

**ANÁLISE DAS POSSIBILIDADES E OBSTÁCULOS PARA A TRANSIÇÃO DA  
POLÓNIA PARA UMA ECONOMIA INOVADORA<sup>1</sup>**

**ANALYSIS OF POSSIBILITIES AND IMPEDIMENTS FOR POLAND'S  
TRANSITION TO AN INNOVATIVE ECONOMY**

**Vanessa Amorim**

25180025@iscap.ipp.pt

**Óscar Bernardes**

oscarbernardes@iscap.ipp.pt

**Bárbara Santos**

barbarasantos95@hotmail.com

**Orlando Lima Rua**

orua@iscap.ipp.pt

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## **RESUMO**

O presente artigo tem como objetivo a análise das fontes de financiamento à inovação mais importantes, às quais a Polónia apresenta atualmente acesso. É igualmente pretendida, uma abordagem dos obstáculos que o país em estudo enfrenta para se tornar uma economia mais inovadora. Como é amplamente aceite, a inovação é uma atividade fulcral para o desenvolvimento económico de qualquer país e para manter a competitividade no mundo atual. Contudo, na União Europeia existem países que, apesar do seu desenvolvimento global, apresentam índices de inovação abaixo da média da União Europeia.

**Palavras-chave:** economia; financiamento; inovação; Polónia; obstáculos.

## **ABSTRACT**

This article examines the most significant sources of innovation funding available to Poland. It is also intended to address the barriers to becoming a more innovative economy faced by the country under study. As is widely accepted, innovation is a critical component of any country's economic development and competitiveness in today's world. However, there are countries in the European Union (EU) that, despite their overall development, have lower innovation rates than the European average.

**Keywords:** economy; financing; innovation; Poland; obstacles.

## **INTRODUCTION**

Europe's innovation capabilities must be strengthened to compete in global markets while preserving and improving the European way of life. The European Parliament and the European Council agreed in April 2019 on an ambitious €100 billion program, Horizon Europe 2021-2027, to bolster Europe's global innovation leadership. This program will benefit European nations, private businesses, institutions, and other stakeholders. The objective is to disseminate information about global challenges and industrial modernization (European Commission, 2020a).

Each country has its internal funding mechanism for innovation and knowledge-based programs. Countries can improve their socioeconomic development by acquiring knowledge. Local businesses can enhance their competitiveness, secure market quotas, and generate superior-quality jobs and revenue for their countries. A critical factor to consider is how effectively acquired knowledge will be applied to various fields of activity. Thus, knowledge diffusion confers a new quality on information societies in knowledge-based economies (KBEs) (Lewandowska, 2013). In connection with these words, one can assert that there is a significant phenomenon in today's world, namely innovation, which has been defined as a necessary component of KBEs and, consequently, of enterprises seeking to remain competitive. Financially, innovation is defined by modernity, the threat of failure, a high level of expenditure, and a lengthy implementation period. Therefore, it is critical to select appropriate financing sources (Rutkowska-Gurak, 2010).

According to Czarnota (2009), some facts still need to be highlighted concerning traditional definitions. To begin, innovation does not have to be completely novel and undiscovered, as the definition is silent on whether the solution must be novel on a global market or enterprise scale. Additionally, the impact of innovation on the economy as a whole, its competitiveness, and flexibility are influenced not only by innovation itself but also by the stage and rate at which it spreads among specific businesses or economic systems. Second, a solution can only be considered innovative if it can be applied practically. Thirdly, innovation is not only considered in technical fields but also refers to marketing and organizational changes that redefine how companies work or their relationships with the environment. Last, one solution can be considered an innovation only when it can refer to the practical implementation of usage (Bukowski et al., 2012).

Nowadays, businesses aspire for a more evolving attitude that boosts their competitiveness in national and international markets by focusing on new solutions, knowledge acquisition, and experience, among others. Additionally, information is a highly prized asset in the modern era (Ratajczak & Mądra, 2008). The evolution of traditional organizations into learning organizations and then into so-called "smart" organizations (based on knowledge and innovation) has become almost a model of evolution (Lewandowska, 2011). They collaborate with technological excellence centers, research and development (R&D) institutes, and clusters. According to Lewandowska (2013), the synergy between business and science is a critical component of innovative enterprises. As a result, increased R&D expenditures, improved access to funding sources, and the availability of unconventional financing solutions for innovative projects are critical for developing a competitive economy (Lewandowska, 2013).

Despite the acceleration of global economic development allied to globalization, the growth of knowledge resources, and the increasing possibility of turning organizations into innovation processes (Lewandowska, 2013), there are a few significant challenges, particularly in funding innovative projects in small and medium-sized enterprises (SMEs). In this context, it is widely accepted that SMEs are the engine of the Polish economy.

## **2 THEORETICAL FRAMEWORK**

In April 2018, due to the urge to collect Polish entrepreneurs' observations about factors that inhibit their development, Siemens, in cooperation with the Ministry of Entrepreneurship and Technology, conducted the survey named "Smart Industry Polska 2018". Survey results indicate that lack of funds is the most significant barrier to their development (64%). The second biggest obstacle is the lack of time for innovative activities (62%). The third considerable barrier in developing Polish SMEs is related to problems with acquiring properly educated employees (53%). One of the company's environmental factors that inhibit innovation is bureaucracy. Polish entrepreneurs also have difficulties finding qualified employees and consider the governmental support insufficient. The smallest companies primarily report challenges in obtaining EU subsidies, i.e., those employing up to 9 employees (Siemens, 2018).

While financing innovation is a critical function of modern businesses, certain stages of the sourcing process continue to present obstacles. Nonetheless, it is not possible to ignore the current opportunities provided by private and EU instruments. In this perspective, it is necessary to consider the following research questions: RQ1) What are the advantages and disadvantages of utilizing this type of assistance?; RQ2) What barriers do SMEs face in applying for such

assistance?; and RQ3) Which sources are the best from the perspective of Polish enterprises in terms of EU, private, and state assistance?

The article's primary objective is to examine a few financial instruments used to finance innovation, using Poland as an example, and to determine why Poland is one of the least innovative countries in the EU (European Commission, 2020b).

### 3 METHODOLOGY

Saunders et al. (2019) present three different research approaches in their investigation:

- **Deductive:** researchers advance a hypothesis or hypotheses based on a pre-existing theory, moving from the general (theory) to particular (the research) to test the data (Silverman, 2013). Therefore, the principal proposal is to confirm or refute an existing theory by collecting new data and evaluating the propositions or hypotheses. This approach is suited to the positivist attitude, allowing the formulation of hypotheses and the statistical examination of anticipated results to an acceptable level of probability (Snieder & Larner, 2009).
- **Inductive:** is mainly exploited in qualitative research to analyze a social phenomenon to obtain empirical patterns that operate as the start of a theory, allowing researchers to establish a theory rather than adopt a pre-existing one as in the deductive. The inductive approach is characterized as a move from the specific to the general (Bryman & Bell, 2011). Data are collected priorly, and a theory is formed using the results of the data analysis; there is no primary framework, and the research focus can thus be formed after

the data has been collected. This method is commonly used for qualitative research throughout interviews to analyze people's options over a specific phenomenon, and the research tries to associate patterns between respondents (Flick, 2011). Therefore, this approach can explore a small sample.

- **Abductive:** is a combination of inductive and deductive approaches to address weaknesses associated with both.

Through the perspectives introduced by Saunders et al. (2019), the article's primary methods are inductive-deductive inference and research analysis based on existing data and case studies.

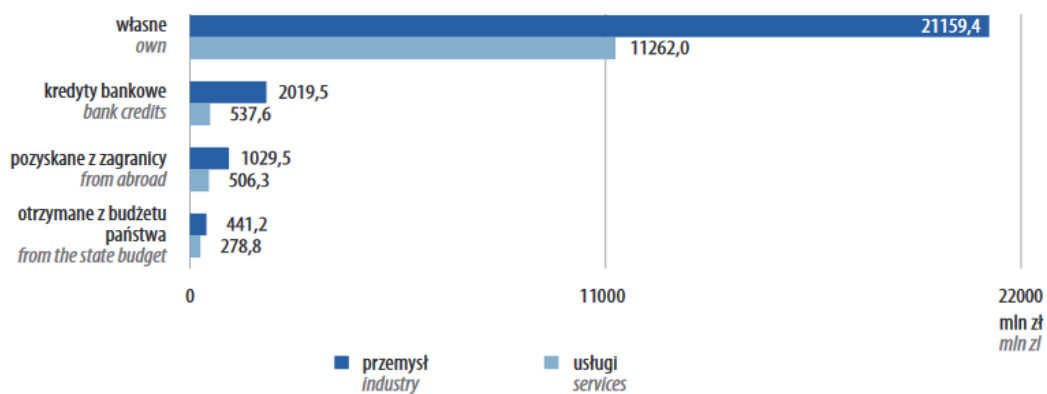
#### **4 RESULTS AND DISCUSSION**

Comparing 2013 and 2017 in Poland, it can be concluded that while both years' primary source of financing innovation was internal funds, enterprises operated with a more considerable sum of money in 2017. Surprisingly, the situation has improved regarding foreign funds and bank credits. Bank credits were the second most common funding source in 2017, while funds from abroad came in third. In 2013, however, the reverse was true. The difference in the data indicates that enterprises were more willing to risk on credit to fund innovation in 2017 than in previous years. In financing innovative activities "from abroad," 2017 obtained 53% less than the amount gained in 2013, indicating that foreign investors were more willing to invest in 2013.

Contrasting 2013 to 2017 (Figures 1 and 2) reveals that both industrial and service enterprises finance innovative activities primarily with their resources, with their share of the overall

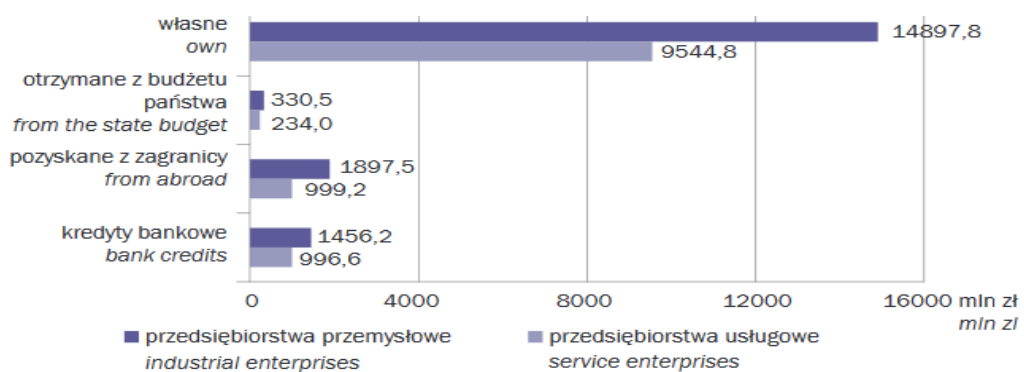
financing structure reaching 86% in 2017 and 80% in 2013, respectively, for industrial enterprises and 89% in 2017 and 88% in 2013 for service enterprises. This means that, despite numerous options for financing innovations, financing from one's resources remains the most secure option, while the others carry a higher risk.

**Figure 1 - Expenditure on innovation activities by specific funding sources.**



Source: Statistics Poland (2018).

**Figure 2 - Enterprises innovation activities between 2011-2013.**



Source: Statistics Poland (2015).

The percentage of enterprises introducing innovations is lower in the SME sector than in the large company sector because the scope of activities of smaller business entities is narrower than that of large businesses, which offer a more diverse range of products and services and employ extensive manufacturing processes (Ratajczak & Mądra, 2008).



#### **4.1 Bank Credits**

The above data shows that credit is a popular financial instrument for financing innovative economic projects. However, Chęciński (2015) found that this source has plenty of disadvantages. Implementation and diffusion of innovation require an enormous amount of resources. Considering the high risk of their return, the bank grants a high-interest loan; therefore, raising this type of capital would not always be proportional to the planned profits. Some organizations called credit guarantee funds to make bank loans possible for SMEs that cannot secure their debts. A surety or guarantee can cover bank loans and credits for investment financing if their goal is the implementation of new technical or technological solutions resulting from scientific research or development works (Krawczyk-Sokołowska, 2011).

#### **4.2 EU Sources**

Poland has benefited significantly from EU funding programs since 2004. The current EU financial perspective for 2014-2020 indicates that innovation will play a critical role in financing the EU's strategy. In this context, three auxiliary programs and instruments are available.

The first is the well-known European Structural and Social Funds, also known as the European Regional Development Fund (ERDF) and European Social Fund (ESF). The ERDF supports investments in technology and research used by businesses, establishing cooperative networks, and developing endogenous potential via investments in research and innovation entities. Prioritizing partnership agreement investments typically entails promoting scientific research, technological development, and innovation through the development of smart specializations,

the advancement and competitiveness of information and communication technologies, and SMEs themselves. The ESF, the second fund, funds activities related to the Digital Agenda and the Innovation Union. The ESF's support for SMEs, new skills, and lifelong learning is frequently emphasized, as these measures should enable beneficiaries to adapt to new challenges, such as the transition to a KBE (Dziembała, 2016).

Horizon 2020 is the second critical instrument, as it is in charge of funding innovation and creating opportunities for R&D enterprises and research units. The budget for this program has been set at €77 028.3 million. It is based on priorities such as an excellent science base with €24 441.1 million delegated, a leading position in the industry focused on faster development of technology and innovation, with a particular emphasis on SMEs, having €17 015.5 million earmarked for this purpose, and social aspects to meet the challenges set (€29 679 million) (Galsworthy & McKee, 2013).

The EU's third instrument is the program for SME competitiveness (COSME). This program's budget is €2 298.243 million, with at least 60% of that amount allocated to financial instruments. The primary objective of this incentive is to increase SME access to equity and debt financing (Dziembała, 2016). This program should also promote entrepreneurial culture, support job creation, and SME growth (EUR-Lex, 2013).

In the SME sector, another specific objective is "Industrial Leadership," which aims to accelerate technology development and innovation to benefit businesses. The EU contributed €17 015.5 million toward this goal (Dziembała, 2016).

Poland is the largest net beneficiary of EU funds (Statista, 2020), but this does not equate to increased competitiveness. According to Mikołajczyk (2017), the EU member states can be classified into four categories based on the Summary Innovation Index: 1) innovation leaders; 2) innovation followers; 3) moderate innovators; and 4) modest innovators. Poland falls into the third category, which means that its performance is estimated to be between 50% and 90% of the average for EU countries. One factor contributing to the Polish economy's lack of innovation is the 2.5% of EU funds allocated to R&D (European Commission, 2019). By comparison, Estonia is classified as an innovation follower, which means that its innovation performance is estimated to be between 90% and 120% of the average for EU member states (Mikołajczyk, 2017). Estonia, along with Poland, is a transitional economy that joined the EU in 2004. It is one of the most innovative economies in the EU, allocating 8.94% of EU funds to this purpose (European Commission, 2019).

### **4.3 State Aid**

The critical point made by the author Mikołajczyk (2017) is that there is a trend among countries, as demonstrated by research, toward using tax credits and grant incentives to boost innovativeness. As a result, the government's role and attitude toward innovation are also critical.

According to KPMG experts and research, the more taxes and other costs a country imposes on its entrepreneurs, the more it discourages them from undertaking innovative activities. As a result, there is a compelling need for a tax policy that places a cap on the taxation of innovative activities (Mikołajczyk, 2017).

Several instruments used by Polish fiscal policy directly on businesses can be mentioned. The first is the tax deduction, whose purpose is to enable entrepreneurs to establish an innovation fund (up to 20% of revenues), which charges the entrepreneur's operating costs every month and thus reduces the entrepreneur's corporate income tax base. Regrettably, there are still some restrictions on using this incentive, the most significant of which is the requirement to hold the status of a research and development center, which the Minister of Economy grants. To qualify for a research and development center, an enterprise must meet three criteria: 1) its annual net revenues (excluding Value Added Taxes) must not be less than those required by the Accounting Act; 2) the enterprise must conduct scientific research and/or development; and 3) the enterprise's annual revenues from the sale of its research and development services or industrial property rights must account for at least 20% of net revenues (Jasiński, 2013). According to the Ministry of Economy's Public Information Bulletin, only 27 entrepreneurs had the status of a research and development center at the end of 2017, with more than half of those enterprises being former state-owned research and development institutions converted to commercial law companies. Thus, this is a method of obtaining a research and development center status and utilizing its benefits. As a result, one could argue that this tool was ineffective (Polish Government, 2019a).

Another fiscal policy tool is technological tax relief, regulated by Polish tax law. The primary disadvantage of this incentive is the regulation's current wording, which indicates that tax relief is available only for acquiring new technology. It results in a situation where external entities and their technological solutions are treated more favorably than Polish enterprises responsible for their innovations. As a result, this solution discourages Polish entrepreneurs from investing

in developing and establishing their technology. More importantly, it results in the so-called import of innovation rather than building a comparative advantage through creating and implementing innovative solutions (Sawicka, 2013).

#### **4.4 Leasing**

Moving forward to private sources of innovation funding, it's worth noting that leasing is gaining increased attention. Initially, leasing was primarily used to finance the purchase of transportation and machinery. It expanded over time to include more innovative fixed assets, such as modern logistics centers.

According to statistics (Table 1), there was a growing interest in leasing during those years, both in the leasing market and in the interest of businesses in leasing contracts (Dziembała, 2016). Agreeing to 2018 data, leasing enterprises benefited from 853,000 lessees who leased 2,240 thousand items or objects, totaling PLN 110.5 billion. Compared to 2008, 2009, and 2010, the amount increased by more than 200% (Polish Government, 2019b).

Table 1 – Lessees and assets leased (2009-2010).

Leased item	No. of lessees			No. of leased items		
	2008	2009	2010	2008	2009	2010
<b>Including:</b>	<b>302,449</b>	<b>381,830</b>	<b>373,616</b>	<b>745,513</b>	<b>979,932</b>	<b>890,921</b>
Means of road	254,410	290,043	284,770	501,773	540,470	529,512
Other means of transport	303	892	434	3,632	4,242	3,567
Industrial machines	65,739	68,600	73,398	156,248	160,241	173,150
Computers and office	10,757	8,541	9,116	74,225	127,283	96,870
Real	393	361	381	918	702	741
Others	2,324	754	890	8,716	5,933	1,700

Source: Lewandowska (2013).

Equipment leasing is an intriguing way to finance innovation for SMEs, which is notoriously expensive. Due to their ability to divide payments into installments, they can maintain financial liquidity while continuing to develop.

#### 4.5 Venture Capital

In terms of a less common method of innovation funding, venture capital (VC) is worth mentioning. According to the definition, it is a medium- or long-term investment strategy in which the investor acquires interests in an unlisted company to sell them once the business succeeds. Most VC funds are closed-end, meaning investors cannot sell their shares until the investment is completed. Because investors bear the most significant risk, contracts are written in such a way that they protect the investor's interests to the greatest extent possible (Lewandowska, 2013). VC investments are typically made during the early stages of an

enterprise's development, including the expansion or start-up phases. Additionally, this tool includes financing "seed" investment to validate the idea as a business start-up. The most popular sectors for VC investments are telecommunications, media, information technology, medicine, and energy. On the other hand, in Poland, the consumer industry and financial services are the least appealing sectors for VC investors (Lewandowska, 2011).

According to the Organisation for Economic Cooperation and Development (OECD), the share of Polish VC investment in Gross Domestic Product is 0.005%, or €23 million per year, according to a Deloitte report (Deloitte Polska, 2016).

Apart from VC, there is another type of high-risk investment known as business angels. It entails establishing an innovative project by a private investor using their funds for no discernible financial gain. Between 1999 and 2009, the number of business angel networks in the EU quintupled, from 66 to 3036 (Deloitte Polska, 2016).

Numerous Polish entrepreneurs have noted that the difficulty of obtaining funds for innovation is due to bureaucracy and the high risk associated with financial instruments. As a result, an alternative funding source for innovation, crowdfunding, should be mentioned. This source has a few competitive advantages over the previously mentioned: it omits specific bureaucratic, risk, and access considerations.

From a SMEs perspective, crowdfunding enables them to raise necessary funds without external constraints. The critical point is that the venture will be approved by those willing to finance it. Additionally, crowdfunding enables access to other financial instruments for innovation and makes it easier to obtain the funds required to initiate negotiations with banks and investors.

When investors contribute funds to a project, they can connect directly with entrepreneurs and form a unique networking community that fosters an entrepreneurial culture and provides non-financial resources. Along with the funds received, assistance obtaining other forms of co-financing is critical from the company's perspective. Frequently, project initiators seek funding to complete only a portion of the project. Additionally, it enables businesses to determine whether their concepts will gain widespread acceptance.

The equity crowdfunding market in Poland is still relatively small. According to Crowdsurfer.com (Kozioł-Nadolna, 2016), investments totaled just €216 000 in 2015, with an average investment value of around €17 000. Similar conclusions can be drawn from an analysis of the Polish crowdfunding market between 2015 and 2017. Within the equity model, there are four actively operating platforms. They are, however, defined by a small number of completed projects (about a dozen). This crowdfunding model appears to be the most effective way to support businesses developing novel solutions financially. Compared to the global market, the Polish market seems to be in its initial phase.

## **CONCLUSION**

To summarize, Polish businesses appear to have many financial instruments to assist innovation. However, most of these tools have constraints that make them inaccessible to businesses.

According to the current analysis, the primary issue is a lack of awareness among entrepreneurs regarding their potential and the government's failure to educate them in this area. Another issue is the government's failure to implement pro-innovation policies and provide state aid. Due to



the current level of bureaucracy and the absence of a clear tax code, these are only available to a small number of businesses (Sawicka, 2013). Additionally, the government should develop new tools to assist businesses and direct a more significant portion of EU funds toward innovative development rather than other purposes (European Commission, 2019).

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