DEVELOPMENT OF INNOVATIVE ACTIVITY IN COMPANIES IN POLAND – TRANSNATIONAL STRATEGIC PLANS AND A DOMESTIC BUSINESS PERSPECTIVE

Wiktor Bołkunow

Warsaw School of Economics, Collegium of Management and Finance,

Al. Niepodległości 162, 02-554 Warsaw, Poland

Abstract

Implementation of innovative solutions is one of the factors affecting economic development. Therefore, goals and guidelines concerning innovation are included in development strategies such as the Europe 2020 Strategy. Companies operating in Poland are increasing their degree of innovation; when we compare Poland, however, to other European countries, it is still perceived as a "moderate innovator". Therefore, within the framework of implementation of Europe 2020 in Poland steps should be undertaken to support innovative entrepreneurship, primarily by increasing various types of support, in particular for SMEs and simplifying the rules on financial issues.

Key words: *innovation, entrepreneurship, Europe 2020, innovativeness in Poland*

1. INTRODUCTION

The present article attempts to analyze the level of development of innovative activity in enterprises in Poland, especially in comparison to the economically developed European countries. The reason for choosing the topic is the fact that the development and use of innovation in the economy is now one of the most important determinants of the development of individual companies as well as national and transnational economies (e.g. the European Union), and is usually an important part of their strategic plans. Therefore, an attempt should be made to find an answer to the question concerning the situation of enterprises in Poland. A special focus will be put on the perspective of the business environment. A hypothesis was made that companies in Poland are increasing the range of innovation activities. The method that was used to achieve the goals was an analysis of reports and studies on various aspects of the development of innovativeness in enterprises in Poland. After a short theoretical introduction, in which the most important theories of the importance of entrepreneurship and innovation for economic development are presented, the strategies for innovation in the European Union and Poland are discussed. Then there are presented and analyzed data from a variety of reports of consulting firms on innovation in enterprises in Poland. Finally, an attempt will be made to summarize the whole analysis and present conclusions.

2. THE ROLE OF INNOVATION AND ENTREPRENEURSHIP IN ECONOMIC DEVELOPMENT

The main economic objective of societies has for a long time been an increase in what Adam Smith called "the wealth of nations". There have been developed a number of theories attempting to identify the determinants of increasing this "wealth", that is, using the contemporary language, economic growth and development (it is worth mentioning that according to Adam Smith himself it was the so-called productive labor, used to produce material, tangible goods). More and more of them underline the importance of factors such as entrepreneurship and innovation. It should be stressed here that as long ago as in 1912, Joseph Schumpeter presented one of the most significant theories of economic development, which valued highly the role of innovation and entrepreneurship. Namely, he argued that the driving force of the economy are the activities of entrepreneurs who are able to implement inventions. They introduce innovations - new products, technologies or solutions to their companies. And by doing that, entrepreneurs "strike" the economy from a state of equilibrium at a low level of economic activity (Noga 2009, p.149). Schumpterer's ideas of "creative destruction" and breaking down old rules became the basis of other, modern management concepts, concerning the economy as a

whole as well as individual companies. One of them is, for example, the "blue ocean strategy". According to this theory, entrepreneurs, in order to avoid a devastating struggle and achieve growth should create and implement a unique idea, which creates a new value for the customer. That is how they will leave “the red ocean" (which is the sea of blood) and move to the uncontested market space (“the blue ocean") (Glinka & Gudkowa 2011, pp. 46-47). It should be stressed here that the entrepreneurial implementation of innovations in the economic sphere has a positive impact not only on the company itself, but also on its environment. Glinka and Gudkova sum up the functions of entrepreneurs in the economy in the following way:

1. Entrepreneurs affect the shape and functioning of the labor market;
2. Entrepreneurs create a possibility of making a better use of existing resources and ensure the efficiency of markets;
3. Entrepreneurs create the proper combinations of economic factors;
4. Entrepreneurs accept risk;
5. Entrepreneurs stimulate local growth;
6. Entrepreneurs provide benefits for investors;
7. Entrepreneurship affects the flexibility of markets;
8. Entrepreneurship of individuals – both corporate employees and individual entrepreneurs - favors increasing the flexibility of corporate structures, as well as contributes to creating more modern organizational solutions and management innovations;
9. Entrepreneurship has a positive effect on economic development (2011, pp. 53-55).

One should stress the fact that the concepts or phenomena of "entrepreneurship" and „innovation" are inextricably linked. The essence of entrepreneurship is, by its nature, innovation (though not all entrepreneurial activities must result in innovation). As Glinka and Gudkova noted, „economists consider the introduction of innovations to be one of the most important functions of the entrepreneur in the economy” (2011, p. 85). It is due to the fact that thanks to them one can discover new uses of resources.

3. INNOVATION STRATEGIES OF THE EUROPEAN UNION

In 2000, at a meeting in Lisbon, the European Council adopted a plan for the development of the European Union whose aim was to make the EU economy the most competitive knowledge-based economy in the world. Although a decade later it was concluded that the so-called Lisbon Strategy could not be evaluated as successful (European Commission, 2010), the very definition of the objectives of the Strategy and taking measures for their implementation should be considered valuable. In 2010 the Lisbon Strategy was replaced by a new 10-year plan – the Europe 2020 Strategy. Its main objectives are as follows:

„1. Employment

- 75% of the 20-64 year-olds to be employed

2. R&D

- 3% of the EU's GDP to be invested in R&D

3. Climate change and energy sustainability

- greenhouse gas emissions 20% (or even 30%, if the conditions are right) lower than 1990

- 20% of energy from renewables

- 20% increase in energy efficiency

4. Education

- Reducing the rates of early school leaving below 10%

- at least 40% of 30-34–year-olds completing third level education

5. Fighting poverty and social exclusion

- at least 20 million fewer people in or at risk of poverty and social exclusion" (European Commission, 2016d).

There were also defined seven flagship initiatives meant to boost growth and jobs. One of them is „Innovation Union", with the following aims:

- "refocusing R&D and innovation policy on major challenges for our society like climate change, energy and resource efficiency, health and demographic change

- strengthening every link in the innovation chain, from 'blue sky' research to commercialization". (European Commission, 2016c).

4. INNOVATION STRATEGIES IN POLAND

The Polish economy, in more than 20 years after the change of the economic system from a centrally planned economy (from which it inherited large heavy industrial and defense industries) is undergoing, though quite slowly, changes typical of highly developed countries – e.g. a growing part of the GDP is produced in the service sector, instead of in industry or agriculture. When compared to the countries of the so-called "old" EU, Poland is not characterized by a high degree of innovation, but it must be stressed that this situation is changing - for example, the number of European patent applications filed by Polish entities has significantly increased in 10 years (an increase from 105 applications in 2005 to 475 in 2014) (Crido Taxand 2015, p. 30).

4.1. Europe 2020 – national goals of Poland

Like other Member States, Poland was obliged to reformulate the overarching objectives of the EU Europe 2020 into national targets and to define the methods of their implementation. In 2011, Poland presented the following national targets of Europe 2020 (chosen examples):

- increasing the rate of employment of 20-64 year-olds to at least 71% (the EU indicator: 75%);
- reaching the level of investment in R&D to 1.7% of Poland's GDP (the EU indicator:3%);
- reducing the rates of early school leaving below 4.5% and increasing the level of 30-34–year-olds completing third level education to 45% (the EU indicators: 10% and 40% respectively);
- reducing by 1.5 million the number of people in or at risk of poverty and social exclusion (the EU indicator: 20 million) (GUS 2016).

4.2. Progress in reaching R&D and innovation goals in Poland – a EU perspective

As far as progress in reaching the goals is concerned, according to the EU 2016 country report (a working document), which assesses Poland's economy in the light of the European Commission's Annual Growth Survey, it is worth noticing that the Polish economy made steady progress over the last two decades. However, continuing to close the income gap with the EU average is now becoming more difficult for a number of reasons, some of the most important being: decelerating total factor productivity, the unfavorable demographic outlook, remaining structural issues in the labor market, education and innovation systems or barriers related to the functioning of the public administration, taxation, and the environment for research, development and innovation activities. The EU experts appreciated a steady increase in R&D spending; they noticed, however, that GERD, i.e. the level of

gross domestic R&D expenditure (0.9% in 2014) is still one of the lowest in Europe and well below the EU average (slightly above 2%). Poland also performs below the EU average on all dimensions of the 2015 Innovation Union Scoreboard (IUS). Among questions of concern there also remain a fairly strong deterioration in innovation activities by SMEs and a limited range of sources of financing firms' R&D activity. As the experts noticed, while access to bank loans is easier in Poland than in many other EU countries, the covering of alternative financing (e.g. venture capital and private equity instruments) is limited, particularly among young, smaller companies. It should, however, be regarded as positive that, although R&D in Poland still relies predominantly on the public sector, supported mainly by EU Structural Funds, there was reported an increase is business enterprise expenditure (from 0.2% of GDP in 2009 to 0.4% in 2014). The experts also recognized efforts undertaken by the Polish authorities to boost the development of entrepreneurship and innovativeness, especially regarding SMEs, aimed, e.g. at providing alternative financing to companies wishing to engage in R&D, bringing together private investors and entrepreneurs interested in syndicated private investment for start-ups in Poland and, which is especially important, modifying the R&D tax incentives system. They include a wide array of strategic plans and programs, e.g. "4Stock", "Biznest", the 2013 Strategy for Innovation and Effectiveness of the Economy 2020 (SIEG) or the 2014 Enterprise Development Program (PRP). In January 2016 the new government created an Innovation Council, a body that comprises, among others, three deputy prime ministers (Development, Culture and National Heritage, and Science and Higher Education) to coordinate the innovation policies of the government. (European Commission 2016b).

4.3. *Progress in reaching R&D and innovation goals in Poland – the Polish government perspective*

On April 26, 2016, the Council of Ministers adopted the update of the National Reform Program under the Europe 2020 Strategy, which presented the ways of achieving the goals stated, including the macroeconomic scenario. As far as R&D is concerned, the position of a "moderate innovator" in the Innovation Union Scoreboard 2015 report was estimated as unsatisfactory. What was emphasized as a positive trend was the increase of expenditure on R&D (GERD), with a particular focus on the systematic increase of business enterprise R&D spending (BERD) – in 2014 its share in the overall expenditure on R&D amounted to 39% and was 14.6% higher than in 2010. It was admitted, however, that BERD in Poland was still significantly lower than in well-developed EU countries. The document highlighted the importance of creating favorable conditions for increasing the scale of operations of Polish entrepreneurs. They should include, above all, the elimination of regulatory barriers and red-tape in the everyday functioning of Polish companies, capital and substantial support (provided by state-owned companies as well as private corporations) development of startups, the activities of the Guarantee Fund for innovative companies in the SME sector and the further implementation of research programs and programs promoting cooperation between science and industry. As far as steps and plans for improvement are concerned, the foundation of the Innovation Council was mentioned and a number of government actions and plans were listed. It is believed that the achievement of the (stated) goal of increasing the investment in R&D to 1.7of the GDP in 2020 is feasible (Ministry of Science and Higher Education/The National Centre for Research and Development) (Ministry of Development 2016).

5. INNOVATIVENESS IN COMPANIES IN POLAND – A POLISH BUSINESS ENVIRONMENT PERSPECTIVE

Here arises the question how the development of innovativeness and entrepreneurship in enterprises in Poland is perceived by the business community itself. In order to find an answer to this question, selected reports on innovation in Poland, prepared by leading consulting companies were analyzed. Below are presented the key findings and conclusions.

5.1. Deloitte report

According to the Deloitte survey titled "Research & Development in enterprises. Report 2015", carried out (for the third time in a row) in 2015, only one third of Polish companies declare that they have a strategy for research, development and innovation. In other cases, the decisions related to the activities of research and development are taken ad hoc by the board. Moreover, in comparison to 2014, the percentage of companies that did not incur expenditure on R&D increased by 30% (from 9.7 % in 2014 to 13% in 2015), despite the fact that in the study conducted in 2013 all respondents declared their intention to incur expenditure on research and development. On the other hand, however, in comparison with the study from 2014, almost twice as many Polish companies allocated more than 3% of their turnover to research and development (an increase from 26.3 % to 48 %), which means that the total amount of funds allocated to R&D increased significantly. The main conclusions of the study are as follows:

- A mixed system of incentives, which would combine tax reliefs with subsidies, would have the biggest stimulating impact on the increase of spending on R&D in Poland (an opinion expressed by nearly a half of the respondents);
- The most important external factor determining the level of spending on R&D in Polish companies is the availability of a wider range of types of support; it is particularly important for micro and small enterprises, among which more than 80% granted the maximum number of points to this factor. This result confirms the need to introduce a new tax relief on R&D activities;
- More than 1/3 of respondents pointed out the lack of clear interpretation in the assessment of subsidies or tax reliefs by the tax authorities or other administrative bodies as the most serious drawback of the current system of support for R&D. It should, however, be emphasized that, according to most companies, keeping separate records of the costs of R&D was not identified as problematic (only 8% of respondents considered it a significant difficulty). This illustrates the differences in the degree of complexity of internal and external reporting on R&D, which confirms the need to simplify the system (Deloitte 2015).

5.2. KPMG report

Another study on the innovative activity of enterprises in Poland is the KPMG Report of 2014 entitled "Innovation maturity of enterprises in Poland".

Here are the main conclusions:

- 78% of medium and large companies in Poland are working on innovations; almost as many (71%) companies implemented the innovations that they developed. As for the types of innovations developed, both in the industry (62% of respondents) and in trade and services (56%) companies concentrate on product and service innovations. The industry is also working intensively on process innovations (60%) and trade and services on organizational innovations (46 %);
- The reasons why companies do not conduct activities for innovation are as follows: 44% of companies have concerns about the return on investment in innovation; 43% believe that it is not justified by the business model or strategy and for 34% of them the reason is the scale of operation of the company;
- Only one third of the companies are mature innovators, conducting innovation activities in many (i.e. at least three) areas (products and services, marketing, processes and organization);
- Nearly half of the enterprises present innovation as one of their strategic objectives; nevertheless, only every tenth company appointed a board member responsible for the implementation of this objective;
- More than 1/3 of companies implemented solutions aimed at supporting the innovativeness of employees; 41% of industrial companies and 32% of trade and service companies have a system

of additional remuneration for such initiatives. However, although the vast majority (81%) of companies that are innovatively active estimate that the organizational culture has a positive effect on the innovativeness of employees, only 13% of them consider this impact to be really effective;

- 57% of companies conduct or commission research and development works. Most commonly (70%) they are related to the investment in machinery, equipment and software. In most cases, the evaluation of the effectiveness of the R&D (conducted or outsourced) is positive;
- Approximately 2/3 of the companies believe that the expenditure on innovation paid off. In particular, this applies to industrial companies. The companies managed to improve the quality of products and services (91% of companies), improve brand perception (86%), and, as a result, increase sales (73%) and strengthen the competitive position (76 %). Moreover; the operational efficiency also increased (82%), which in many cases resulted in a reduction in operating costs (63%);
- Over 80% of companies are planning to increase the scale of innovative activity (in the perspective of three years). Both in the industrial and commercial sectors companies intend to focus on those areas in which they are already conducting innovative activities, i.e. the industry on products, services and processes and trade and services on products, services and organization;
- A majority of companies (56%) decide on the acquisition of best practices from the market rather than on the elaboration of their own, completely new solutions;
- Only a limited number of companies (17% of industrial companies and 13% of trade and service companies) are innovation leaders or experienced innovators. Beginner innovators make up 30% of industrial companies and 23% of trade and service companies. The rest are little innovative companies (32% and 42%) and non-innovative companies (21% and 22% respectively). Interestingly, the self-evaluation of medium and large enterprises on their level of development in terms of innovation is much higher than the assessment resulting from the study.

In the summary of the Report, the Authors presented a conclusion that the Polish business is currently in the middle of the road to innovativeness. But – which is very important – it is taking decisive steps forward (KPMG 2014).

5.3. The Innovative Economy Institute report

The report prepared by the Innovative Economy Institute, titled “Innovations 2015” presents a range of information on innovation in Poland, in comparison to other European Union countries. Here are the most important findings:

5.3.1. Degree of innovativeness

When it comes to the percentage of companies engaged in innovation activities, which is one of the indicators of innovation, according to data from the Report of the European Commission's Innovation Union Scoreboard 2014, Poland is in the group of "moderate innovators" in the EU. In 2013, its innovation index was 0.28, while the average for the whole of the European Union exceeded 0.55. The leaders in this category are Germany and Luxembourg; the results achieved at the level of Poland were reached by Slovakia, Lithuania, Hungary, Romania, Latvia and Bulgaria. Unfortunately, Poland is performing below the average of the EU for most indicators, e.g. the number of non-EU doctorate students, PCT patent applications in societal challenges and license and patent revenues from abroad. Relatively higher results were achieved in terms of non-R&D innovation expenditures and youth with upper secondary level education.

5.3.2. Key industries in the field of innovation

Both in the European Union and in Poland the most innovative sectors are information and communication, and financial and insurance activities. Activities on innovation in products or processes are conducted, on average, by 61 and 57 percent of businesses in the EU and, respectively, 44 and 45% in Poland (the least innovative of the analyzed areas are transport and warehousing).

5.3.3. Average expenditure on innovation per company

As far as average expenditure in innovation per one company is concerned, in 2010 the first two places were won by Denmark (with the expenditure exceeding 2 million euros) and Finland (1.9 million euros). Poland (785 000 euros) took the eleventh place, scoring slightly above the EU average (726,000 euros).

5.3.4. The scale of expenditure on innovation during the economic downturn

It turns out from the data collected by the European Union within the scope of the project titled "Community Innovation Survey" that the scale of expenditure on innovative activities in Poland in the years 2008-2010 increased in comparison with the period of 2006-2008 by 13 percent, while the average for EU countries fell by 5 percent. There were significant declines in countries with a high proportion of innovative companies, such as Ireland (- 46 percent), Luxembourg (- 32 percent), Estonia (-13 percent) and Germany (- 7 per cent), as well as in the countries with a relatively small scale of innovative activities (e.g. Bulgaria - 57 percent, Romania - 50 percent, the Czech Republic - 10 percent). It should be stressed that Poland stood out against countries with similar levels of economic development, namely the Czech Republic, Slovakia, Slovenia and Estonia. Despite the economic slowdown in this period, not only did Poland have the expenditure on innovation activities per company higher than the average for the countries of the European Union, but it also reported an increase in these expenditures. Thus, one could draw the conclusion that the innovative activities in Poland are conducted by a fairly small but well-invested group of companies. They are increasing the scale of investment, which is a unique phenomenon in the group of the countries analyzed.

5.3.5. Revenues from the sales of innovative products

Companies in Poland, which introduced *new products for the company*, receive an average revenue of about 5.3 million euros from their sale; the EU average is 6.9 million. In the case of *products new to the market*, the average revenue of Polish companies amounts to 8.1 million euros (the average for EU countries is 7.9 million euros). This confirms the conclusion that was already made that in Poland there is a group of highly innovative companies, which receive significant revenues from investments in innovations.

5.3.6. Cooperation in the field of innovation with other entities

As far as cooperation on innovation with other entities is concerned, Polish companies achieve results similar to the average for the European Union. In 2008-2010, the percentage of Polish companies which cooperated with other organizations in the field of innovation amounted to 33 percent, whereas the EU average was 34 percent.

5.3.7. Reasons for undertaking innovative activities

The main reasons why companies decide to undertake innovative activities are similar in Poland and in other EU countries. The most important include:

- a desire to improve the quality of products and services (50 percent of companies in Poland, 55 percent in the EU);
- striving to increase the range of products and services (49 percent of companies in Poland, 51 percent in the EU);
- a willingness to enter new markets or increase the market share (43 percent of companies in Poland, 46 percent in the EU).

5.3.8. Using the EU support and national public funds

As far as the use of funds from the European Union is concerned, in 2010 16 percent of Polish companies received this sort of support, which is just the same as in the case of companies operating in the Czech Republic. Only Lithuania (34 percent) and Hungary (21 percent) benefited more from EU subsidies. However, when one takes into account the percentage of companies that benefited from any form of public support, the indicator for Poland was 20 percent, while the leaders, namely France and Cyprus, achieved the levels of 46 and 42 percent respectively (Innovative Economy Institute 2015).

5.4. A comparison of the development of R&D and innovation in Poland and the UE – a short summary

One could draw the conclusion from the statistical data discussed in the chapters above that, indeed, in comparison to the other countries of the European Union Poland is rather a moderate innovator. A choice of examples of Poland's performance against the EU average and EU leaders is presented in Table 1 below.

Table 1. The development of R&D and innovation in Poland and UE

	Poland	**EU avg.**	**EU leader(s)**
Europe 2020 goals			
Gross domestic expenditure on R&D (GERD) as % GDP in 2014	0.94	2.03	Finland (3.17) and Sweden (3.16)
Gross domestic expenditure on R&D (GERD) as % GDP in 2020	1.7	3,0	Finland and Sweden (4.0)
Innovation performance in 2013 – relative strengths (scores above 100) (performance relative to the EU where the EU = 100)			
Non-R&D innovation expenditures	182	100	Cyprus (296)
Youth with upper secondary level education	112	100	Croatia (118)
Population with completed tertiary education	109	100	Ireland (143)
Innovation performance in 2013 – relative weaknesses (scores below 30) (performance relative to the EU where the EU = 100)			
Non-EU doctorate students	8	100	France (130) and the UK (127)
R&D expenditures in the business sector	25	100	Finland (178) and Sweden (176)
PCT patent applications in societal challenges	27	100	Sweden (160) and Denmark (158)
License and patent revenues from abroad	28	100	Ireland (175)
New doctorate graduates	29	100	Sweden (171)

Source: compiled from European Commission 2014, "Innovation Union Scoreboard 2013", European Commission 2016a," Annex 2. Overview of Europe 2020 targets", Eurostat 2016, "Gross domestic expenditure on R&D (GERD)"

It seems that the current expenditure on R&D should be a matter of special concern. It should be stressed, however, that there are also areas of relative strengths of Poland, in which the country's innovation performance is above the EU average (though in none of them Poland reached the leading position). The most promising seems to be the level of education of the so-called human capital – the percentage of citizens with completed secondary and tertiary education is quite high. Still, a lot remains to be done to join the European elite of innovation leaders.

6. SUMMARY

The activity of "Schumpeter's entrepreneurs", who take up the challenge of introducing innovation to business practice is one of the driving wheels of economic development. The importance of creating and implementing new solutions is recognized by economic decision makers at the macro level, as they include guidelines for the development of R&D and entrepreneurship in transnational and national strategic plans, such as the Europe 2020 Strategy. An analysis of the studies on the development of innovation activity in companies in Poland allows for the formulation of the following key conclusions:

- Companies in Poland are increasing the range of innovation activities (which confirms the hypothesis that was stated in the introduction) - for example, the number of European patent applications filed by Polish entities is increasing, the majority of medium and large companies are developing and implementing innovations, and their opinion on the cost-effectiveness of the expenditure on innovation is usually positive; most companies are also declaring increasing the scale of innovation activities in the near future;
- In comparison to other European countries, Poland ranks among the "moderate innovators"; what deserves special recognition, however, is the fact that the percentage of well-educated people is quite high in the country;
- The most important challenges for the further development of innovativeness include: increasing the availability of different types of support (especially public support), in particular for small and medium-sized enterprises and providing simplification and a greater clarity of regulations governing financial issues (such as subsidies or taxes).

The findings of the study could be used in practice by government decision makers during further works on the implementation of the R&D and innovation goals of Europe 2020, especially concerning government-to-business cooperation. The main limitations of the study and data analysis relate to a lack of a deeper insight into in-company factors shaping the development of innovativeness (e.g. the company culture or the board's attitude). The needs for future research also include an ongoing evaluation of the efficiency of the government policy in reaching the Europe 2020 goals.

To sum up, one could agree with the statement of the Authors of the KPMG report that the Polish business is currently in the middle of the road to innovativeness and that it is taking decisive steps forward. What should be stressed as a final recommendation is that during the implementation of national strategies such as Europe 2020, effective actions should be taken to accelerate significantly this development.

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