an arrangement can be expressed in any way. A prerequisite for the registrability of a topography is its originality. Protection can only be granted to topographies that are the result of the intellectual work of a creator and were not generally known at the time of their creation. Both conditions must be met simultaneously (Skubisz, 2014, p. 1206).

### **5. Industrial property protection in the years 2000-2020 – the quantitative dimension**

The quantitative dimension of industrial property protection, both submissions of applications and protection rights granted, can constitute an excellent, yet underestimated, picture of the innovativeness of the economy. In the conditions of the systemic transformation

and the building of a market economy in the 21st century, the key issue seems to be very high instability and variability over time of both the number of submitted applications and the number of granted protection rights. It concerned, without exception, all forms of industrial property. Nevertheless, there were considerable differences in the intensity of activity with regard to the particular forms of industrial property, which is shown clearly in the tables below.

**Table 1.**  
*Industrial property protection in Poland in the years 2000-2020*

Year	Objects of industrial property							
	Invention		Utility model		Industrial design*		Trademark	
	applications	granted patents	applications	granted protection rights	applications	granted rights from registration	applications	granted protection rights
2000	2404	939	1274	680	1175	629	14111	7118
2001	2202	851	1057	484	1223	561	12434	5074
2002	2313	834	865	558	1284	921	12355	4803
2003	2268	613	732	666	1917	1837	13281	5181
2004	2381	778	648	894	1918	2026	13776	5669
2005	2028	1054	600	829	1773	1973	13864	8688
2006	2157	1122	625	869	1707	1437	14065	10644
2007	2392	1575	604	605	1598	1431	13951	14033
2008	2488	1451	667	616	1465	1207	14705	13911
2009	2899	1536	734	431	1849	1299	13229	8731
2010	3203	1385	879	484	1723	1231	14080	10050
2011	3880	1989	941	498	1548	1294	14252	8795
2012	4415	1851	944	514	1341	1532	13246	7925
2013	4237	2339	985	621	1317	1268	13532	9049
2014	3939	2497	914	586	1138	827	13139	9386
2015	4679	2404	994	562	1022	776	12613	7992
2016	4261	3370	1084	638	1063	1080	13854	7902
2017	3924	2795	953	776	971	815	13739	13800
2018	4207	2906	943	769	1081	949	12811	10470
2019	3887	2947	855	603	1004	934	13294	9894
2020	4010	2260	793	533	988	789	13541	6556

\* in 2000 – decorative designs, in 2001 – jointly decorative designs and industrial designs.

Source: the author's own work based on Nauka i technika w 2020 r. [Science and Technology in 2020], compiled by The Central Statistical Office and The Statistical Office in Szczecin, Warszawa - Szczecin 2020, as well as other publications with the same title from previous years.

The above table indicates that over the entire period 2000-2020, the number of patent applications grew quite significantly, although this growth was not continuous and was periodically interrupted by small and short-lived decreases. In total, the number of patent applications during this period increased by as much as 66.8%, giving an average year-on-year increase of 2.59%. The number of granted patents grew at an even faster rate and increased by as much as 140.7% over the entire twenty-one years' period, an average year-on-year increase of 4.49%. This shows a very positive trend, with an increasing share of applications being granted protection.

In the same period, the process of filing applications for the protection of utility models with the Patent Office was quite different, as in the years under examination, i.e. between 2000 and 2020, the number of applications decreased by 37.8%, which constituted an average annual decrease of 2.34%. The number of granted protection rights, on the other hand, decreased in

this period by only 21.6%, or on average by only 1.21% every year. Thus, also in the case of utility models, an increasing percentage of applications were granted legal protection.

The trends in the submission and registration of industrial designs (and in the years 2000-2001 both industrial designs and decorative designs) were different. The number of applications for their protection fell by 15.9%, or by an average of 0.86% on a year-on-year basis, but the number of granted rights resulting from registration decreased by as much as 25.4% over the whole period or on average by 1.14% every year. This indicates that an increasingly smaller percentage of applications were granted legal protection.

The number of applications for the protection of trademarks declined by only 4.0% between 2000 and 2020, an average annual decrease of 0.21%, while the number of granted protection rights granted fell by 7.9%, or on average by 0.41% every year. This means that, also in this case, fewer and fewer applications were being reviewed successfully.

Unfortunately, statistical data on the structure of industrial property protection are only available for patents and industrial designs and cover a slightly shorter period. Nevertheless, they also show quite interesting regularities relating to applications for protection of both patents and utility models.

**Table 2.**  
*Patent applications*

Year	total	including applications filed by		
		scientific entities of the Polish Academy of Sciences, research institutes, universities	business entities	natural persons
2010	3203	1577	711	915
2011	3878	1825	1335	718
2012	4410	2102	1521	787
2013	4237	1995	1509	733
2014	3941	1924	1511	506
2015	4676	2015	1901	760
2016	4261	1677	2008	576
2017	3924	1569	1763	592
2018	4207	1798	1779	630
2019	3887	1714	1655	518
2020	4010	1726	1709	575

Source: the author's own work based on Nauka i technika w 2020 r. [Science and Technology in 2020], compiled by The Central Statistical Office and The Statistical Office in Szczecin, Warszawa - Szczecin 2020, as well as other publications with the same title from previous years.

In the years 2010-2020, the structure of patent (invention) applications was dominated by scientific entities of the Polish Academy of Sciences, research institutes and universities (grouped together as one category of entities in Table 2), but with a downward trend in their share of all applications, from 49.2% in 2010 to 43% in 2020. At the same time, the share of applications filed by business entities rose from barely 22.2% to as much as 42.6%, thus almost equalling the share of academic and research organisations. Natural persons submitted the fewest applications; their share fell from 28.6% in 2010 to 14.3% in 2020.

With an overall quite clear, although unstable, growth trend reaching on average 2.3% year-on-year (with an increase of as much as 21.2% in 2011 and a decrease of as much as 8.9% in 2016 in the entire period 2010-2020), the lowest average annual increase (0.9%) was generated by the scientific entities of the Polish Academy of Sciences, research institutes and universities. They were followed by natural persons (4.5%) and business entities (9.2%).

**Table 3.**  
*Utility model applications*

Year	total	including applications filed by		
		scientific entities of the Polish Academy of Sciences, research institutes, universities	business entities	natural persons
2010	879	104	392	383
2011	940	109	624	207
2012	941	108	562	271
2013	986	105	587	294
2014	913	126	680	107
2015	994	115	673	206
2016	1084	128	811	145
2017	953	108	701	144
2018	943	115	671	157
2019	855	135	599	121
2020	793	163	480	150

Source: the author's own work based on Nauka i technika w 2020 r. [Science and Technology in 2020], compiled by The Central Statistical Office and The Statistical Office in Szczecin, Warszawa - Szczecin 2020, as well as other publications with the same title from previous years.

In the structure of applications for the protection of utility models (see: Table 3), the trends were fundamentally different. The most applications were submitted by business entities, whose share increased from 44.6% in 2010 to 60.5% in 2020. The share of natural persons declined quite significantly, from 43.6%, to barely 18.9%, while the share of the scientific entities of the Polish Academy of Sciences, research institutes and universities increased from 11.8% to 20.6%.

With an overall quite clear, although unstable, downward trend reaching on average 1.0% year-on-year (with an increase of as much as 9.1% in 2016 and a decrease of as much as 12.1% in 2017 in the entire period 2010-2020), the highest average annual increase of only 4.6% was generated by the scientific entities of the Polish Academy of Sciences, research institutes and universities. The number of applications filed by business entities rose annually on average by 2.0%, while natural persons recorded a decrease of 8.9%.

## 6. Conclusion

In the cognitive and research dimensions, both innovation and innovativeness constitute an interdisciplinary category analysed by many researchers by means of different methods and based on different categories of data or indexes. The lack of a uniform definition of the concept of innovation, and therefore of its objectivised measures, is due to the very specific nature of the subject of research, and consequently the approach to this concept, understood as either a (continuous) process or the effects of this process.

Proving that innovations become a driving force for economic development – a belief shared by the world of science and the general public – is extremely difficult if only fragmentary data are available. In fact, there may not even be conclusive evidence unambiguously confirming their impact on economic development. However, this does not exempt researchers from attempts to study and assess the phenomenon of innovation itself, in both qualitative and quantitative terms. This review does not claim to provide a comprehensive account of the phenomenon, but is intended as a contribution to further research.

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