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INNOVATION IN SOCIAL-ECONOMIC DEVELOPMENT IN POLAND. RESEARCH INSTITUTES AS ENTITIES AND CONTRACTORS OF INNOVATIVE ACTIVITIES IN POLAND

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Summary

The aim of the article is to present the development of innovative in Poland in the term of the membership in European Union. The author will refer to the place and role of R & D activities in Poland. The article consists short theoretical part concerning selected theories of innovation in the economy. In the main part of the article will be presented research institutes in the context of their relevance in improving the innovation in Poland, taking into account the changes proposed by the government administration.

Keywords: innovation , research institutes, European Union, Knowledge Based Economy, science

Introduction

The significance of innovativeness in the contemporary world

In the contemporary world "innovativeness" is one of frequently used terms. In the 21st century "innovativeness" has become an important goal of the policies of a modern state. A breakthrough in the development of innovation policy of the European Union (EU) was the Lisbon Strategy announced in 2000[1]. It was a response to the low competitiveness of Europe in the area of development of modern technologies, in comparison to global leaders such as the United States of America (USA), Japan, China, or India. Significant role of innovativeness for the social-economic development was confirmed in 2005 by the European Charter of Small Enterprises. The year 2009 was proclaimed by the European Commission the year of creativity and innovation. Unfortunately, the Strategy wasn't introduced, so at the beginning of 2010 a new programme for the development of EU — Europa 2020[2] — was announced. The Europa 2020 strategy defines a new direction for the development of innovativeness and entrepreneurship. In 2010 the European Commission prepared a plan titled Union of Innovation, which contains EU concepts of innovation associated with ingenuity and creation of new jobs, as well as with social and economic development. This goal became particularly important for Poland in the period from the moment when it joined the structures of the European Union till now.

The term of innovation — multitude of innovations

The term of innovation appears in European strategic programmes, projects for scientific institutions and entrepreneurs, in social and economic life. Innovations are a subject of interest for a whole range of scientific areas: technical, economic, social and others. The term of innovation can be understood in many ways. This arises from the dynamic character of this phenomenon, as well as varied approach to this issue, depending on the area of science in which it functions (e.g. economics, sociology, philosophy, pedagogy, medicine etc.). There are many different definitions of the term also because innovations can be understood as either a process, or the result of a process.

Innovations in the economy — chosen concepts

Due to the multitude of interpretation of innovation referring to the economic sphere, below the popular concepts of innovation by chosen authors are listed. The given examples are presented in a chronological sequence — according to the time of their formation.

Table 1. Chosen definitions of innovation

J.A. Schumpeter, *Teoria rozwoju gospodarczego*, Warszawa 1960, s. 104.	"The introduction of new products, new methods of production, finding new markets, acquiring new sources of resources and introducing a new organization."
P.F. Drucker, *Innowacja i przedsiębiorczość, Praktyka i zasady*, Warszawa 1992.	"Specific instrument of entrepreneurship — activity which creates new opportunities for creation of goods on the basis of the same resources."
Ph. Kotler, *Marketing. Analiza, planowanie, wdrażanie i kontrola*, Warszawa 2002.	"The term refers to every good that is regarded by someone as new."
W. Griffin, *Podstawy zarządzania organizacjami*, Warszawa 2005.	"Focused effort of an organization for the purpose of mastering new products and services, or new applications of existing products and services. Innovation is also a form of control in the sense that it helps an organization keep up with the competition."
Oslo Manual8, *Definicja zastosowana w Programie Operacyjnym Innowacyjna Gospodarka*. Statistical Office of The European Communities, *Guidlinesfor collecting and Interpreting Innovation Data,* Third Edition Organisation for Economic Cooperation and Development, Paris, 2005.	"The introduction of a new, or substantially improved solution concerning a product (commodity, or service), process, marketing, or organization to practice in a company. The essence of innovation is the implementation of novelty in practice. The implementation of a new product involves offering it on the market. The introduction of a new process, new marketing methods, or new organization means applying them in the daily operations of a company."

Source: own materials prepared on the basis of literature on the subject.

The above definitions formulated by renowned representatives of the world of science and economy show that the perception of innovation changed along with the social-economic changes taking place over the years. The comparison of various views of innovativeness points to the multitude of aspects that influence the formation and development of innovativeness. In the definition formulated in 1911 by J.A. Schumpeter[3],

regarded as a forerunner of the theory of innovation in economic sciences, the key word is "new". The author linked innovations with the first application of a particular solution and focused above all on technical innovations and their significance for the economy. J. Schumpeter linked the term of innovation to five cases:

- the introduction of a new product, which the consumers haven't encountered yet, or a new kind of commodity,
- the introduction of a new method of production not tested in practice yet in a particular area of the industry,
- opening a new market, that is, a market where a particular kind of national industry didn't operate regardless of whether the market existed earlier, or not,
- acquiring a new source of resources, or intermediate goods regardless of whether the sources already existed, or whether it had to be created first,
- the introduction of a new organization of a certain industry, e.g. creating, or breaking a monopoly[4].

Schumpeter described the process of popularization and introduction of a novelty to the economy as "imitation". He also distinguished between the terms of innovation and invention (an invention which hasn't been introduced to production is not an innovation). Based on Schumpeter's deliberations it was assumed that the innovation process constitutes a sequence of events starting with the creation of an idea (invention) through the materialization of the idea (innovation) to its popularization (diffusion). The issue of innovativeness evolved along with economic changes in the world. Schumpeter's theory was formed in times of capitalist economy at the beginning of the 20th century when production and capital played the leading role. It was only at the end of the 20th century that a slow change of the paradigm of management and thus also the way of thinking about innovations started. Greater emphasis was put on the significance of knowledge and information in the economy. Along with the decline of the significance of industry and growth of the importance of services, the subject scope of innovation increased substantially and went beyond the sphere of technology[5].

It is worth concluding the theoretical deliberations concerning innovativeness with the question whether the theory of innovation is necessary and needed. It seems that the answer is yes, as this is the best tool for practitioners to present phenomena associated with innovation. It also opens up opportunities for creative problem solving, explanation and structuring of knowledge.

Innovativeness in the development of Knowledge-Based Economy

As it is emphasized in strategic documents of the European Union, the construction of Knowledge-Based Economy requires appropriate, coherent and uniform strategy, which includes: framework programmes facilitating adaptation to rapid changes, flexible institutions, creative market of entrepreneurs. Knowledge is the main production factor and innovation is the main competitiveness factor of a company and the whole national economy defining its development. Without them it is impossible to build a knowledge-based economy. What deserves particular attention is the process of emergence and formation of knowledge-based economy. The determinants of the development of knowledge-based economy are: human capital, universities, scientific-research institutions, financial and credit institutions, as well as IT infrastructure. The above-mentioned elements are necessary for the proper functioning and development of a contemporary economy. They should influence each other during their utilization in practice. The pace and success of the process of building knowledge-based economy depend on the mutually formed relations between them. It is hard to overestimate the role that research institutes play in the creation of new economy.

They play the role of knowledge incubators (new technologies, ideas), they are a catalyst of knowledge necessary to create innovative projects and ventures. That's why the condition for building knowledge-based economy in Poland is connecting the research-scientific sector with companies in a proper way.

Innovative policy in Poland under conditions of membership in the European Union

An important indicator of the efficiency of every state in the area of innovation, development of entrepreneurship and as a result the economy is the National Innovation System (NIS). It is defined as a structure covering the whole set of interrelated institutional and structural factors in the national economy and society which together and individually generate, select and absorb technological solutions. National Innovation System is not just institutions, but above all the cooperation between them. Poland's accession to the European Union caused significant changes in Polish innovation policy. An attempt was made to increase the coherence of this policy with the programmes of the European Union concerning innovativeness. At the same time the adaptation of innovation policy to the policy of the EU couldn't involve only the intention to copy EU solutions and requirements. It was necessary to focus on creating your own strategic concept of pro-innovation policy taking into consideration the local conditions (legacy of centrally planned economy, unfinished transformation of the system). Adequate innovation policy was supposed to put Poland in the position of a rightful partner in scientific-technical cooperation and a competitor on the common market. In the years 2004-2016 about a dozen strategic documents associated with the creation of innovation policy in Poland were issued. It is worth mentioning here the small act on innovativeness from 2016[6] The act eliminates income tax on intellectual property brought into a company. Small and medium companies will be allowed to deduct the costs of acquiring patents from their taxes and entrepreneurs will be allowed to deduct the costs of R&D not for three, but for six years. The biggest change is the hike of tax allowances for entrepreneurs. Another significant document adopted by the government in February last year is the *Strategy for Responsible Development*[7]. In the above document a lot of attention is paid to the development of innovation and the reform of research institutes in Poland. Strategy for Responsible Development[8] provides for the reform of research institutes „*…**for the purpose of raising the transfer of knowledge to business, addressing the strategic needs of the state through consolidation, commercialization and coordination of conducted activities**…*”

Research-development activity in the formation of innovativeness in Poland

One of important elements of a properly functioning state is the structural organization of the research-development sphere. It is of crucial significance for the development of a properly functioning economy and eventually it reflects its competitiveness. In Poland it contains: scientific institutions of the Polish Academy of Sciences, research institutes, research-development centres, central laboratories and other organizations whose main task is conducting research-development activity. In the structures of this sphere there are also universities, units serving science — national libraries, archives, associations, foundations etc., development units — commercial entities dealing with R&D along with their core business activity (companies, laboratories, research centres and facilities), industrial-research centres, technology parks. Each individual sector is distinguished by a different character of activity. Education and research works are the domain of universities. Units of the Polish Academy of Sciences deal with primary research and research institutes deal with applied research and development works. This division shows that the activity of these three most important sectors should be mutually complementary and overlapping. Work on a new bill on higher education has been in progress already for two years[9]. Currently, consultations with the scientific community concerning the proposed changes and regulations are in progress.

Research institutes as entities and executors of innovative actions in Poland

114 research institutes operate in Poland. The biggest number of research institutes are subordinate to the Ministry of Development. Most research institutes are active in the area of exact sciences, engineering and life sciences. The basic goals and tasks of research institutes are stipulated in the act from 2010, these are: conducting scientific research and development works, dissemination and implementation of research results.

The basic assumption is that they have to serve the role of combining scientific research and development works responding to the requirements and needs of the economy.

Analysing research institutes as entities which play a major role in the formation of innovation policy in Poland, it is worth looking into their actual participation in the formation of this policy. An active approach of the community representing research institutes has been observed over the last 15 years — for example in case of work on the bill on research institutes[10], later in the process of assessment of criteria for the new parametrical assessment of scientific entities in 2013. Here the Main Council of Research Institutes (RGIB) plays a significant role. For many years, through RGIB research institutes have been participating in economic, social and in particular, in scientific and innovation policies. Government and administration bodies regularly receive opinions and proposals. Actions aimed at solving problems common for the community of institutes, as well as for the development of science, improvement of innovativeness and efficiency of the economy, the development of research personnel and in particular young scientists, are also taken regularly. Research institutes are a necessary element of the National Innovation System in Poland. They implement the goals of innovation policy by carrying out the tasks assigned to them by the 2010 act on research institutes. The contribution of these entities to the innovation policy in Poland are innovative solutions created in cooperation with companies. Research institutes play a very important role in the process of building modern, positive relations between science and business.[11] They are the closest to the economy thanks to the tasks which they handle, namely, conducting development and industrial research focused on implementations. As research institutes are a collection of non-uniform institutions operating in various areas of the economy, it is hard to assess unequivocally their links and direct efficiency of their influence on the economy. On the other hand, taking into consideration low and still shrinking subsidies from the state budget, one of the most important sources of funds are orders from business. However, the scope of this cooperation is still insufficient. A positive example of the achievements of research institutes in activity aimed at the development of the economy, is their work in the area of national defense. In March this year on the

initiative of RGIB a conference presenting interesting achievements of chosen institutes in this area[12] was held. Intensifying cooperation between the spheres of science and economy requires continuous dialogue and above all creating a system of efficient incentives for entrepreneurs to invest in the sphere of science. Thus, the government — as the creator of scientific, scientific-technical and innovation policy of the state — researchers, entrepreneurs and investors have to participate in the decision-making process. This process also has to take into consideration the international context, in particular the context arising from the functioning of the European Research Space, as well as cooperation with developed countries outside the European Union.

Conclusions

Presenting research institutes as the creators of innovation policy, it is worth pondering whether and to what extent research institutes need another reform. It is worth emphasizing that this is the sector of science which has gone through the deepest restructuring in the past 25 years. In Europe there is a trend to merge similar institutes, like in case of CARNOT institutes in France. Each research institute in a network has its legal autonomy, specialization and competences in particular areas of research. Carnot brand is awarded by the minister of higher education and research to units which successfully cooperate with the representatives of the sector of companies and local communities.[13]

The reform of research institutes in Poland is supposed to involve the process of their prioritization for areas of branch specialization for the purpose of securing the possibility of conducting interdisciplinary research. According to government administration, the consolidation of research institutes will allow the creation of entities able to compete on the global market. The establishment of the National Technology Institute is planned for 2018[14]. National Technology Institute[15] is a proposed new organizational unit, which will allow better utilization of the scientists' potential and linking it with the growing needs of innovative entrepreneurs. An alternative concept proposed by RGIB is

the creation of the so-called network of research institutes (grouped into research areas)[16], without depriving individual institutes of their legal personality.

The general assumptions and directions of reforms in the area of economy and research-development are reasonable. New reform and the thorough systemic changes in the research-development sector in Poland should be evolutionary in character. All changes aimed at achieving a positive economic effect should be conducted following a deep, mutual analysis conducted jointly by the involved social groups.

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[1] See: Strategia Lizbońska — droga do sukcesu zjednoczonej Europy, Urząd Komitetu Integracji Europejskiej (UKIE), opr. zb., Gdańsk 2002.

[2] http://ec.europa.eu/europe2020/index_pl.htm, 22.04.2017.

[3] Joseph Alois Schumpeter (born February 8, 1883, died on January 8, 1950) — Austrian economist, regarded as one of the most outstanding economists of the 20th century.

[4] See: J. Schumpeter, Teoria rozwoju gospodarczego, Warszawa 1960, s. 104.

[5] See: W. Janasz, K. Kozioł, Determinanty działalności innowacyjnej przedsiębiorstw, Warszawa 2007, s. 13.

[6] Act from November 4, 2016 on the change of certain acts defining the terms of conducting innovative activity.

[7] http://www.bankier.pl/wiadomosc/Rzad-przyjal-Strategie-na-rzecz-Odpowiedzialnego-Rozwoju-7499039.html, 22.07.2017.

[8] https://www.mr.gov.pl/media/23749/SOR_29072016_projekt.pdf

[9] http://isip.sejm.gov.pl/DetailsServlet?id=WDU20051641365, 22.04.2017.

[10] Ustawa z dnia 30 kwietnia 2010 r. o instytutach badawczych (Dz. U. z 2010 r. Nr 96, poz. 618 z późn. zm.).

[11] This subject was discussed at, among others, a conference from the Partnerzy Zmian Gospodarczych, Badania, Innowacje, Rozwój 2014-2020 cycle organized by Business Center Club, which was held in Warsaw on June 5, 2013. The debate was attended by experts from the scientific community, representatives of the Ministry of Science and Higher Education, Ministry of Regional Development and the National Centre for Research and Development. Material patronage over the Debate was taken by the Main Council of Research Institutes. The debate was conducted by editor Bartosz Marczuk from Rzeczpospolita daily.

[12] More about the event: http://www.rgib.org.pl/index.php?option=com_content&view=article&id=1489:cywilne-instytuty-badawcze-wspieraj-bezpieczestwo-polski&catid=1:nowoci&Itemid=103, 22.04.2017 r.

[13] Carnot label is awarded as a result of a competitive call for applications. The procedure involves the assessment by a special Commission. Following a positive assessment a particular Institute gets a Carnot accreditation for five years.

[14] The creation of National Technology Institute will facilitate the commercialization of research; it will also make it easier for Polish entrepreneurs to obtain knowledge. http://www.rp.pl/Edukacja-i-wychowanie/309129984-Narodowy-Instytut-Technologiczny-stanie-na-czele-sieci panstwowych-instytutow-badawczych.html, 22. 04.2017

[15] Draft bill on National Technology Institute: https://bip.kprm.gov.pl/kpr/wykaz/r709179056, Projekt-ustawy-o-Narodowym-Instytucie-Technologicznym.html

[16] NIT czy SIB, a może kompilacja? Rozmowa z prof. Leszkiem Rafalskim — Przewodniczącym RGIB, p. 1–2, Biuletyn Rady Głównej Instytutów Badawczych, grudzień 2016, nr 3 (99).

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