THE IMPACT OF OPERATIONAL PROGRAMME INNOVATIVE ECONOMY ON THE GROWTH OF INNOVATIVENESS OF INDUSTRIAL COMPANIES[1]

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Abstract
The following paper is concerned with the use of subsidies coming from Operational Programme Innovative Economy for the purposes of Polish companies. Data analyzed in this paper prove that UE subsidies do not have positive impact on the growth of innovativeness of companies. On the contrary: this impact appears to be negative.
Keywords*: innovations, processes, product, subsidy.*

1. Introduction

In modern economy, innovative character of companies can be regarded as a synonym for their competitiveness. Businesses that launch new products or modern manufacturing, marketing and organizational methods more often succeed in meeting clients' expectations. As a result, they find it much easier to stay on the market and to increase their shares. Development, making and launching new goods, products and services is closely connected with the necessity to improve the quality and innovativeness in every branch of the company. However, it is a very costly process to introduce all those changes, therefore only big firms can afford to finance them from their own resources. Micro-, small and medium-sized undertakings that do not have such funds are forced to look for some alternative solutions.

At the time of programming, i.e. 2007-2013, enterprises which wished to improve the quality and innovativeness of their goods, products and services, could have used public funds, among those coming from Operational Programme Innovative Economy (OP IE). The aim of this article is to try to assess the impact of OP IE subsidies on the growth of innovativeness of companies that used them in 2007-2013. The thesis statement proposed is that public funds gained from OP IE have resulted in the improvement of quality and innovativeness of companies.

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In the first paragraph preliminary remarks have been included which concern the innovative activity of undertakings. The second paragraph introduces, respectively, the definition, kinds and classification of innovation. The following attempts at assessing activities of Polish innovative companies in comparison with those of some chosen European countries. Paragraph four presents the impact of subsidizing from public funds on innovative nature of companies. The final paragraph contains conclusions and summary. Desk research method has been used in this work. It consists in collecting and analyzing data found in academic literature on the subject, press releases, analytical reports and comparisons of statistics.

2. Innovative activity of enterprises

The notion *innovation* comes from a Latin word *innovation* and means renewal. Innovations are also associated with another Latin word *novus,* meaning novelty (Borowski, 2011, pp. 8-13). Nevertheless, the first of the Latin terms mentioned above is much more widely used in the literature concerning the topic of innovations.

In literature on this subject one can find a great range of definitions for innovation. J. A. Schumpeter presents this notion in a wide perspective, mainly, he defines innovation as activity connected with preparation, launching, manufacturing new as well as improved goods, materials, services, devices, methods and processes, which are meant to be introduced on the market or used in practice (Schumpeter, 1960).

P. F. Drucker argues that innovations transcend every branch of a company's activity. Changes can occur in the product itself as well as in organization, methods of management and marketing. Drucker assumes that those changes must be regarded in a systemic way. The changes must be subject to active identification. One must also regularly analyze prospective opportunities to use them to create new innovations. Unexpected factors are the most vital ones among those that make it necessary to introduce innovations. They can be divided into: the need of process, change in perception, change in industry structure or in market structure and, last but not least, new knowledge (Drucker, 2004).

According to Schumpeter and Drucker, innovations can be understood as activities bound with all the processes, no matter how minor they are, that occur in an enterprise.

In Oslo Manual textbook the notion of innovation has been presented in a wide perspective and has been described as launching a completely new or greatly improved product, process, marketing method, organizational method

in economy practices, reorganization of a working place, as well as changes in relationships with the environment.

The division of innovation to *defensive* and *offensive,* as it has been suggested by Ortt and van der Duin (2008), is also worth mentioning. *Defensive* innovations are based on all kinds of information about competitive position and market needs. On the other hand, *offensive* ones are based on information about academic and technological inventions and their purpose is to take a much higher competitive position on a given market (Ortt & van der Duin, 2008).

Alińska et al. (2008, p. 27) draws attention to the fact that innovations can be regarded as processes directly aimed at achieving competitive position. These days it is vital to ensure that our goods and services are innovative from the very moment of setting up a new establishment. It is not enough that an enterprise walks the beaten track. Gaining the competitive advantage is possible only when the subject makes sure it is a step ahead from its rivals. What can be done to beat one's competitors? It is always advisable to regard launching newer and newer solutions in all processes, goods and services, because it is launching *novum* that enables us to achieve the so desired competitive advantage.

Nowadays it is futile to count on random solutions. It is a must to create best conditions possible for innovations, and to constantly search for new ones. A systematic innovation is one that is based on a well-organized and purposeful search for changes and a systematic analysis of all possible chances to create and implement innovations (Brzozowski, 2001, p.180).

Numerous criteria and ways of classifying innovation can be found in the academic literature. The most popular classification, formed on the basis of kinds of innovation is:

- product innovations – consist in introducing a new key product or service on the market, as well as great enhancement of a product or service;
- process (technological) innovations – consist in implementation of new or improved methods of production, use of new or improved technological processes, devices, machines, tools, software, ways of production and providing services;
- organizational innovations – rest on the use of a new method of organizing the company's activities, new organization of working places or new organization of external relations;
- marketing innovations – are based on implementation of a new marketing method that stems from launching a new marketing strategy that differs from the previous one. Changes in that matter are mostly about changing the appearance of the product, its promotion, packaging, pricing policy and distribution (Afuach, 2009).

In this paper there is a number of definitions for innovation that depict how broad this topic is. They also underline the connections between innovations and achieving competitive advantage by enterprises. Putting together all the definitions above, two conclusions can be made. First, it has to be assumed that introducing any change, no matter how minor it seems to be, is a sign of innovation-provided that it is a purposeful and deliberate activity. What is more, these days every enterprise that cares about the competitiveness of its goods and services implements innovations. Activities of innovative character that are introduced by companies which do not use any public funds do not always come to light and are not calculated into external statistics.

3. Innovative activity in Poland contrasted with that in other European countries of choice

Unfortunately, conclusions from research conducted by PARP concerning the innovativeness of enterprises from 28 EU countries and a few other chosen ones are not too optimistic. In the majority of countries analyzed, a lower percentage of innovative companies can be observed, both those on the top, as well as those at the end of stake. Undertakings create their own strategies and set precise goals for themselves, however, there exists a large number of obstacles that hinder them from achieving previously set goals. Some Eurostat data has been included in this article, in order to present the innovative character of Polish enterprises against the background of the innovativeness of other European countries' companies.

Table 1. Percentage of companies performing current and abandoned innovative activity in 2008-2012

Countries	2008 (%)	2010 (%)	2012 (%)	Difference 2011 –2010 (pp.)	Difference 2012– 2008 (pp.)
EU (28)	no data	no data	48,9	4,0	2,7
Germany	79,9	79,3	66,9	-12,4	-13,0
Italy	53,2	56,3	56,1	-0,2	2,9
France	50,2	53,5	53,4	-0,1	3,2
Great Britain	45,6	44,2	50,3	6,1	4,7
Estonia	56,4	56,8	47,6	-9,2	-8,8
Croatia	44,2	42,4	37,9	-4,5	-6,3
Spain	43,5	41,4	33,6	-7,8	-9,9
Bulgaria	30,8	27,1	27,4	0,3	-3,4
Poland	27,9	28,1	23,0	-5,1	-4,9

Source: Own research and studies based on Eurostat Statistics Database (inn_cis6_type), (inn_cis7_type), (inn_cis8_type).

In an attempt to assess levels of innovativeness of enterprises, a general approach has been used. It depicts the percentage of companies performing current, as well as abandoned innovative activity when it comes to products, processes and organizational and marketing methods. Table 1 presents the percentage of enterprises that can be characterized by innovative activity in 2008-2012.

Among the countries presented in Table 1 there can be distinguished four groups of actively innovative enterprises and countries assigned to them:

- leaders <55,6; 66,9> (Germany, Italy),
- catching up countries <43,8; 55,35> (France, UK, Estonia),
- average innovators <32,25; 43,8> (Croatia, Spain),
- weak innovators <20,7; 32,25> (Poland, Bulgaria).

Leader in innovation, i.e. Germany, has fallen prey to the most negative changes. The drop in enterprise innovativeness has reached in this case over 12%. Significantly lower indicators of innovation have been observed in Estonia, Croatia, Spain and Poland. In Poland, the innovative character of undertakings grouped according to their size appears to be much better. Data depicted in Table 2 prove that big enterprises which possess much greater economic potential are characterized by activity in their innovative work.

Table 2 depicts the percentage of enterprises that perform current innovative activity and abandoned activity and they are ordered according to their size.

Table 2. Percentage of enterprises performing current innovative activity and abandoned activity according to number of employees (%)

Countries	Total	10–49 workers	50–249 workers	>249 workers
EU (28)	48,9	4502	60,5	76,4
Germany	66,9	63,6	74,3	92,2
Italy	56,1	53,4	71,4	84,4
France	53,4	49,1	66,2	81,0
UK	50,3	48,7	56,7	56,2
Estonia	47,6	42,6	64,3	78,3
Croatia	37,9	33,1	51,5	77,2
Spain	33,6	29,0	55,7	78,2
Bulgaria	27,4	22,7	40,4	59,0
Poland	23,0	17,4	35,8	63,9

Source: Own studies and analyses based on Eurostat Statistics Database (inn_cis6_type), (inn_cis7_type), (inn_cis8_type).

According to data from Table 2, Germany remains the leader in the group of big enterprises, too. Among those countries that have been subject to research, in Germany there are 92,2% undertakings that deserve to be called innovative. In Poland, respectively, this number reaches up to only 63,9%. Bulgaria places itself a little below Poland with 59%, and UK with total of 56,2%. When it comes to the share of innovative undertakings of average size, it amounts to almost 35,8% in Poland. The percentage of innovative small businesses in Poland is only 17,4% and such a result puts our country on the last position in the ranking.

When making an attempt to assess the innovativeness of Polish companies, it is necessary to underline that 77% enterprises which have been subject to research do not perform any innovative activities. In contrast, in Germany, our closest neighbour, the amount of non-innovative enterprises is only 33%.

4. How subsidies are used by enterprises on innovation

Between 2007-2013, thanks to Operational Programme Innovative Economy (OP IE) entrepreneurs, academic and research bodies, business-related institutions, and public administration institutions received funds of over 10,18 billion euros for the improvement of innovation of Polish businesses. Funds from The European Regional Development Fund (ERDF) for this purpose amounted up to 8,65 billion euros, and the remaining 1,92 billion euros came from national budget.

By October 30, 2015 there have been 17851 agreements signed under OP IE for the total amount of PLN 44,22 billion, which is 104,01% of allocation for the programme. All of the funds designed for OP IE have been allocated between 2007-2013 and because of that one can try to assess the impact of such support on the innovativeness of companies.

In Table 3, the share of financial support for individual priorities has been presented. The table shows that the biggest number of OP IE funds has been devoted to priority 4- investments in innovative enterprises. The amount of subsidy in this case has been over PLN 15 billion.

A question should be raised here if it is true that funds from OP IE have contributed to the growth of innovativeness of Polish businesses? Unfortunately, when comparing the amount of funds with data from Table 1 (paragraph 3), one can notice that public support has in fact not lead to any growth desired.

Table 3. Division of OP IE funds into priorities

Priority	Allocation for the priority in million PLN	Number of arrangements signed	The amount of subsidy under agreements (in millions PLN)
Priority 1 Research and development of modern technologies	6 343,34	1491	7 003,72
Priority 2 Infrastructure of R&D zone	6 006,11	166	6 736,20
Priority 3 Capital for innovation	1 315,15	310	1 366,84
Priority 4 Investments in innovative enterprises	15 469,32	2088	15 488,77
Priority 5 Diffusion of innovation	1 856,14	611	1 985,26
Priority 6 Polish economy on international market	1 718,58	5 108	1 794,92
Priority 7 Information society: establishment of electronic administration	3 933,92	40	3 800,69
Priority 8 Information society: boosting the economy's innovativeness	5 001,81	7801	5 248,24
Priority9 Technical support	868,30	236	792,72

Source: Retrieved from www.poig.gov.pl.

Data presented in annual Central Statistical Office (GUS) reports confirm that the percentage of enterprises which implement product or process innovations is lower and lower each year. Graph 1 indicates how many innovative enterprises use public support, e.g. support from EU funds. A quite significant drop in innovative activity occurred in 2008. In the following years the share of innovative industrial undertakings grew, but was still minor and came to as little as 25%. Data contained in this chart indicates that 75% of industrial establishments do not use any national support.

The following conclusion can be made: vast majority of enterprises do not use any mechanisms supporting innovations offered by the state and co-financed from EU funds. Why is it then that enterprises do not make use of those huge funds designed for backing up innovations? Apparently, companies are not able to correctly fill in applications or they do not comply with the criteria that are artificially created and imposed by office workers. The report prepared by J. Hausner proves that EU funds devoted to supporting enterprises

do not have any positive impact on their innovativeness. On the contrary, they spoil the market and competition (Hausner, 2012).

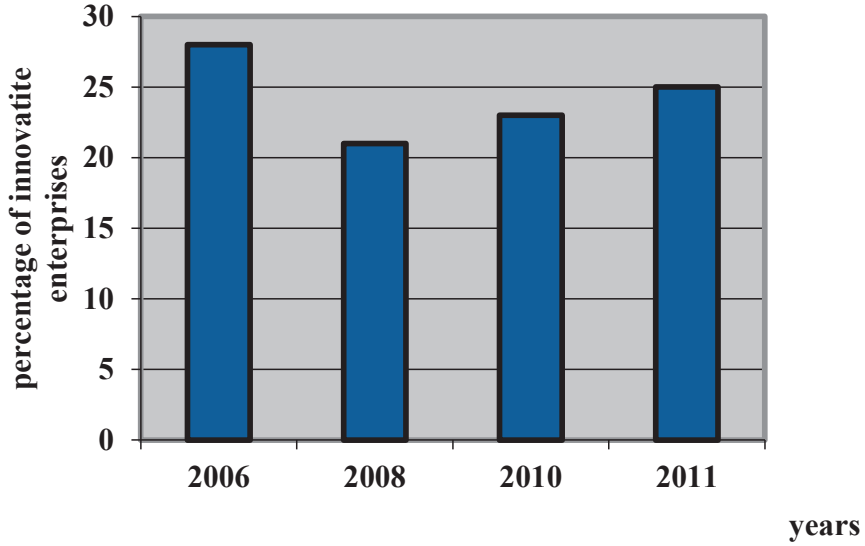

Figure 1. Percentage of innovative enterprises using public support (including EU funds)

Source: Retrieved from www.poig.gov.pl.

5. Obstacles in innovative activity of enterprises

The notion of enterprises' innovativeness is strictly connected with all kinds of obstacles in its launching and development. Those obstacles result in hindering innovations from being launched as well as abandoning the already existing innovative processes. For micro- and small enterprises it may be very costly to abandon the already undertaken innovative steps as they do not possess any big amounts of capital. This, in turn, limits their innovative activity to a great extent (Juchniewicz & Grzybowska, 2010, p. 43).

Financial factors belong to one of the most vital and, at the same time, most hindering ones when it comes to innovative activity. Lack of own funds, restrictions in access to external sources of financing and high costs of innovative activity, as well as unstable demand for goods, remain the most important financial barriers (Dzikowski, 2013, p. 46). Studies conducted by Central Statistical Office (GUS) confirm that financial restrictions consist a basic barrier for innovative activity of Polish enterprises (Świadek, 2007, s. 100).

Matusiak and Guliński (2010) have divided obstacles in implementing and taking up innovative activities into four groups:

- systemic barriers – connected with excessive bureaucracy and stimulators of innovative activity,
- structural barriers – connected with the lack of correct policy and actions in terms of R&D zone and the enterprise itself,
- competence barriers – connected with the lack of ability to use potential opportunities that occur in academic and economic vicinity,
- awareness and cultural barriers – connected with the lack of trust for institutional mechanisms functioning in the social system.

The previously referred to Oslo Manual textbook mentions 4 basic factors that have a negative impact on the quality of innovations implemented in an enterprise. These are: cost, market, institutional and knowledge factors.

E. Okoń-Horodyńska enumerates barriers in enterprises' innovativeness, such as (Okoń-Hordyńska, 2004):

- low expenditures on R&D and education,
- lack of political will, as well as lack of long-term strategy for economic development,
- lack of activity of R&D units in commercialization of academic studies' conclusions,
- weak demand for technological innovations,
- immaturity of financial institutions and lack of venture capital,
- deficiencies in enterprises' education about innovation.

In Polish enterprises one can observe a tendency not to perform any activity when it comes to increasing capital expenditures for innovation. Companies are reluctant to devote any extra money that could contribute to cover all kinds of costs of innovative projects. Previous experience in using external financing proves that funds coming from Regional Operational Programmes play a big role in innovative development of enterprises. Financial support gained from EU triggers the development of cooperation between scientific units and enterprises themselves (Szymański & Tomaszewski, 2013, s. 246).

Enterprises would use the EU funds to increase innovativeness of their goods, services or processes if it were not for the demands imposed on them by various institutions that effectively obstruct and prevent them from doing so. It is because only chosen companies that meet all the criteria set by the project can receive the funding. Those which do so are, in turn, not necessarily interested in preparing and submitting complicated and time-consuming applications. Thus, it is really difficult to claim that OP IE funds play a vital role in the development of enterprises' innovativeness.

All of the authors of articles cited in this paragraph agree that financial barriers remain among those most important to hamper innovative activities. Therefore, increasing the level of innovativeness in Polish enterprises depends on the increase in investments in all kinds of innovative activities. In accordance with their assumptions, Operational Programmes that financially

support projects of innovative character should, to some extent, enable the decrease in financial problems of enterprises wishing to implement innovative activities. However, as it turns out, funds devoted on increasing innovativeness of enterprises are available for a big number of undertakings. The most significant barriers in their use, in turn, lie in the implementation system and inconvenient criteria which block their access.

6. Conclusion

This article presents an overview of definitions of innovation and depicts its kinds and classification. Special attention has been paid to the influence of innovativeness on enterprises' competitiveness. The analysis of innovative activities undertaken by Polish enterprises does not appear very optimistic as the analyzed data in this paper show that innovativeness of Polish undertakings decreases year by year.

In the last year analyzed in paragraph 3, over 77% of enterprises do not undertake any innovative activities. Big enterprises have a much higher level of innovative activities, and over 60% analyzed subjects implement activities of that kind. Nevertheless, activities of the remaining groups of enterprises are not optimistic and contribute to the fact that our country is among the weakest innovators.

Among barriers preventing innovative activities from being implemented the most crucial ones are financial barriers which are for SME sector the most relevant in hampering initiatives like that. It is worth noticing that systemic barriers, which effectively discourage entrepreneurs from applying for EU funds or even prevent them from doing so, are also vital barriers to the development of innovativeness.

It is sad to say that this thesis claim that public funds donated by OP IE have contributed to improvement of quality and enterprises' innovativeness is simply not true.

The new Operational Programme Inteligentny Rozwój (Intelligent Development), implemented in 2014-2020, without any doubt provides enterprises with new possibilities of financing innovative activities. However, if the criteria to their access are not changed, they will still have a negative influence on the innovativeness of Polish enterprises.

Still, is it possible to talk about truly pure competitiveness of enterprises which use external, and often non-reimbursable forms of financing innovative activities? Do EU funds not interrupt the proper functioning of market mechanisms? It is worth to conduct some further research to find answers to these questions.

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