

The Importance of Cooperation for Innovation in the Region

Niki Derlukiewicz, Anna Mempel-Śnieżyk

Wrocław University of Economics, Poland

Abstract

The paper considers the issue of cooperation between particular actors such as: enterprises, local government, R&D sector, and business environment institutions in the context of innovativeness of the economy. Presently, numerous studies analyze how to create an innovative economy in order to answer the question of what contributes to generation of innovations and the key elements in this process. Furthermore, the created models of a group of determinants influencing innovativeness are still evolving and depending on the examined aspect, different approaches to innovation in the regions are presented, including cooperation between the aforementioned entities. The main aim of the paper is to present the significance of cooperation between different actors in the region for developing innovative solutions. To achieve the aim, the authors present an example of cooperation between enterprises, pointing out the benefits of common projects, and present activities undertaken in regions which enhance innovation. The authors also focus on checking the offers and readiness for cooperation of selected Polish universities. In order to elaborate the basic information, the authors conducted desk and field research. In order to check the state of the art of the investigated issue and prepare the background for the empirical part of the paper, analysis of the literature on the subject was conducted. The desk research was supported by Google Scholar, Emerald, and Scopus databases. To present cooperation in the regions in the context of innovativeness, the authors used the method of observation and case studies. As a result of the research, it can be said that cooperation between science and business brings mutual benefits, although when the benefits to businesses are often analyzed and measured in the literature on the subject, less attention is paid to the effects of cooperation for the R&D sector — e.g., financing the scientific research by the business sector, and the opportunity for scientific workers to gain experience in enterprises. According to the conducted research it can be said that the last two decades brought changes both in the awareness of local authorities about their role in creating a pro-innovative environment and in the way they operate. Polish universities have also started transformation and have started to deal with potential co-operators by preparing the offer and information for them.

Keywords: cooperation in the region, innovativeness, regional development

JEL: O11, O39, Q55, R11

Introduction

Nowadays, knowledge, technological development and continuous innovation are noted as key elements for economic development. When discussing issues related to development of innovations in regions it is important to mention the players that are crucial in this process. They represent both the public as well as private sector. A significant role is played by institutions of science and research (research and scientific centers, universities, laboratories which contribute to innovation, providing creative ideas, knowledge and skills, innovative solutions). The second group can be identified as business supporting institutions (e.g., technology parks, centers for the transfer of knowledge and technology, business incubators) which support innovative processes through various forms of assistance and pro-innovation services, they cooperate with businesses, and transform the knowledge from research institutions to enterprises. The next group of players are innovative entrepreneurs who use knowledge, ideas and concepts in new market products, technologies and services. The last group are local authorities which support cooperation between the above mentioned entities

through the undertaken activities and projects. Cooperation between science and business can raise the level of innovation in a region, that is why it is essential to support this kind of cooperation by local authorities. Moreover, central, regional and local authorities participate indirectly in creating and supporting the innovativeness of the economy. They can create potential for innovation in the field of cultural, strong internal economic, social and institutional ties. By implementing policies and using specific tools, local authorities are able to build an innovative environment, attract companies characterized by high quality of services, support existing companies, and influence the relation between economic entities located there.

The main aim of the article is to present the significance of cooperation between different actors in the region for developing innovative solutions. To achieve this aim, the authors pointed out the benefits of the examples of common projects and activities undertaken in regions which enhance innovation. In order to achieve the research goal, the authors focused on checking the offer of selected universities in Poland and their readiness for cooperation with business entities. To achieve the aim of the paper and present cooperation in the region in the context of innovations, the authors undertook the second part of the research—the field research—using the method of observation, comparative method, audit of websites and case studies. The analyses of case studies were also helpful in the field of pointing out projects and initiatives undertaken in regions for increasing innovativeness. The audit of the websites was conducted to check types of projects implemented in regions and to this end the websites of all regions were analyzed. The chosen projects were analyzed in detail. The authors analyzed also reports and other source materials and expertise from particular regions. It allowed us to systematize the knowledge associated with developing innovations at the regional level. To find out the offer and check the readiness of Polish universities for cooperation (as important partners in creating the innovativeness of the present economy) the authors analyzed official university websites in the context of availability for businesses, local authorities, and other entities.

1 Conceptual framework and methodology

The connections between economic entities, business environment institutions and R&D centers is becoming more and more significant and can be seen as a very important instrument in solving economic problems. The cooperation, creating economic and organizational relationships, has become the fundamental reference of the modern innovative economy and one can agree with the common saying that innovation emerges in networks (Bengtsson and Kock 2000, 225). A very important aspect in this context is the cooperation between science and business, and more specifically, the implementation of innovative business solutions developed by the science sector or jointly with a business, i.e. the transfer of knowledge from science to business. It is worth mentioning that many activities aimed at promoting and creating an innovative economy are being undertaken in regions (Derlukiewicz 2014, 10). The determinants which contribute to generation of an innovation are still evolving and scientists in the world continue the research concerning key elements in the process of innovation development.

In the paper qualitative methods were used in order to broaden the knowledge concerning the examined phenomena. The authors carried out desk research and field research—by case study. In order to check the state of the art of the investigated issue and prepare the background for the empirical part of the paper the analysis of the literature on the subject was conducted. The literature review was supported by Emerald, Google Scholar, and Scopus databases.

2 Developing innovations at regional level. Benefits of creating networks

Regional development is determined by the region's ability to manage effectively its knowledge potential. The effectiveness of this process is associated, among other things, with the style and operational methods used by public institutions, as important actors responsible for widely defined regional development. The level of a region's innovativeness can be determined by the involvement of local authorities in the knowledge management process (Kuhn, Tomassini, and Simons 2006, 23).

It is commonly accepted that success of regional development is mainly due to the availability of knowledge resources, which in turn are perceived as an essential element of innovation in the region. In this context, some local and regional factors of innovation development are important, for example:

- qualified and experienced workforce with potential for professional training;
- access to modern technological knowledge through local R&D institutions and various intermediary organizations providing services, information and consultancy;
- widely defined “quality of life,” attracting employees and stimulating their innovation potential;
- existence of small and medium-sized enterprises, which are appropriate to adjust to innovative changes;
- access to innovation-financing sources; and
- cooperation of different entities for innovation (Gruchman 1989, 113).

Taking into account that an “innovative” region is a region ready and open for changes, the cooperation between regional actors: enterprises, authorities, business environment institution, and R&D sector seems to be very important. It should be noted that an innovative region is characterized not only by its abilities to produce and absorb innovations, but also to convert them in accordance with their own development needs and requirements of the local market. It is commonly known that regions that generate innovations are likely to develop more dynamically than those with limited inventive potential and abilities for imitation and adaptation creative solutions. It is worth emphasizing that the R&D sector is very important in this process, as well as the innovation environment and the region’s capability to implement innovations.

Important factor influencing the development of an innovative economy is cooperation and networking structures — e.g., clusters, which are perceived as acting in favor of locating knowledge- and technology-intensive investments in their territory (Simmie 2004, 112). One can find in the literature multiple divisions of network correlations which function in a contemporary economy. The network concept is known in different areas and among others it appears also in regional development. The key elements of the research literature on the formation of networks is presented by Smith-Doerr and Powell (2005). They present a detailed division of network according to formality, informal linkages, tasks requiring coordination, a network concerning sharing of information, theory related to regional agglomeration and creating spillovers, the “secrets of industry are in the air,” and historical, political, cultural context which differentially affects capacity for collaboration.

Creating networks and enterprise cooperation (Ginevicius 2010, 285–292) contribute to positive effects for entities belonging to this network. They can take advantage of such benefits as: profit increase due to lower costs incurred by companies operating within the network, export increase, higher innovativeness, better expansion of knowledge and technological progress, enhancing competitive advantage, faster productivity growth related to the concentration of the resources of innovation absorption capacity (Plawgo 2005, 33). Existence of networks, as a form of organization, ensure also sharing risks, formulating issues together, analyzing ideas and initiatives, sharing costs of introducing innovations, availability and possibility to rotate experienced and specialized employees, mutual confidence of partners, which contributes to the frequent formal and informal contacts between them as well as exchange of experiences.

It is worth mentioning innovative clusters (Chen 2005, 6). This notion has emerged as an effect of rapidly strengthening the collaboration between firms for achieving knowledge-based advantages. Hart specified local innovative clusters and presented their types and characteristics.¹ Freeman (1991, 12) introduced and coined the notion of network innovators and different types of innovation networks can be distinguished (see more in: Knell 2011, 5). Innovation networks through spreading innovative technologies and good practices create benefits for both members as well as for entities from outside the network (see more in: Ahuja 2000). The most commonly known examples of clusters in high technology are: clusters located in the Silicon Valley, Cambridge (biotechnology, computer and IT industries), Austin, Montpelier (telecommunications, software, biotechnology), Lombardy (IT and chemical industries), and the eco-energy cluster in Dolnośląskie Voivodship. It is worth mentioning that, as it results from the research conducted by Bednarz and Markiewicz,

1. See: Innovation Clusters: Key Concepts. By D.A. Hart, [a:] <http://centaur.reading.ac.uk/27212/1/0600.pdf>, page 10.

in Polish reality a strong and wide support of regional and central institutions in building efficient networks is still required. The authors investigated cooperation between enterprises by a prism of Ozawa and Porter models. The researcher recommended that “widespread cooperation between companies and thanks to the spill-over effect, may contribute to accelerate the Polish economy to the innovation-driven stage” (Bednarz and Markiewicz 2015).

3 Cooperation between science and business

Presently, a well-functioning system of connections based on supporting relations between the above-mentioned actors is significant. The important role in supporting these relations is played by business environment institutions. One of the main tasks of business environment institutions is to provide pro-innovative services for business—e.g., intermediation in a process of knowledge and technology transfer, preparing an offer or inquiry about technology, review of profiles of technology suppliers and customers, establishing contact or help with implementation of technology and monitoring this process. When analyzing their offer, one can find that pro-innovative services also include consulting assistance in conducting research projects that cover technical, technological or organizational undertakings leading to the creation of a prototype. They also help enterprises in developing industrial design, in implementing research or finding new technologies, facilitate an access to the sources of risk financing, encourage and provide tools necessary to absorb knowledge and transfer technology or help to deliver funds for starting business activity. Thanks to a pro-innovative activity, business environment institutions reinforce the development and innovativeness of businesses (Feldman and Link 2001, 34). The offer of Polish business supporting institutions is wider and wider. The analysis of the last decade shows that they are very active, and from year to year improve their activities—e.g., are “visible” for the business sector, have prepared a transparent offer, and in undertaken projects they meet expectations of entrepreneurs.

Till now, in all Polish regions, a number of actions have been undertaken to foster innovations. The activities and projects implemented in the regions were different and dependent on a strategy adopted in particular regions. These activities were undertaken both by business supporting institutions, R&D sector and regional authorities and other actors. Table 1 presents examples of actions implemented in different Polish regions. It should be noted that these undertakings are only chosen examples of many other projects that are realized in Polish regions.

The examples of undertaken and implemented projects confirm that all sectors of the economy are engaged in the process of improving the innovativeness of Poland. It is worth highlighting a few projects which encourage the cooperation between science and business. For example, in the Dolnośląskie Voivodship the following projects: the Mozart, Green Transfer, Innovative Transfer and Lower Silesian Innovation Voucher, were implemented. Generally, the purpose of stated projects was to establish cooperation between scientists and enterprises for the creation of new, innovative products or services—and therefore the transfer and commercialization of knowledge. So far, the implementation of these projects has given the first results in the form of new papers, patents, and applications. The example of the project are as follows:

- Thanks to the Mozart programme, already over 30 jobs and over 50 innovative products and services were implemented (e.g., development of a technology to obtain human stem cells for use in medicine, creation of a new, innovative, and economical LED lighting structure which meets the strength requirements, etc.). As an outcome of this project, more than 15 employees of enterprises were involved in teaching students at universities, more than 40 courses were upgraded thanks to the knowledge acquired by scientists, inventions were made and patent applications were filed. In addition, more than 130 students were involved in partner companies during internships or training.²
- The project Science2Business realized in the region of Lubelskie Voivodship was also very interesting, and the main goals were to: stimulate innovative initiatives, stimulate and activate women’s environments, spread the idea of technology transfer and innovation in academia,

2. See: <https://www.wca.wroc.pl/>.

stimulate the synergies of academia with investors and activation of originators for horizontal exchange of experience.

- Another project aimed at cooperation between different actors for innovation was realized in the Wielkopolskie Voivodship—“Scientist in business—apprenticeship of scientific employees in companies.” The goal of this programme was the development of cooperation and boosting the transfer of knowledge and strengthening ties between scientific centers and enterprises in region. Thanks to internship programs and trainings, scientists learned about the ways of starting cooperation with companies and what rules this cooperation should be based on. The project had a positive impact on the motivation of the participants to commercialize their scientific achievements and contributed to raising the awareness of benefits associated with the cooperation of the scientific environment with enterprises.

Tab. 1. Examples of actions undertaken in the Polish regions to support innovation

Voivodship	Examples of project and activities
Dolnośląskie	<ul style="list-style-type: none"> • Lower Silesian Bond for Innovation • Innovative Transfer
Kujawsko-Pomorskie	<ul style="list-style-type: none"> • Cooperation for building innovative capacity of enterprises in the Kujawsko-Pomorskie voivodship • Creation and operation of the Regional Center for the Promotion of Innovation and Technology Transfer
Lubelskie	<ul style="list-style-type: none"> • Transfer of knowledge and innovation through the development of cooperation networks in the Lublin Region • Invest in innovation—technology incubator • Science2Business
Lubuskie	<ul style="list-style-type: none"> • Lubuski Center of Innovation and Agricultural Implementations in Kalsk • Master in innovation—competition for graduates of universities in Lubusz voivodship
Łódzkie	<ul style="list-style-type: none"> • Łódź—city of innovation • IDEA—Innovation by knowledge
Małopolskie	<ul style="list-style-type: none"> • Broker of innovation • Malopolska Innovation Fair
Mazowieckie	<ul style="list-style-type: none"> • Mazowiecka network of advisory and information centers on innovation • Innovator of Mazovia
Opolskie	<ul style="list-style-type: none"> • St@rt up. Try your business idea • Effective innovation manager
Podkarpackie	<ul style="list-style-type: none"> • Regional Investor and Innovation Center in Rzeszow • University Center for Innovation and Transfer of Technical-Scientific Knowledge
Podlaskie	<ul style="list-style-type: none"> • Innovative tourism online booking system • Educated by technology—teacher development program
Pomorskie	<ul style="list-style-type: none"> • Strategic technological and innovation advice for companies • Advanced Technology Center “POMORZE”
Śląskie	<ul style="list-style-type: none"> • Silesian Portal for Innovation • SWIFT (Innovative Technology Forum Scholarships)
Świętokrzyskie	<ul style="list-style-type: none"> • Circles of innovation—development of integrated tools for supporting the innovativeness of voivodship in areas with high growth potential • Perspectives of RSI Świętokrzyskie
Warmińsko-Mazurskie	<ul style="list-style-type: none"> • Regional Support System for Innovation • Preparation of regional innovation brokers of research institutions and enterprises to implement new technologies
Wielkopolskie	<ul style="list-style-type: none"> • Scientist in business—apprenticeship of scientific employees in companies • Cooperation between the sphere of science and business in Wielkopolska
Zachodniopomorskie	<ul style="list-style-type: none"> • Time for internship—diffusion of knowledge between academia and business • Academy of Innovation

Also in all other regions in Poland many projects and activities were undertaken to strengthen the cooperation between science and business to achieve a higher level of innovation in the region.

Nowadays, the transfer of knowledge and technology, in addition to teaching and basic research, is becoming an important issue for universities. Polish universities act differently in comparison with universities acting (e.g., in the USA or Scandinavian countries where cooperating with businesses has a different dimension). Polish universities adapt to new conditions in the market and try to meet expectations of other actors functioning in the region. They realized that it can result in benefits not only for enterprises but also for them. To find out the offer and check the readiness of Polish universities for cooperation the authors analyzed official university websites in the context of availability for businesses, local authorities, and other entities. When analyzing the websites of universities one can observe the increasing number of marketing activities. They prepared well-functioning webpage bookmarks concerning cooperation with businesses, wide and clear offers for potential cooperators. When searching their websites, it is possible to continue mostly in English, but some of universities have websites also in other languages such as German or Russian, but also in Ukrainian or even Chinese. More often the foreign language websites are as perfectly written as in Polish. This encourages not only Polish investors to cooperation but also those from abroad. Furthermore, the trainings and courses have become their basic offer. On the university websites one can find also the realized projects (but unfortunately not so easy as courses or basic research). This also shows to potential cooperators the scope of conducted research. Opening up universities for cooperation with business is very important and it is a great step for creating relations and future cooperation. However, it is still common that enterprises do not know about these possibilities of cooperation. The SME sector notes this form of cooperation as unbelievable, unprofitable, or as a waste of time. But it is worth adding that the awareness of entrepreneurs is changing, and undertaken actions and good practices contribute to break barriers still existing in this field.

Conclusions

Summing up, it should be emphasized that currently the main factor in the development of the companies, regions or national economies is still innovation. It is very important to generate and implement new solutions, technologies, new products and services. That is why more and more entities make efforts to establish innovations. Moreover, the activity towards innovation becomes fundamental and the analyzed actors are beginning to be aware of this.

All of the actors mentioned in the paper participating in creating an innovative economy are very important, but the most important in the process of developing innovation is cooperation between them and implementation of common projects, which is confirmed by undertaken initiatives, presented in the paper as the examples. All regions have adopted an approach to address the shortcomings related to the functioning of an innovative economy and try to face this challenge by supporting: science and research centers, various business environment institutions, technology parks and enterprises functioning in high technology sectors. By these bodies the region promotes cooperation with the research and development sector, and enters into new areas of business therefore attracting innovative enterprises.

The clusters mentioned also contribute to developing an innovative economy because these kinds of networks characterized relations between companies and infrastructure supporting stimulation of the innovation process. Voyer (1998, 13) indicates the following correlation: the larger the cluster in terms of the number of companies and employees, the greater its self-reliance, which, in turn, translates into the fact that fewer functions need to be purchased outside the cluster. The environment of clusters is certainly considered pro-innovative and companies within clusters are characterized by higher innovativeness compared to the average results across the business population (Plawgo 2014, 8).

Undoubtedly, cooperation of different actors, especially between science and business brings mutual benefits. While the benefits to businesses are often analyzed and measured, less attention is paid to the effects of cooperation for the research and development sector — e.g., financing the scientific research by the business sector, and the opportunity for scientific workers to gain

experience in enterprises. The necessary condition for developing innovations in a region is diffusion of information about potential and possible cooperation in this field and by example show benefits for all participants—spreading knowledge about the effects of common projects realized by different actors in the region.

The conducted research confirmed that joint projects by companies and scientific institutions make it possible to overcome communication barriers and can result in redoubled strength in the future. Furthermore, the completed projects are an incentive for future co-operators, they also have changed the awareness of Polish entrepreneurs and increased trust in public administration. There are many examples of activities realized in cooperation which resulted in developing innovative solutions and can bring uncountable benefits for partners as well as for an entire regional economy. That is why it is still so important to support cooperation of different actors in a region. In this context it is worth mentioning as the example the results of the research conducted in 2005 by the Institute of the Home Market and Consumption. This research was confronted by investigators with similar surveys and researchers concluded that the relationship between enterprises and local governments was rather weak and the research showed no signs of permanent cooperation based on confidence, good communication and mutual support (see more in: Kłosiewicz-Górecka 2006). Presently in comparison 2005, local government, by a prism of constantly undertaken projects, seems to be aware of and responsible for supporting cooperation in the region.

As the research shows, Polish universities have started activities contributing to cooperation in the region. The structure and the ways Polish universities operate hinder them in some actions but they are setting out in the right direction and attract entrepreneur/public institutions by a clear and easily available offer. On the one hand, it can confirm the increasing awareness of Polish universities of their role in initiating cooperation and in economic development; on the other hand, it shows that by entrepreneurial activities of universities, they try to meet the expectations of the market.

References

- AHUJA, G. 2000. "Collaboration Networks, Structural Holes, and Innovation: A Longitudinal Study." *Administrative Science Quarterly* 45 (3): 425–455. doi: 10.2307/2667105.
- BEDNARZ, J., and M. MARKIEWICZ. 2015. "From Confrontation to Cooperation. Institutional Support in Building Cooperation of Polish Enterprises." *Oeconomia Copernicana* 16 (3): 89–115.
- BENGTSSON, M., and S. KOCK. 2000. "'Coopetition' in Business Networks—to Cooperate and Compete Simultaneously." *Industrial Marketing Management* 29 (5): 411–426. doi: 10.1016/S0019-8501(99)00067-X.
- CHEN, L.-Q. 2005. "Analysis of the Interaction of Industrial Cluster and Regional Innovation System." *Journal of Chongqing University (Social Sciences Edition)*.
- DERLUKIEWICZ, N. 2014. "Development of an Innovative Economy in Poland Based on the Transfer of Knowledge from Universities to the Economy." *Biblioteka Regionalisty* (14): 7–14.
- FELDMAN, M.P., and A.N. LINK. eds. 2001. *Innovation Policy in the Knowledge-Based Economy, Economics of Science, Technology, and Innovation*. Boston: Kluwer Academic Publishers.
- FREEMAN, C. 1991. "Networks of Innovators—a Synthesis of Research Issues." *Research Policy* 20 (5): 499–514. doi: 10.1016/0048-7333(91)90072-X.
- GINEVICIUS, R. 2010. "The Effectiveness of Cooperation of Industrial Enterprises." *Journal of Business Economics and Management* 11 (2): 283–296. doi: 10.3846/jbem.2010.14.
- GRUCHMAN, B. ed. 1989. *Postęp techniczny i innowacje przemysłowe w rozwoju regionalnym*. Warszawa: Państwowe Wydawnictwo Ekonomiczne.
- KŁOSIEWICZ-GÓRECKA, U. 2006. "Cooperation of Entities in the Local Market." *Gospodarka Narodowa* 17 (4): 87–105.
- KNELL, M. 2011. Global Networks of Innovators: a Synthesis of Research Issues. Paper read at DIME Final Conference, 2011.04.06–08, at Maastricht.
- KUHN, M., M. TOMASSINI, and P.R.J. SIMONS. eds. 2006. *Towards a Knowledge Based Economy? Knowledge and Learning in European Educational Research*. New York: Peter Lang.

- PLAWGO, B. 2005. "Koncepcja klastrów gospodarczych jako podstawa polityki regionalnej i lokalnej." In *Czynniki rozwoju regionalnego Polski Północno-Wschodniej. T. 1*, edited by B. Plawgo. Białystok: Wyższa Szkoła Administracji Publicznej.
- . 2014. *Benchmarking klastrów w Polsce — edycja 2014. Raport z badania, Seria Innowacje*. Warszawa: Polska Agencja Rozwoju Przedsiębiorczości.
- SIMMIE, J. 2004. "Innovation and Clustering in the Globalised International Economy." *Urban Studies* 41 (5–6): 1095–1112. doi: 10.1080/00420980410001675823.
- SMITH-DOERR, L., and W.W. POWELL. 2005. "Networks and Economic Life." In *The Handbook of Economic Sociology*, edited by N.J. Smelser and R. Swedberg, 379–402. Princeton, N.J. – New York: Princeton University Press; Russell Sage Foundation.
- VOYER, R. 1998. "Knowledge-Based Industrial Clustering: International Comparisons." In *Local and Regional Systems of Innovation*, edited by J. De la Mothe and G. Paquet. Boston, Mass.: Kluwer Academic Publishers.