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A COMPARATIVE ANALYSIS OF VARIOUS FINANCING METHODS AVAILABLE TO SUPPORT INNOVATIVE ACTIVITIES OF SMEs IN POLAND

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Abstract: Innovation plays a critical role in ensuring sustainable economic development. It is a fundamental element in the success of companies, corporations, and industries, but the process of innovation is an expensive endeavor that requires significant financial resources. The objective is to evaluate the strengths and weaknesses of different financing tools, including government grants, bank loans, self-financing, crowd-funding, seed financing, and venture capital by analyzing case studies and results of research surveys. The first part of this research will explore the concept, types, and classification of innovation. The empirical part is based on a discussion of survey results obtained from 59 SMEs, including the factors that influence SMEs' decisions to seek financing for innovation. The research method used in this study is qualitative research in terms of applied and descriptive approaches; various resources were used including library materials, research papers, survey data, and questionnaires with entrepreneurs and business owners. The objective was to analyze obstacles and opportunities as well as the most suitable financing method required by small and medium-sized enterprises (SMEs) to support their innovation. The results show that the choice of the financing method depends on several factors, including the type and stage of innovation, the scope of the company, the particular industry, and the risk involved for both the innovator and the investor.

Keywords: financing methods, innovation support, Poland, seed financing, SMEs

JEL Classification: O31, M13, G23

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Introduction

The global economy is heavily dependent on small and medium-sized enterprises (SMEs), which hold an important position. SMEs drive growth and innovation across various sectors while also generating employment opportunities for individuals. In a literature review, we will discuss frequent economic practices and highlight the relatively low level of innovation in Poland, particularly among small and medium-sized enterprises (SMEs). Therefore, it becomes important to examine the connection between both internal and, more importantly, external sources of financing and the extent of innovative activity within the SME sector in Poland.

Innovation is a broad term that refers to improving existing services or inventing something new. It is the process of implementation of new products or completely enhanced products in a market. A product is either goods or services, whether related to the production or delivery of service with a better marketing approach or organizational method (OECD, 2005). There are various definitions and concepts of 'innovation' in the context of economic and business theory, as well as in practical applications. Due to its historical importance and significance, different criteria are often used to categorize innovation. In the mid of the previous century, Austrian economist Joseph Schumpeter identified five distinct types of innovation: formulating and producing a new product, introducing a new production method, new ways of selling goods and services, developing a new form of organization, and introducing new sources of raw materials (Schumpeter, 1934). These concepts serve as the foundation for the development of a conceptual innovation process framework.

The concept of innovation presented here is closely associated with the classification of innovation by the Organization for Economic Co-operation and Development (OECD), which divides innovation into four categories: product innovation, process innovation, marketing innovation, and organizational innovation (OECD, 2005). According to Schumpeter, innovation is a historical and irreversible change in the way of doing things, often referred to as “creative destruction” (Schumpeter, 1934). Innovation is a process that begins with an idea or imagination and progresses through various stages of development before concluding with implementation. Innovations are referred to as new creations with economic impact, adopted and undertaken by businesses, including both product and process advancements.

Product innovations involve the development of new or better products that include new material goods, as well as new intangible services such as travel, freight forwarding, insurance, consulting, brokerage, education, and health care (Maier, 2018). This strategy is very common in business and, according to our requirements, is used to develop either a new product or improve the performance of an existing one by introducing necessary modifications and selling new or improved products, including both tangible goods and intangible services (Meeus & Edquist, 2006).

Process innovations are new methods of producing goods and services that include technological and organizational changes. In this classification, material goods and technological product innovations are considered tangible, while the remaining categories are intangible (Meeus & Edquist, 2006). This field of innovation is working to improve existing methods and their effectiveness by improving production, processing, delivery, and customer satisfaction (Maier, 2018).

Technological innovation is a process that involves technology, organizations, business, and finance. It leads to the development of new products and production techniques, which are used to create semi-finished products. In the 21st century, the Internet is the best example of technological innovation (Xiao & Su, 2022) because it can also provide the basis for many other innovations. Nowadays, big tech giants like Google and Amazon are innovations in their own right and enable other innovations in different fields.

The most important field of innovation is business model innovation because it creates our business strategy according to market requirements. A business model is a plan that describes how a company or organization creates value for its customers. It typically includes information about the target market, their needs, and how the company's products or services will meet those needs. The current economic challenges they face require them to seek innovation not only in the areas of products and processes but also in the production, process, and organizational areas of their activities. As a result, companies may need to consider introducing changes to their business model to achieve their goals (Grabowska, 2015). The scope of innovation in a business model should be based on the level of understanding of market needs and the ability of an enterprise to successfully implement innovation. Therefore, managers should carefully consider the type and scale of innovative solutions when implementing innovation in a business model (Martin, 2016). Innovation plays a critical role in the introduction of new products or in making changes to existing product lines or processes, resulting in increased market share, sales, and customer satisfaction. The success of innovation heavily depends on its financial support, and developed nations possess numerous methods to support and promote innovative activities (Wegner, 2022). The projects can be financed by companies through internal or external methods, which involve utilizing cash flow or acquiring loans. Usually, the majority of innovative projects receive primary funding from internal sources (Transition Report, 2014). It is essential to have sufficient internal financial resources to carry out innovative activities, not only to cover project expenses but also to facilitate the ability to access subsidies or loans for additional funding that is required during the development phase (World Bank Summary Report, 2020). External financing methods for innovation involve seeking funds from sources outside the company. These may include venture capital investments, bank loans, government grants, seed financing, and crowdfunding platforms. This issue is discussed in more detail in the literature review for this article.

This article will be divided into several sections: introduction, literature review, research methodology, results and discussions, and conclusions. The initial part presents the significance of innovative activities in SMEs and explains the level of dependence on the availability of financing sources. The second section is related to the literature review on the importance and the role of financing in fostering innovation, including the impact of funding on innovation outcomes, as well as the importance of financial support in addressing the obstacles associated with innovation and its funding sources. The methodology of our research discussed in the third section of this article includes empirical research based on a questionnaire-based survey conducted among SMEs to examine their experiences with financing innovation.

It illustrates the essential components of innovation management and highlights the role that various financing tools in supporting innovation within the company. In the fourth part, the results and discussion explain the business model, analyze the different types of financing and financing stages, and present the conclusions of a survey conducted among small and medium-sized enterprises (SMEs) on their experiences in financing innovations. The survey aims to provide insights into the challenges faced by SMEs when financing innovation, as well as their perceptions of different financing tools. This section will examine the survey results, including the factors that influence SMEs' decisions to seek financing for innovation, and the most commonly used financing tools among SMEs.

Literature review

Innovation is not only about coming up with a new idea but also ensuring that the company can implement it. Financial resources play a crucial role in this process. It was found in a study that lack of financial resources is one of the major barriers to innovation (Cobban et al., 2019). The uncertainty surrounding the return on investment and the level of investment required, particularly in the early stages of innovation, makes it challenging for management to invest in new ideas (Rijnbach, 2012). On the other hand, a company may have sufficient funding, but it all comes from internal sources. It is important to consider funding for innovation from a broader perspective and to explore all available options. Financing tools are important in innovation because they provide the means to secure the necessary funding to bring new ideas to life (Rijnbach, 2012).

The analysis of innovation activities in Polish companies reveals that their level of innovation is low compared to leading countries. Between 2019 and 2021, only 26.3% of industrial and 22.2% of service enterprises engaged in innovative activities (Wegner, 2022). Greece had the highest percentage of innovative enterprises at 73%, followed by Belgium at 71%, Germany and Finland at 69%, and Cyprus at 66%. On the other hand, Romania had the lowest level of innovation activity at 11%, Latvia at 32%, Hungary, and Spain at 33%. This lack of innovation can be attributed to a lack of perception of domestic technological innovations by businesses, resulting in an ineffective use of their innovation potential (Community Innovation Survey, 2022). When looking at the funding sources for innovation spending in both industrial and service enterprises, the majority came from own funds (76.3% and 87.9%, respectively). A smaller proportion came from abroad (9.7% and 5.6%), credit and loans from financial institutions (6.0% and 2.1%), and domestic funding from institutions with public funds 3.8% and 2.5% (Wegner, 2022).

The innovation ecosystem in Poland is one of the least developed in the European Union. In recent years, it has ranked near the bottom of the European Innovation Ranking, ahead of only Romania, Bulgaria, and Croatia, with the lack of good ideas and high costs related to innovation being the main reasons that prevent companies from engaging in R&D projects (Community Innovation Survey, 2022). Developed nations have many options to support and advance innovation, as new scientific advancements and technologies play a very important role in national security.

The main source of funding for innovation was internal funds, regardless of the scope and type of activity carried out. It is essential to have sufficient internal financial resources to undertake innovative activities, not only to cover project expenses but also to access subsidies or loans as additional funding is needed during the development phase (Kokot-Stępień, 2022). Internal financing is an immediate option that provides support for innovation to a company or organization that can access from within their own operations and resources, without relying on external sources such as loans or investments. Some common internal financing options include:

1. Retained earnings: Profits that are not distributed as dividends but instead reinvested back into the company.
2. Debt financing: Borrowing funds from within the company, such as through inter-departmental loans or bonds issued to employees.
3. Sales of non-core assets: Divestment of non-essential assets, such as property or equipment, to free up capital for innovation.
4. Cost savings: Redirecting resources from non-essential areas to fund innovation projects.

Internal financing provides companies with a stable and controlled source of innovation financing that can help in the utilization of funds. Innovation activities are highly risky, with some studies finding that 90% fail to succeed (Marmer et al., 2011). To mitigate this risk, innovators must seek financing from sources and institutions that are willing to accept it. The initial funding for innovation often comes from the owner's capital. However, as the project and team grow, this may become insufficient for continued development. Hence, the progress of a startup depends on securing external sources of financing beyond the founder’s equity. These sources can include but are not limited to:

1. Venture capital: It is an external source of funding that is often invested in companies that are high-growth startups and innovative and have the potential for significant returns with very little risk.
2. Business angels: They are wealthy individuals who provide equity financing. They are usually successful entrepreneurs who invest their savings. They usually prefer high-potential, high-risk investments. Like venture capital, business angel investments come with added benefits for the company, such as strategy support, business connections, and experience in running and growing a business.
3. Crowdfunding: It is a popular way to raise funds by appealing to a large group of people through an Internet portal. Projects, whether business or not, are funded through equity or debt-based financing, reward-based financing, or donation-based financing (Mora-Cruz & Palos-Sanchez, 2023).
4. Seed financing: Seed financing is typically provided at the earliest stage of a new venture or project, even before it begins to generate revenue. It is a prevalent method for early-stage development funding among startups that have not yet received venture capital or angel investment. Seed financing commonly involves multiple stages of funding for a project or idea, with each stage having unique characteristics and goals (CFI).

Table 1. Features of the chosen methods for start-ups to raise capital

Category	Founder's invested capital	PE / VC Funds – Business Angels	Crowd funding	Internal Financing
Attainable amount of capital	Constrained by the owners' financial capacity	Depends on the company's financial status and outlook and market conditions	Typically, smaller than with shares sold to financial investors, usually limited	Constrained by the company's cash flow
Ease in obtaining capital	Significant, given that the owners have s ufficient capital	The process for choosing entities to invest funds is rigorous	The competition to secure these funds is intense, success depends on the project's ability to generate interest among the community	Significant
Control over the company	Complete	Financial investors typically aim to exert significant influence on the company's operations	Almost all types of Crowd-funding	Complete
Costs	Very low	Very low	Low	No costs
Additional benefits	No	Assistance in the management of the company, active participation in the strategy, and aid in securing additional funding	Significant marketing impact and promotion, an efficient way to reach a large audience with information about the company and its offerings	No

Source: Author's own study based on research (Wilson & Silva, 2013)

Innovation funding sources will be used to support the development and implementation of an innovative project or idea. The conclusion of financing sources is an important step in the innovation process, as it determines the level of resources available to support the project and the terms and conditions under which the funds will be provided. Ultimately, the choice of financing sources will have a significant impact on the success of the innovation project and must be made with careful consideration of the risks and benefits involved.

Methodology

The primary objective of the article is to analyze the challenges and opportunities faced by small and medium enterprises (SMEs) in terms of innovation support, while also identifying the most suitable financing methods required by them. By conducting this study, we will be able to find answers to the following research questions.

- What is the understanding of the financing options among innovators and how do they assess and use the financing tools?
- What are the key features and benefits associated with the different financing options and what factors are discussed in relation to the choice of financing tool?
- How does the risk associated with the innovation factor influence the selection of a financing tool?

We conducted a survey among small and medium Polish innovative companies that focus on creating innovative solutions. We examined the challenges they faced and analyzed the various financing tools employed by the companies to support their innovative process. This empirical study is based on a survey conducted among SMEs to explore enterprises' experiences of financing innovation. The objective of the survey is to gain valuable insight into the difficulties faced by SMEs when seeking innovation financing, as well as their perspectives on various financing tools. This section helps to analyze the survey findings and includes an exploration of the factors that influence the decision-making process of SMEs when it comes to financing innovation, as well as the financing tools that are the most commonly used among SMEs. Based on the collected data, the analysis includes the assessment of the level, structure, and dynamics of both SMEs' expenditure on innovation and the sources of financing for their innovative activities.

However, like any study, this one also has its limitations. It presents possible ways to overcome the potential limitations of a comparative study of different financing tools that support innovation. One of the primary limitations is the limited availability of data. Some financing tools, such as venture capital, bank loans/credits, and government assistance, have been studied extensively, while others, such as crowdfunding, seed financing, and angel investing have not been studied as thoroughly. It makes it difficult to compare the effectiveness of different financing tools accurately. To overcome this problem, multiple sources were used, such as primary data, e.g., surveys and interviews, to collect information directly from the stakeholders involved in innovation financing. Secondary data, such as financial reports, can also provide useful information for comparative analysis.

Innovation is a long-term process and its effects may not be immediately apparent. Long-term data is required to accurately evaluate the effectiveness of different financing tools. The study analyzed shorter-term data to identify trends and patterns, focused on recent developments and used this information to extrapolate future trends. In addition, interviews and surveys with experts in the field were conducted to gain their insights and perspectives on financing innovation.

Results and discussion

The process of implementing innovation is a very important element for the success of any company, as it enables the organization to remain competitive within its industry, fulfill the ever-changing needs of its clients, and enhance efficiency and productivity. In addition, innovation helps a company explore new markets, products, and revenue streams. There are various approaches for Polish companies to

implement innovation, such as investing in research and development (R&D) to introduce new products or enhance existing ones, share their knowledge and expertise with startups, or create an innovative work environment that encourages employees to come up with and share new concepts.

The research findings indicate that the success of implementing innovation in SMEs is significantly on seed financing during their initial stages, followed by adaptable financing methods depending on the circumstances. However, it was observed that funding options such as crowdfunding, business angels, and seed financing, which are more appropriate for early-stage startups and innovation-focused SMEs, are utilized by less than 10% of the SMEs. By studying successful SMEs, we identified best practices and strategies that can be applied to other businesses. This can help to promote innovation and growth across the sector. This case study can also help identify the challenges and obstacles that SMEs face when it comes to financing innovation. By understanding these challenges, policy makers and investors can work to create more effective solutions that address the needs of SMEs.

Businesses that employ fewer than 250 people and have an annual turnover of no more than EUR 50 million or an annual balance sheet total not exceeding EUR 43 million are categorized as micro, small, and medium companies (European Commission, 2003). SMEs are of significant importance in any economy as they contribute to the production of goods, create employment opportunities, respond effectively to market fluctuations, and act as a catalyst for innovation in the creative, technical, and technological domains. In addition, they also serve as a source of social and economic development within a region. Therefore, supporting SMEs is an important factor in driving economic growth in any economy.

The purpose of the survey was to gather the perspectives of Polish SMEs and help to enhance their competitiveness. It was carried out in April 2023 and received responses from 59 SMEs located in 13 different voivodeships (provinces) in Poland. The report highlights that the majority of companies that participated in the survey are micro-businesses, representing 40.7% of the total. Small companies account for the second highest number, representing 35.6% of the total. Lastly, medium-sized companies make up the remaining 20.3% of the total (Figure 1).

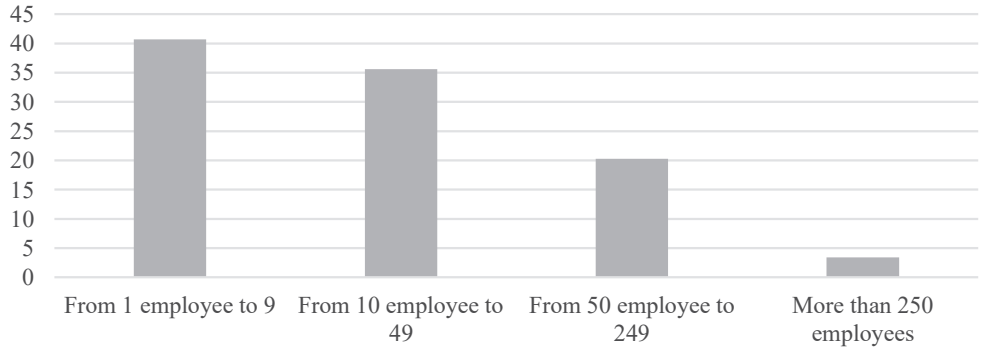

Figure 1. Number of companies classified by the total number of employees (in %)

Source: An online survey carried out by the author using Google Forms

The majority of the SMEs belonged to the restaurant/food/cafe industry, representing 27.1% of the total. The report also highlights that 22% represented the spare parts manufacturing sector, including casting foundries and small industries. In addition, the report highlights that 22% of the respondents were in the information technology sector.

This suggests that there is a strong focus on innovation among SMEs in these sectors. Furthermore, the report shows that 13.6% represented consulting companies that provide unique services to their clients. This highlights the importance of service-based industries in the region and the growing demand for consultancy-based services. Lastly, the report indicates that a minor proportion of companies, less than 15%, did not disclose their type of business. This information is relevant because it may be indicative of the nature of the SMEs in the region and their level of transparency (Figure 2).

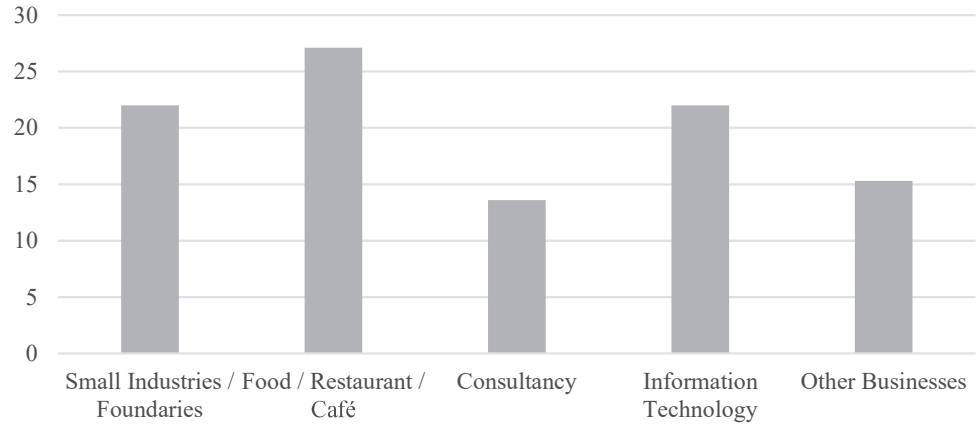

Figure 2. Number of small and medium enterprises according to their business sector (in %)

Source: An online survey carried out by the author using Google Forms

The results of the survey indicate that 42.4% of the companies surveyed used their own funds, including the use of personal savings and other internal sources of funding. The second-highest source of financing for SMEs is bank loans and credits, which constitutes over 15.3% of the total of SMEs. This indicates that some SMEs rely on external funding sources, such as bank loans, to support their business operations. The report highlights that government assistance programs provided funding at 20.3%, which is the third highest source of financing. It indicated that these SMEs may not have proper access to funding sources, which could affect their ability to innovate and grow.

The results of the survey also show that funding sources such as crowdfunding, business angels, and seed financing, which are suitable for early-stage startups and innovation-based SMEs, make up less than 10% of the total SMEs surveyed. This indicates that there is limited availability of funding sources for innovative SMEs.

The reliance on self-financing and bank loans suggests that external funding sources may not be easily accessible for all SMEs, which could limit their ability to innovate and grow. This information can be used to create policies and programs to support SMEs and promote innovation in the region (Figure 3).

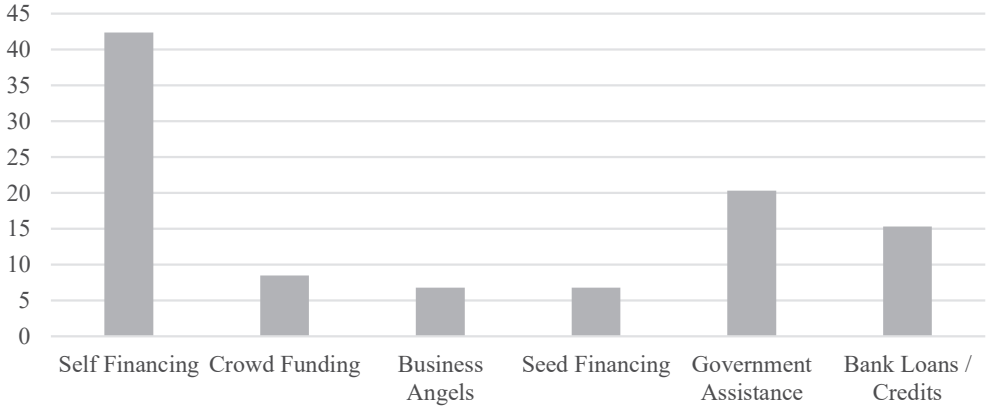

Figure 3. Financing method used in the past six months to support innovation (in %)

Source: An online survey carried out by the author using Google Forms

The most significant obstacle identified by the SMEs is the lack of financing sources, with 32.2% of the respondents citing this as a barrier. This suggests that many small businesses are struggling to secure the funding they need to invest in research and development or other innovative activities. Without adequate financing, these businesses may struggle to remain competitive in the long term. Another significant obstacle identified by SMEs is the high cost of innovation, with 23.72% of the total. This indicates that many SMEs may be deterred from pursuing innovative activities because of the high costs involved. This could include the costs of research and development, hiring skilled employees, or investing in new technology or equipment.

The survey also found that 18.6%. of the respondents consider administrative and legal barriers a significant obstacle for SMEs. The lines suggest that seed financing, crowdfunding, and business angels are good financing tools for innovation and SMEs because they provide initial investment without any conditions, allowing these businesses to pursue innovation. Finally, the survey identified that the lack of skilled employees and technology in some companies is also a barrier to innovation. This could involve investing in employee training programs or hiring skilled employees from outside the organization. In conclusion, the various obstacles that SMEs face in pursuing innovative activities in their development include financing, high costs of innovation, administrative and legal barriers, and a lack of skilled employees and technology. It is necessary to improve and select good financing tools, as well as invest in employee training and skill development (Figure 4).

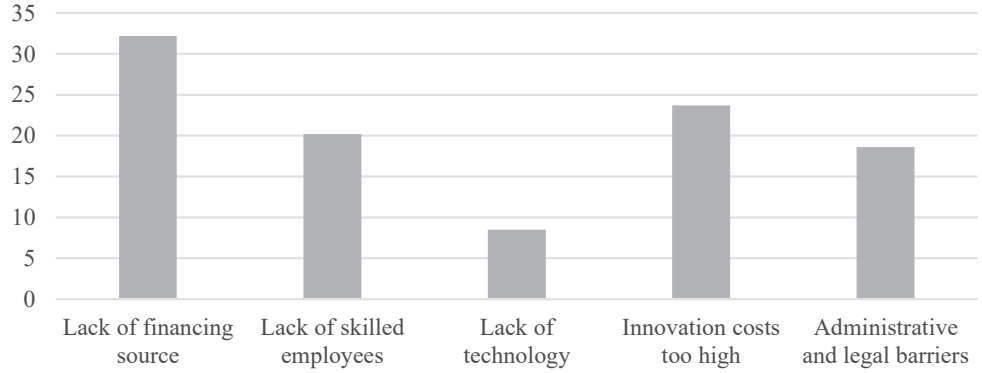

Figure 4. Factors that impede innovation activity in the past three years (in %)

Source: An online survey carried out by the author using Google Forms

Our survey results indicate that seed financing, crowdfunding, and business angels are effective financing options for small and medium-sized enterprises (SMEs), particularly for innovative startups. Furthermore, government-sponsored financing programs can also be advantageous in encouraging innovation. The appropriate allocation of funds is also a critical factor in promoting innovation, with investments in research and development and employee training being particularly beneficial in enhancing overall productivity.

In recent years, the growth of small and medium enterprises (SMEs) has been attributed to their innovative approaches and efforts to secure optimal financing. However, SMEs may find innovation costly, as it involves substantial investments in research and development to introduce new products and services. This can be especially challenging for SMEs with limited financial resources. To address this, SMEs require the most suitable financing method, which depends on various factors such as their growth stage, risk level, and the type of assets they possess.

Ultimately, the study demonstrates that the financing method has a direct impact on the innovation ecosystem, particularly in seed financing, crowdfunding, and business angels, which have a relatively small share in the overall financing pool. Early-stage funding is crucial to provide capital to start-ups and early-stage companies to cover the costs of research and development, prototyping, and other initial expenses. For SMEs exploring innovation, seed financing can be a valuable resource as it can provide the necessary funding to support research and development and implement new ideas.

Conclusions

The objective of the paper was to analyze and compare various financial tools available to support innovation in different contexts. The aim was to provide a comprehensive understanding of the different financing options available to innovators.

It discussed different factors that influence the choice of financing tools, such as the stage of innovation, the industry, the size of the investment, and the risk associated with innovation. There is no single financing method that is best for all innovations and start-ups in SMEs, as the choice of financing method depends on various factors, such as the nature and stage of innovation, the size and scope of the business, the industry, and the risk associated with the innovation and investor. However, the study concluded that each financing method has some limitations. Below, we present a brief overview of some of the financing methods discussed in our paper.

- Self-financing involves using personal savings, credit cards, or other personal assets to fund a startup. It can be a good option for entrepreneurs who have the resources to fund their venture and do not want to give up equity or take on debt. However, self-financing can be risky, as the entrepreneur may lose their personal assets if the venture fails.
- Angel investment can be a good option for innovation with a strong potential for growth and a clear business plan. However, it can be challenging to find and attract angel investors, and investors may expect a high return on their investment.
- Crowd-funding involves raising funds from a large number of individuals, usually through online platforms. It can be an effective way to validate a business idea and generate interest in the product or service. However, it can be difficult to stand out among many projects that seek funding on crowdfunding platforms.
- Seed financing typically refers to the first round of funding that a startup receives from investors. It can be a good option for startups that have a clear business plan and a strong team but need capital to develop their product or service. However, seed financing can be difficult to secure as investors may be hesitant to invest in untested ventures.
- Bank loans involve borrowing money from a bank or financial institution and paying it back with interest over time. Bank loans can be a good option for established businesses with a strong credit history and steady cash flow. However, bank loans can be difficult to secure for startups and may require collateral or a personal guarantee.
- Government assistance can come in the form of grants, loans, or tax incentives designed to support innovation and entrepreneurship. Government assistance can be a good option for startups that meet certain eligibility requirements and can help reduce the financial burden of starting a business. However, government assistance can be limited and competitive and the application process can be time-consuming.

Overall, it is clear that seed financing and angel investment have a positive impact on innovation in Poland, but more needs to be done to ensure that startups have access to these financing tools. By exploring other financing tools and addressing any barriers to access, it is possible to build a stronger startup ecosystem that can help drive innovation and economic growth in Poland. By understanding these challenges, policy makers and investors can work to create more effective solutions that address the needs of SMEs.

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ANALIZA PORÓWNAWCZA METOD FINANSOWANIA WSPIERANIA INNOWACYJNEJ DZIAŁALNOŚCI MŚP W POLSCE

Streszczenie: Innowacje odgrywają kluczową rolę w zapewnieniu zrównoważonego rozwoju gospodarczego. Proces innowacji to fundamentalny element sukcesu firm, korporacji i branż, ale jest przedsięwzięciem kosztownym i wymagającym znacznych środków finansowych. Celem artykułu jest ocena mocnych i słabych stron różnych narzędzi finansowania – w tym dotacji rządowych, pożyczek bankowych, samofinansowania, finansowania społecznościowego, finansowania zalążkowego i kapitału podwyższonego ryzyka – poprzez analizę studiów przypadków i wyników ankiet badawczych. Pierwsza część tego badania poświęcona jest pojęciu, rodzajom i klasyfikacji innowacji. Część empiryczna opiera się na omówieniu wyników badań ankietowych uzyskanych od 59 MŚP, w tym czynników wpływających na decyzje MŚP o pozyskiwaniu finansowania na innowacje. Metodą badawczą zastosowaną w tym badaniu są badania jakościowe w zakresie stosowanych podejść, jak i ilościowe, przy których korzystano z różnych zasobów, w tym materiałów bibliotecznych, artykułów naukowych, danych ankietowych, kwestionariuszy wywiadów z przedsiębiorcami i właścicielami firm. Celem jest analiza przeszkód i możliwości, a także najodpowiedniejszej metody finansowania wymaganej przez małe i średnie przedsiębiorstwa (MŚP) w celu wspierania ich innowacji. Wyniki pokazują, że wybór metody finansowania zależy od kilku czynników, w tym rodzaju i etapu innowacji, zakresu przedsięwzięcia, branży oraz ryzyka, jakie wnosi ze sobą zarówno innowator, jak i inwestor.

Słowa kluczowe: metody finansowania, wsparcie innowacji, Polska, finansowanie zalążkowe, MŚP