

SUPPORTING INNOVATIVENESS OF MSME'S BY BEI ON THE EXAMPLE OF WROCLAW TECHNOLOGY PARK S.A. (WPT S.A.)

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Abstract

In the latest years of socio-economic changes in Poland a lot of attention has been paid to the phenomenon of innovativeness and the development of knowledge-based economy. During this period, a number of programmes and institutions has been created in order to provide and continue services for the development of innovativeness of MSMEs (Micro, Small and Medium Enterprises). Despite the intensity of support, there is still a need for actions in this area, as the basis for the development of Polish economy is, among others, the development of innovation of MSMEs. Undoubtedly, business environment institutions play a significant role in this process, i.e. technology parks that support new/small enterprises, help in the development and access to modern technologies, laboratories, financing, contribute to increasing employment, affect the growth of competitiveness, innovativeness and internationalization of micro, small and medium enterprises. However, in order for these organizations to be able to effectively carry out the tasks entrusted to them, they must have various support instruments dedicated to MSMEs in their offer.

The aim of the article is to present and describe the instruments used by Wroclaw Technology Park S.A. (WTP) in order to support innovativeness of MSMEs in Wroclaw Agglomeration.

Key words: micro, small and medium enterprises (MSMEs), innovativeness, technology park.

JEL Code: M13, O30, O31

Introduction

Although for many years innovations have been perceived as the primary factor for contemporary economy growth, there is a continuous dispute over their origin, core, function, and implementation mechanisms.

Innovation is the key driving force for economy and MSMEs development. The enterprise willing to introduce innovations and adapt better to consumers' needs and business environment needs to be prepared for constant and inevitable change. The fundamental element

of every enterprise functioning and development is the ability to adjust to changing environment. In this context the innovation support system dedicated to MSMEs seems to be significantly important.

The aim of the article is to present and describe the instruments, the degrees of their use in supporting the innovativeness of MSMEs by Wrocław Technology Park S.A.

1 Innovation and innovativeness in the context of MSME's - definitions

In the given literature there are many definitions of innovation. The differences among them come from the scope not the phenomenon understanding. Many authors refer to Schumpeter's (1934) definition, who in his own classical spin relates the term to five cases:

- 1) the launching of a new product or a new product type with no previous customer interaction and experience,
- 2) the implementing of a new production method not trialed before in particular industry area,
- 3) the opening of a new market, where particular type of industry didn't work regardless of market earlier existence,
- 4) the acquisition of a new supply of raw materials or semi-products regardless of its previous existence,
- 5) the introduction of a new organisation of industry, e.g. monopoly establishment or its fracture

Innovations might be understood in the narrower and wider scope. Innovation in the narrower sense (latin *sensu stricto*) is the change of technology in goods production as well as in the production process organization based on new, previously unused knowledge. Every change in the production process, where acquired knowledge is applied should be considered as innovation in the wider scope (latin *sensu largo*) (Janasz&Kozioł, 2017). Kuznets (1959) is the proponent of the narrower scope of innovations. He defines them as the novel application of old or new knowledge in the production process initiating invention deployment. Freeman (1982) also belongs to the group of narrower innovation sense supporters, he defines innovations as the first commercial introduction of a new product, a programme or a tool.

Except for cited Schumpeter, Harman (1971) is the representative of a wider concept definition. He regards the innovation as the new or significantly improved product launch in the market. Hagen (1962) perceives innovation in the similar way claiming that it relies on founding production on new ideas that serve innovators' purposes better than previous ones. It comprises of two phases: 1. the discovery of new knowledge, which allows for increase in the

supply of goods and services per unit of labour, capital and materials used in production, 2. the implementation of knowledge into production processes.

Also in areas such as management and marketing, innovation definitions can be found. Drucker (2015, p. 12) believes that innovation is a specific entrepreneurial tool, making the opportunity to open a new business activity or to provide new services. He claims that „(...) *systematic innovation must be integral to the process of management in all organizations Each of society's institutions must be capable of innovation and change if a society of organizations is to maintain its stability even during normal times (...). Innovation is the act endows resources with a new capacity to create wealth (...)*”. According to him, entrepreneurs should effectively search for sources of innovation, changes and their symptoms, which can show the path for effective solution.

The definitions proposed by the above authors turned out to be too general, not always fully meeting the expectations of recipients, which contributed to the discrepancy in the understanding of innovation. Therefore, some organizations have decided to prepare and develop their own definitions of the concept, adaptable to individual needs. The Organisation for Economic Co-operation and Development – OECD together with Eurostat developed a common definition of innovation, which was included in the handbook: *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, 4th Edition*. According to the OECD (OECD 2018, p. 20): "*An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations.*".

Definition analysis indicates a group of five characteristic innovation factors:

- the subject of innovation, which is a product or service, process, strategy,
- the process of generating innovations, i.e. a sequence of changes, actions or functions aiming improvement or new use,
- the innovation entity, a center within which and for which innovations are created,
- the result of innovation, i.e. the effect of implementing innovation in the center (entity); e.g. economic growth, level of social well-being, profitability, etc.;
- the innovation time frame, i.e. the time in which innovations take place or have to be realized.

A number of innovation definitions have been presented above. And what is innovativeness in that case? For instance, innovativeness defined in the Innovative Economy Operational Program means "*(...) implementing novelties to business practice: a new or*

significantly improved solution in relation to a product (good or service), process, marketing or organization. An innovative solution may be the result of the company's own R&D activity, cooperation with other enterprises and institutions or may result from the purchase of knowledge in an intangible or material form (...)" (Kramarz Invetions, 2019).

2 MSMEs innovativeness support by business environment institutions

There are many types of business environment institutions, which are conditioned by various political and legislative terms affecting the functioning of business environment institutions in different countries, as well as a broad understanding of the entrepreneurship support. An attempt to characterize institutions offering entrepreneurship support services must be preceded by various names prescription defining this type of organization. The most frequent ones include: the business environment institutions, the business support institutions, the business-related organizations and the centres supporting entrepreneurship and innovation (Markiewicz, 2010).

The operation of these units takes place through: supporting entrepreneurship and self-employment, facilitating start and helping new, private companies; promoting and improving the competitiveness of SMEs (Small and Medium Enterprises); creating conditions for the transfer of new technological solutions for the economy and implementation of innovative projects.

The type of services provided by business environment institutions is conditioned by their leading activity, which may take the form of (Matusiak, 2004): a training and consulting center (dissemination of knowledge and skills), technology transfer centres (assistance in the transfer and technology commercialization), a bank loan and loan guarantee fund (financial aid), business incubator and technology center (wide advisory, technical and venue assistance), technology park, business zone and industrial park (creating business clusters and strengthening innovation processes by integrating business services and various forms of assistance in a specific area).

3 Wroclaw Technology Park instruments dedicated to MSMEs

Wroclaw Technology Park S.A. is a modern center supporting the development of entrepreneurship and innovation in the Lower Silesian Voivodship; a platform for cooperation between science and business. WPT is a project realized by the Municipality of Wroclaw (main shareholder) in cooperation with few universities and other institutions.

Currently, there are about 200 companies in WPT, 60 of which are incubated enterprises. The park deliberately withdrew from acquiring large foreign clients, focusing on smaller, but with great potential, domestic companies. WPT focuses primarily on companies conducting research activities that use the Park's infrastructure.

The activities description within the innovation support system for resident companies of Wrocław Technology Park S.A. was made on the grounds of "Report of the Management Board of the Joint-stock Company "Wrocławski Park Technologiczny" for 2018" a document from April 2019¹. Examples of the activities carried out by WPT S.A. to support the companies' innovativeness were presented below. The scope of their operation is not only limited to the Park but also outside its structure.

3.1. Development of laboratory and technological infrastructure

One of the ways to support innovation by WPT S.A. is to provide access to laboratory and technological infrastructure. In the reporting year, due to the growing demand of the Park's residents for using the laboratory and technological infrastructure, it has been extended. The preparation of laboratory and office facilities for Amplicon company operating in the biotechnology industry was started. Amplicon, in just five years, went through the whole spectrum of stages from incubation, the use of a laboratory to a dedicated laboratory and office space in Wrocław Technology Park (WPT). In 2018, the INNOPOLISnext project was also launched. The effect of this project will be, among the others, the extension of the chemical and bioengineering laboratory Ensemble, including the purchase of laboratory equipment, as well as the laboratory of optics, photonics and metrology refitting. As a part of Ensemble of chemical and bioengineering laboratories, among others, a laboratory for drug development technology (approximately 860 sq m) will be created for the needs of Captor Therapeutics. This laboratory will carry out projects focusing mainly on the development of new medicines and platforms for the search for drug candidates. In addition, the Organic Chemistry Laboratory will be expanded (approximately 420 sq m) for the needs of Apeiron Synthesis. The company deals with the development and commercialization of olefin metathesis catalysts. These products are used in the production of drugs, pheromones, fragrances, polymers and construction materials.

In 2018, within the Laboratory and Prototype Department, the material and financial plan was realized at a level exceeding 100%. The emphasis should be put particularly on the plan within the chemical and bioengineering laboratory Ensemble, where revenues amounted

¹ Due to limitations in terms of the size of the paper, authors present only selected activities conducted by WPT.

to 3.7 million PLN, which is an increase of almost 80% (about 1.65 million PLN) compared to the previous year.

3.2. New investments

In 2018, three new investment projects were initiated, aimed at increasing the number of specialized laboratories, creating another incubator and preparing areas for further construction projects. The project teams were set up by the Management Board and developed technical documentation (construction projects), formal and legal documents necessary for the investment realization. Appropriate arrangements and administrative decisions of building permits with a finality clause were obtained for all of these tasks. Additionally, with the appearance of the possibility of obtaining financial support for this type of projects from the EU funds of the ROP WD 2014-2020, applications for co-financing for three different competition calls ordered by the Marshal of the Lower Silesian Voivodeship, were prepared and submitted in a very short time.

All applications have been assessed positively both on the formal, as well as on the substantive aspect by the implementing institution and intended for support. The implementation of these projects with a total value of 42.4 million PLN is planned in the next 2-3 years:

1. Development of the pro-innovation business support offer in Wrocław Technology Park - INNOPOLISnext - total cost 18.2 million PLN. The project is a continuation of the project "From Wrocław Technology Park to INNOPOLIS Wrocław". There is a specific demand of start-ups to develop new technologies in the field of chemistry, biotechnology and pharmacy. Therefore, it is planned to increase R&D Park potential by existing buildings adaptation to the laboratory function.
2. Establishment of a Space Technology Incubator in a post-industrial facility of the Wrocław Technology Park - a total cost of 16.4 million PLN. In addition to a Space Technology Incubator creation in the boiler house in the post-industrial area of PAFAWAG, the project implies designing, launching and equipping dedicated laboratory. As a result of the reconstruction and renovation of the degraded old industrial facility there will be laboratories of the new Space Technology Laboratory, technical and office rooms, meeting rooms, and social rooms for space industry companies.

Importantly, the facility will be incubated as a part of the European Space Agency Business Incubation Center (ESA BIC) in cooperation with the European Space Agency (ESA), the Industrial Development Agency and consortium members centered on ESA BIC. In Lower

Silesia there are companies developing space projects such as, for example, a space drill, a Mars rover, and drone technologies. The implementation of the project will enable integration, provision of infrastructure and support for the start-ups from the space industry in Lower Silesia.

3. Preparation of investment areas in the area of the WTP's Business Machine Room - total cost 7.7 million PLN. Wrocław Technology Park considering the entrepreneur's process and development cycle from the moment of starting a business (incubation), then functioning as a small company that benefits for its development from R&D facilities, to dynamic production growth, intends to prepare an offer also for entrepreneurs of the latter phase. Therefore, it is planning a project, which aims to prepare owned, often degraded, former industrial areas of PAFAWAG, for investment purposes. Resident enterprises growing in the Park due to their size will need more space than the Park has in its existing facilities. Currently owned by the WPT, and yet undeveloped land with an area of approx. 7 ha in Wrocław at Fabryczna street, practically does not provide opportunities for new investments. This is due to the depletion of capacity, the residual network of water and sewage infrastructure and the lack of internal roads.

3.3. Other instruments

Another tool supporting the innovation of resident companies is the implementation of projects by WPT S.A. in consortia in which companies - residents of WPT S.A. can participate. Due to the dynamic development of the space industry sector, WPT has attempted to implement the project entitled "Modular GEM Detectors" as a part of a consortium made up of the Space Research Center of the Polish Academy of Sciences (leader), Wrocław University of Technology and a resident of the TTA Techtra Park and WPT S.A. In 2018, endowment for this project was obtained. The total value of the project is 4.2 million PLN, of which WPT will carry out industrial research for the sum of 251 thousand PLN, with the use of equipment constituting the Laboratory of Non-Destructive Testing and the Laboratory of Material Properties, in the years 2020-2021. In recent years, activities were also undertaken to disseminate information about the equipment of WPT laboratories for the needs of the space sector. The consequence of these activities is the initiation of the investment project "Establishment of a Space Technology Incubator in a post-industrial object of the WPT".

A very interesting tool called "inventions in a neighborhood" – meetings devoted to sharing experiences in R&D activities of the residents of the Technology Park. There was a growing interest in the meetings popularizing the knowledge about innovative work carried out

in the WPT, as evidenced by, among others, noticeable increase in the number of participants. Meetings were organized, including representatives of resident companies as well as external companies and universities.

In 2018, actions were also taken to acquire more participants of specialist trainings among students. Talks were conducted in scientific environments and co-operation was established with the Scientific Circles Council of the University of Wrocław. This resulted in training dedicated to students of the Faculty of Biotechnology of the University of Wrocław in the field of Real-Time PCR techniques in the analysis of gene expression.

3.4. Effects

From the beginning of its activity, ie from 2006 to December 31, 2018, the support of the Lower Silesian Academic Business Incubator has benefited (and/or continues to benefit): 141 academic enterprises, of which 11 companies are continuing incubation (as at 31/12/2018). However, from the beginning of its operations, i.e. from January 12, 2015 to December 31, 2018, the Bidder Incubator of Entrepreneurship and Technology WPT S.A. 135 enterprises used, of which 44 companies continue incubation (as at 31/12/2018).

In 2018, from incubation in the Incubators of Wrocław Technology Park S.A. 96 entrepreneurs used it, of which 23 were companies incubated in the Lower Silesian Academic Entrepreneurship Incubator, and 73 companies from the Entrepreneurship and Technology Incubator. In 2018, 355 contracts for *de minimis* aid were signed, covering the implementation of projects with a total value of over 3.5 million PLN, for which over PLN 2.1 million of *de minimis* aid was granted.

Comparing the amount of aid granted, it can be seen that the most *de minimis* aid in 2018 was granted in the field of cryogenics, materials, optics and the operation of the Experimental Center.

Conclusions

A solid understanding of activities supporting the innovation of micro, small and medium sized enterprises is crucial for effective support of the innovative activity of companies using the business environment institutions. These organizations are increasingly noticeable on the Polish scene, although their potential is unfortunately still not fully used in creating an innovation - friendly environment.

Similar conclusions on the basis of research were made by Dvouletý, Longo, Blažková, Lukeš, and Ander (2018), claiming that public policy supporting business environment institutions in supporting MSME's innovation does not meet expectations regarding supporting competitiveness and employment growth. In their opinion, it is likely that a similar situation occurs in the neighboring countries of Central and Eastern Europe, but it may also exist in developed economies.

Interesting results were obtained by Olkiewicz, Wolniak, Eva-Grebski and Olkiewicz (2019) in two incubators in Poland and two in the USA. In the analyzed incubators, the links between the companies were at a low level. They stated that increasing this type of connections/co-operation could improve the functioning of the entity and increase its potential in the field of innovation. In addition, in the opinion of researchers, the profit-generating model requires close relations between the university and industry and the reduction of the role of the government in the management and operation of the incubator center. They claim the role of the government is important, but the key to building a financially independent innovative incubator center is to focus on the university-industrial corporation relationship which should ensure BEI's financial stability without the need for external financing. They believe that such a model can be optimal and ensure long-term successful operation of the incubator center.

The example of Wrocław Technology Park activities and successes of resident companies may indicate how to conduct activities that are directly reflected in the growth of innovativeness of resident companies. One of the most important activities is to focus on the development of laboratory and technological infrastructure and to take into account trends related to, for example, the development of space exploration. In addition, it is worth noting that WPT S.A. often for the needs of implemented projects participates in various types of consortia, which creates even greater opportunities for the development of resident companies. Another important activity is creating cooperation between companies inside the Park. It is also worth emphasizing that the indicators of innovation support objectives by the technology park are carried out with a surplus, and the support instruments themselves should be considered as highly effective.

It is worth emphasizing that some of the above activities have already been implemented, some are still in the design/implementation phase. However, it can be stated that after the implementation of some activities (such as the activities of incubators), the actions taken bring already the expected effects and affect not only resident companies, but also the regional and national scale innovativeness.

Acknowledgement

The project is financed by the Ministry of Science and Higher Education in Poland under the programme "Regional Initiative of Excellence" 2019 - 2022 project number 015/RID/2018/19 total funding amount 10 721 040,00 PLN.

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