




# The importance of external financing in management of innovative processes in the SME sector

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## Abstract

**Motivation:** A broad approach to the SME sector causes that small and medium-sized enterprises are active in all segments of the economy. Each segment is characterized by a certain way of doing a business and thus financing it. Therefore, an important issue for the small and medium-sized entities is to provide both liquidity and continuity of financing and access to such sources of financing that will allow the implementation of innovative projects since innovation affects the pace and direction of development of the specific economic entity as well as significantly indicates the forms and structure of business cooperation.

**Aim:** The aim of the article is to analyze the extent to which the various sources of financing are used by small and medium-sized enterprises in the implementation of innovative projects, and to show the relationship between external sources of financing and the level of expenditure on innovation of SMEs in Poland.

**Results:** The analysis was based on examining the dependence of the scale of innovative activity of enterprises in the SME sector in Poland on the possibility of using not only own funds, but also funds from external sources, the use of which by small and medium-sized enterprises is still too low and is often limited to EU funds.

**Keywords:** innovations; sources of financing; external sources of financing; SMEs

**JEL:** O31; L20; G32

## 1. Introduction

Small and medium-sized enterprises play the key role in shaping the economy all over the world. Enterprises of the SME sector are the source of growth and innovation in all sectors and create jobs for citizens. Due to small and medium-sized entities, it is also possible to balance negative economic trends, therefore, their constant development is essential for economic growth. One of the possibilities of enterprise development is searching for innovative solutions the implementation of which allows for gaining a competitive advantage. For a number of companies of the SME sector, undertaking innovative activities is not so much a possibility but often the necessity enabling further operation in the competitive and constantly changing environment.

The constantly growing competition forces enterprises, particularly small and medium-sized ones, to continuously diversify their offer in order to stand out or increase the degree of customer satisfaction. Undoubtedly, innovative projects, the implementation of which requires significant financial outlays, often exceeding the capabilities of particularly those smaller economic entities, are important in this respect. In each enterprise, regardless of its size, it is extremely important to select the appropriate forms of financing, including innovative activities, since individual sources may not only affect the long-term position in the market but, most of all, the possibility of further operation. Admittedly, there are many criteria for classification, however, when relating to the idea of financing, mainly using equity or borrowed capital, the sources of financing are most often divided into internal and external, most generally involving the capital of third parties. Unfortunately, enterprises of the SME sector use external financing to a limited extent, which does not translate positively into the range of their innovative activities. Most of them satisfy their financial needs with equity, engaging external sources only when it becomes insufficient. However, due to often high costs of innovation, access to external financing supporting own financial contribution is favorable for undertaking pro-innovative activities and increases the range of implemented innovation.

In the literature and economic practice, it is often emphasized that the level of innovative activity in Poland is low, and in the case of small and medium-sized enterprises even very low, therefore it is important to show the relationship between not only one's own, but most of all external sources of financing and the scale of innovative activity enterprises in the SME sector in Poland.

The objective of the article is to assess the innovative activities of Polish enterprises of the SME sector in the years 2009–2018, particularly taking into account individual sources of financing, and also to examine the relationship between the level of expenditure on innovation in small and medium-sized enterprises and external forms of its financing. The achievement of this objective is possible due to some theoretical considerations concerning the subject matter discussed, supported both with the analysis of statistical data on innovative activities of SMEs and sources of financing of implemented projects as well as

the research into the relationship of the analyzed values based on the Pearson correlation coefficient.

Article will be divided into following sections: introduction, literature review, research methodology, results & discussions, conclusions. In the first part the importance of innovation in the activities of enterprises and the essence of the dependence of the level of innovative activity on the possibility of using various sources of financing was shown. The second area covered a literature review on innovative activity and its financing sources. In the third point, the methodology of the conducted study was described, with particular emphasis on the study of correlation using the Pearson coefficient. In the following sections, the CSO (2009–2018; 2009–2019) data on the level of expenditure on innovation in Polish small and medium-sized enterprises in 2009–2018 and the sources of financing for innovations implemented by SMEs in the adopted research period were presented. Moreover, the level of dependence between the analysed variables was calculated. The next step was data interpretation. The entire study was completed with a summary. The presentation of the figures in the form of table and charts can be found in the appendix at the end of the paper.

## 2. Literature review

Small and medium-sized enterprises (SME) play an important role in the complex process of developing a modern and dynamic economy (Norek & Arenhardt, 2015, pp. 155–181; Qureshi & Herani, 2011, pp. 30–44). One of the elements determining the pace and directions of the company's development, and thus its competitiveness, is the effective management of innovations, the implementation of which requires the provision of appropriate resources, including financial resources obtained from various sources. Lazonick & Mazzucato (2013, pp. 1093–1128) emphasize that the main features of innovation, i.e. high uncertainty, long implementation times, collective nature and cumulative nature influence the kind of finance that is needed. In turn, the type of finance that is provided depends heavily on its source, whether it is the private or the public sector and the multitude of different types of public and private financial actors (Mazzucato & Semieniuk, 2017, pp. 24–48). For the success of the innovation project also important is the form of fundraising and the methods of financial support. The system of the financing of innovation and investment construction projects is a combination of direct and indirect ways of financing (Chirkunova et al., 2016, pp. 112–117).

An important determinant of the scope of innovations undertaken by enterprises from the SME sector is the availability of appropriate financing (Ayyagari et al., 2011, pp. 1545–1580; Berger & Udell, 2007, pp. 5–22). Canepa & Stoneman (2008, pp. 711–730) created the ranking of obstacles to innovation by company size, which shows that both in the manufacturing and service sectors, small and medium-sized enterprises rank the availability of finance as the most important factor hindering innovation. Firm size exerts a significant impact

on the availability of external financial sources to be channelled into innovation. Financing constraints are less tight among large firms, not only because they can more easily raise funds directly from the market, but also because they can provide more reassurance to a bank that its loan will be repaid (Ughetto, 2008, pp. 907–925). However there is some evidence (albeit weak) that smaller enterprises innovate more with greater access to external finance, regardless of age and legal organizational form (Ayyagari et al., 2011). It should be emphasized that access to external finance does not, by itself lead to innovation. Not all firms that receive external finance are equally innovative.

Although there is a positive relationship between innovation companies and external financing (Ayyagari et al., 2011; Gorodnichenko & Schnitzer, 2013, pp. 1115–1152) and SMEs, in order to function on a highly competitive market, must implement innovative solutions and, unfortunately, access to external financing is hampered by numerous structural factors. The main obstacles to obtaining financing for the implementation of innovations in SMEs include (Bertonia et al., 2018, pp. 371–384; Vasilescu, 2014, pp. 35–47):

- high uncertainty (the return on innovation activity is often uncertain);
- information asymmetry (Nunes et al., 2013, pp. 249–272; O’Sullivan, 2004), thus often it may be difficult for investors to comprehend the firm’s value (Nofsinger & Wang, 2011, pp. 2282–2294), what’s more, it sometimes appears the moral hazard problem (Denis, 2004, pp. 301–326);
- a lack of internal financing and collateral;
- innovation activity is usually intangible, making it difficult to judge its monetary value before it becomes a commercial success;
- the higher risk associated with SME activities;
- the lack of collateral;
- institutional and legal factors; financial and institutional development helps alleviate SMEs’ growth constraints and increase their access to external finance and thus levels the playing field between firms of different sizes. Specific financing tools such as leasing and factoring can be useful in facilitating greater access to finance even in the absence of well-developed institutions, as can systems of credit information sharing and a more competitive banking structure (Beck & Demirgüç-Kunt, 2006, pp. 2931–2943);
- high issuing costs and the scarcity of venture capital, which is accessible to only a very limited percentage of firms;
- constraints on the SME side related to the quality of projects, negative attitude towards equity financing or inability to use the available source of financing.

Sometimes the reluctance of enterprises to finance innovation from the outside is due to strategic reasons. Firms have little incentive to disclose information about their innovative projects to lenders as that knowledge may leak to competitors. Therefore, managers prefer to rely on internal sources of financing to finance their investments. This attitude can be even stronger for smaller firms

that are unable to protect their innovations with complementary assets such as established distribution networks (Scellato, 2007, pp. 55–76; Ughetto, 2008).

An analysis of the use of various sources of financing in general structure of financing innovative activities of enterprises in Poland was presented by Bednarczyk & Zapartowicz (2016, pp. 81–95), Kokot-Stępień (2016, pp. 16–29), Starzyńska & Baraniak (2017, pp. 131–143) and Wieprow (2017, pp. 21–36). Wanicki (2017, pp. 356–364) indicated the latest solutions in the field of financing innovative projects, paying particular attention to innovative repayable instruments and crowdfunding. Szydłowski (2019, pp. 273–286) presented the impact of monetary policy on decisions regarding the sources of financing innovation in enterprises. Kokot-Stępień & Krawczyk (2020, pp. 291–304) indicated the impact of public support on the scope of innovative activity of enterprises in Poland. Zakrzewska & Kijek (2019, pp. 244–249) examined the direction and strength of the impact of selected determinants of the selection of a specific source of financing for innovative activities in food industry enterprises and Tylżanowski (2015, pp. 535–544) in the developed models showed that enterprises using external financial support have a greater chance of technology transfer. Some authors who deal with the issue of financing innovation point to the use of EU funds. Murzyn (2017, pp. 157–166) showed the role of the cohesion policy in financing innovative enterprises in Poland, while Lisowska (2017, pp. 205–218) analyzed the significance of a loan for technological innovations in the innovative activity of SMEs.

Taking into account the innovative activity in small and medium-sized enterprises, the most important forms of financing innovations used by Polish enterprises belonging to the SME sector were identified by Drews (2018, pp. 253–269). On the other hand, Starzyńska assessed the sources of financing for innovative activities in small and medium-sized enterprises, both industrial (2017, pp. 443–452) and service (2018, pp. 511–523).

### 3. Methods

The initial stage of the elaboration begins with a critical analysis of the literature and reports relating to the issues raised. The presentation of the most important issues is the basis for the study of numerical data using statistical methods. The publication uses data published by the Central Statistical Office. Selected information on the innovative activities of enterprises in the SME sector and sources of financing innovation by small and medium-sized enterprises comes from the annual reports of the Central Statistical Office for 2009–2018. On the basis of the collected data, first, the analysis of the level, structure and dynamics of both SME innovation expenditure and the sources of financing its innovative activities was performed, while trying to indicate the reasons for the changes, then the dependence between the previously studied variables was examined.

Using the Pearson's correlation coefficient, it will be possible to find answers to the following research questions, the first of which, the basic one, determines the validity of the subsequent analysis:

- Do external sources of financing affect the level of expenditure on innovative activities of enterprises from the SME sector (is there a dependence between innovative expenditure and external financing)?
- Is this correlation conditioned by the size of activity (small/medium-sized enterprise)?
- Is this correlation conditioned by the type of activity (industrial/service enterprise)?
- The correlation of which of the external sources of financing innovation in the SME sector in the analyzed period was the strongest and which was the weakest (which of the external sources of financing innovation have the greatest and the least impact on innovative activity in SMEs)?

The Pearson product-moment correlation coefficient describes the size and direction of linear relationship between two continuous variables and range from  $-1.0$  to  $+1.0$ ; if no relationship exists between the two variables, the value of the correlation is zero (Goodwin & Leech, 2006, pp. 249–266; Senthilnathan, 2019). In the published sources there are assumed various ranges of the coefficient absolute value to assess the relationship strength. One of the examples is as follows:

- $|r|=0$  — no correlation;
- $0.0 < |r| \leq 0.1$  — faint correlation;
- $0.1 < |r| \leq 0.3$  — weak correlation;
- $0.3 < |r| \leq 0.5$  — average correlation;
- $0.5 < |r| \leq 0.7$  — high correlation;
- $0.7 < |r| \leq 0.9$  — very high correlation;
- $0.9 < |r| < 1.0$  — almost full correlation;
- $|r|=1$  — full correlation.

## 4. Results & discussion

The share of expenditure on innovation of SMEs in the total value of expenditure on innovative activities of all enterprises in Poland ranged from 21% in 2016 to 33% in 2014. Taking into account all the years of the research period (Chart 1–3), the expenditure in industrial companies was twice as high as in service ones, which must have been related to the fact that, in the first group of enterprises, most of all, product and process innovation is implemented, which certainly more financial resources ought to be allocated for than in the case of marketing or organizational innovation which the entities of the service sector focus on. Significant capital needs with limited access to resources and also often lower propensity to take risk translated, in turn, into fewer innovative activities of smaller enterprises, operating mainly in the industrial sector, the expenditure of which ranged from 20% in 2016 to 33% in the last year covered by

the research. On the other hand, among service companies, in which much less capital-intensive non-technological innovation is implemented, the difference in the level of expenditure on innovation in small and medium-sized enterprises was not so large. Moreover, in 2014 the expenditure was higher in these smaller entities, since it amounted to 63% of the total innovation expenditure in service SMEs. However, due to a larger range of operation and thus larger own resources and easier access to external resources, in the total number of small and medium-sized economic entities, the largest expenditure has been borne and still is by entities employing more than 50 people, whereas an increase in innovative activities of small enterprises, the expenditure of which doubled in the research period, should be highlighted.

When analyzing the level of expenditure on innovation in enterprises of the SME sector, it can be noticed that the lowest value was recorded in the first year covered by the research (PLN 6669.7 million), whereas the highest value was recorded in 2014 (PLN 12474.1 million). In the years 2009–2014 the expenditure indicated an upward trend (it increased by 87%), mainly due to innovative activities of industrial companies. However, in the years 2012 and 2014 the expenditure on innovation in entities of the service sector grew faster than in industrial companies. Unfortunately, the investment in innovation grew rapidly in the entities which undertook its implementation and still few enterprises conducted such activities. As a result, in the years 2015–2016 the trend was reversed and the value of expenditure on innovation in the entire SME sector decreased at first by 16% and then by 20% in relation to the previous year. In 2015, the negative trend was the result of a drastic decline in the activities of service companies and in the subsequent year it was also due to a significant decrease in expenditure in industrial units. In the years 2017–2018 the expenditure on innovative activities of small and medium-sized enterprises increased again and finally amounted to PLN 9812.2 million, nearly 60% of which was the expenditure by industrial companies and the expenditure of medium-sized enterprises exceeded the expenditure of entities employing less than 50 people by nearly 67%.

Regardless of the type and range of the conducted activity, the primary source of financing innovation was own funds. Undoubtedly, in order to undertake an innovative activity, it is necessary to have own financial surpluses which are not only to cover the cost of implemented projects but also to make it possible to apply for a subsidy or credit since, during the development period, there is an increased need for external sources of financing. Unfortunately, entities of the SME sector encounter many obstacles to obtaining external funds. Many enterprises do not have a well-established market position, stable sales markets, sufficient assets to secure the credit repayment. Moreover, some credit terms discourage or even prevent entrepreneurs from using this type of instrument to make it possible to implement cost-intensive innovative projects. As a result of the growing demand for capital, SMEs benefit from other sources of external financing, primarily including leasing. Some companies implementing innova-

tive projects also obtain financial support from venture capital funds, however, it should be remembered that not every innovation is interesting for an external entity to invest in it. Nevertheless, for the small and medium-sized enterprises wishing to implement innovation, EU funding granted under different operational programs is often of the key importance.

Too low level of equity with limited access to external financing does not affect the propensity to invest, which was reflected in the level of innovation expenditure of entities of the SME sector. The dominant role of own funds in the financing of innovative projects was mainly evident in the case of service companies since their share ranged from about 50% in 2012 to more than 80% in 2016, whereas, on average, they represented 65–75% (Chart 7–9). Medium-sized entities of the service sector benefited from their own funds to the greatest extent. Small service companies, during the implementation of innovative projects, use external financing slightly more often, in particular EU funding. In some years covered by the research one could observe a greater interest in leasing or bank credit, however, the value of these sources of financing varied with no possibility of indicating a clear trend. On the other hand, industrial companies were much more willing to use external financing. Due to the specificity of operation, they more often implemented more costly projects, which they would certainly not be able to cover with their own financial surpluses. The opportunity to access external forms of financial support positively affected innovative activities of mainly small-sized entities of the industrial sector — the share of external funds often exceeded the share of equity (Chart 4–6). In medium-sized industrial companies, own funds dominated in the structure of sources of financing innovation (except for the year of 2015). However, the share of external financing was not low, and it was, on average, at the level of more than 40%. However, EU programs constituting the main source of support for innovative activities of enterprises of the SME sector were of the greatest significance.

Having presented the range of innovative activities in the SME sector closer, while taking into account the sources of financing innovation, in the subsequent part of the article, the research questions will be verified using the Pearson correlation coefficient. The conducted research (Table 1) confirms the existence of a very strong relationship between the range of innovative activities of SMEs and the size of external financing and it is, admittedly slightly, but still larger than the financing of innovation using own funds. Therefore, this means that small and medium-sized enterprises are more willing to engage in development by implementing innovative solutions, having access to external financing. The largest dependence in this respect occurred in the case of industrial companies in which innovative activities are often dependent on the possibility of using capital from the outside of the entity. High costs of implemented projects, often at a low level of own financial resources, particularly in smaller entities, causes that, without access to external financing, entrepreneurs focus solely on current activities. Service companies, due to the range and costs of innovation activities,



made the implementation of innovation slightly less dependent on external financing, however, this dependence was also very high.

The analysis of individual sources of external financing indicates that their impact on innovative activities of enterprises of the SME sector was diversified for entities identified both by the size and type of the conducted activity. Funds from the national budget stimulated innovative activities of both small and medium-sized industrial companies in the least. In addition to the provision of appropriate guarantees securing the credit repayment, targeted subsidies, the State most often stimulates the innovativeness of economic entities using tax instruments which are an indirect form of support since there are no direct subsidies here, but resignation from a portion of tax revenues. Nevertheless, due to volatility and low transparency of regulations and also uncertainty as to the correct allocation of costs to the tax credit and the fear of questioning the amount of deduction by the tax authority and often too low financial benefit caused that entrepreneurs did not benefit from this form of support for innovative activities too often.

Enterprises of the SME sector financed implemented projects with funds from bank credits certainly to a very small extent (average correlation for both industrial and service companies). The lowest dependence occurred in the case of medium-sized industrial companies and small service ones. This is undoubtedly due to the fact that banks constantly prefer larger economic entities and are far less confident in the case of smaller companies, which makes it more difficult to obtain capital from the outside. Admittedly, financial institutions increasingly appreciate the significance of small and medium-sized entities in the economy, however, providing services to enterprises of the SME sector is not the key element of the strategy to them. Entrepreneurs are not fully credible to banks and belong to the group burdened with the highest risk. Enterprises of the SME sector applying for the credit for innovative activities are often unable to prove their financial credibility and also, they do not possess sufficient assets to secure the credit repayment. The facilitation of access to external financing for entrepreneurs who were unable to provide sufficient guarantees were credit guarantee funds. Providing SMEs with guarantees, on the one hand aimed at increasing their access to financing sources whereas, on the other, protecting financial institutions from the related risk was undoubtedly a sufficient source of support for innovative activities of entities of the SME sector. A good solution was also *Credit for technological innovation*, i.e., the support given in the form of technological bonus in the form of repayment of the capital portion of the credit granted by a commercial bank for the implementation of an innovative project. The reduction in the cost of credit which could finance the purchase and implementation of a new technology or introduction of a new technology developed within the framework of own research positively affected innovative activities of small industrial companies since the correlation of the analyzed variables amounted to 0.51.

However, among the sources of external financing, regardless of the extent and type of the conducted activity, the largest impact on the implementation of innovative projects was exerted by funds from abroad (in each case the correlation was very high and, for small industrial companies, nearly full, since amounting to 0.92). Enterprises of the SME sector most of all benefited from all types of EU funding, mainly under the Innovative Economy Operational Program (until 2013), Smart Growth Operational Program, Eastern Poland or regional programs. The significant support was previously mentioned *Credit for technological innovation*, under which repayable support is granted in the form of market-based credit by one of the banks cooperating with Bank Gospodarstwa Krajowego (BGK) and non-repayable support, i.e., a grant, the so called “technological bonus” in the form of partial redemption of the credit taken to finance technological innovation. Entrepreneurs with an idea of an innovative product, but not having scientific resources to develop it could also benefit from funding granted by Polish Agency for Enterprise Development under the program *Innovation vouchers for SMEs* supporting the entire process of innovation implementation — from the idea, through R&D and developing a product or technology and ending with an investment related to its market implementation. However, it is worth pinpointing that the enterprise whose application for funding was approved, had to have its own contribution. Despite the fact that, during the project implementation, the entrepreneur incurs both eligible and non-eligible costs, the basis for calculating the amount of support is only the amount of eligible costs, therefore, subsidies usually finance only a part of an innovative project. Moreover, entrepreneurs very often finance innovation on their own so as to receive reimbursement after the completion of its subsequent parts. For this purpose, they use their own funds or the ones from the bank credit.

In order to implement innovative solutions, enterprises of the SME sector also eagerly used other external sources of financing. The particularly high dependence of these variables occurred in medium-sized enterprises, both industrial and service ones. Among the other external sources, leasing was undoubtedly the most important, enabling access to innovation and cost reduction with no need to involve large equity. Leasing increases the flexibility of operation, creates tax preferences and, by means of spreading the payment over the life of the asset, allows for better management of working capital and financial liquidity. Another solution for entrepreneurs with an innovative idea, but with no sufficient financial resources to implement it was to benefit from venture capital funds. However, it should be remembered that alternative sources of financing are mainly aimed at supporting larger economic entities and, unfortunately, are not used very often, especially by the smallest economic entities.

The issue of innovation are widely discussed in the literature, but the issue of its financing is usually limited to approximating the available sources of financing innovation, evaluation of the using of various sources of funding in general financing structure of innovative activity or the possibility of supporting innovative activities with funds from the EU budget. However, there is a re-

search gap covering the issue of the relationship between the use of individual sources of financing and the value of expenditure on innovation in Polish small and medium-sized enterprises.

## 5. Conclusion

Innovative activities of SMEs largely depend on access to external sources of financing. The possibility of covering the costs of implemented projects not only with own funds but also with external ones has a positive effect on the range of innovative activities of enterprises. In the research period, expenditure on innovation in all entities of the SME sector increased by PLN 3142.5 million. While taking into account the size of the business, the largest (almost two-fold) increase was recorded in small-sized entities, whereas, while considering the type of activity, the largest increase was recorded in service companies. External sources of financing mostly supported innovative activities in industrial companies, especially small ones, in which the share of external financing often exceeded equity. The existence of the dependence in this area was confirmed by the study of the correlation, which was close to one.

Among external forms of financial support, regardless of the size and type of the conducted activity, the largest impact on innovative activities of SMEs was exerted by resources from abroad, including primarily funding under EU programs. The largest relationship between these variables was again in small-sized entities, although it was also very high in medium-sized ones. This was undoubtedly due to the fact that the beneficiaries of many EU programs supporting projects involving the implementation of innovation was enterprises of the SME sector. The conducted analyses indicate that service companies also used the support granted by the National Center for Research and Development and the national budget in the form of targeted subsidies.

Despite the fact that many entrepreneurs, for various reasons (insufficient capital resources, problems with liquidity, low creditworthiness) had difficult access to bank credits, by means of which they used them in innovative activities to a relatively small extent, the relationship between this source of financing and the value of expenditure on innovation was high in small-sized enterprises. This was certainly affected by the non-repayable grant for the repayment of a part of the credit to finance the implementation of technological innovation which was an important incentive for many entrepreneurs to undertake pro-innovative activities. However, as a result of the growing demand for capital, enterprises of the SME sector, especially medium-sized ones, used leasing more often than bank credit since it not only allowed innovative solutions to be implemented with no need to involve large equities, but also created tax preference. Unfortunately, the low share of alternative sources, such as venture capital, focused mainly on the support for larger enterprises, does not solve the problem of financing innovative activities of smaller economic entities.

The fact of taking into consideration the data relating to a particular period of time may make the research seem limited in some way. Expanding the research by analysing later years as well as the attempt to explain why the examined relationships were high or weak or why they did not occur at all need further research to be carried out in the future.

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## Appendix

**Table 1.**  
Correlation table of external financing and expenditure on innovation in SMEs

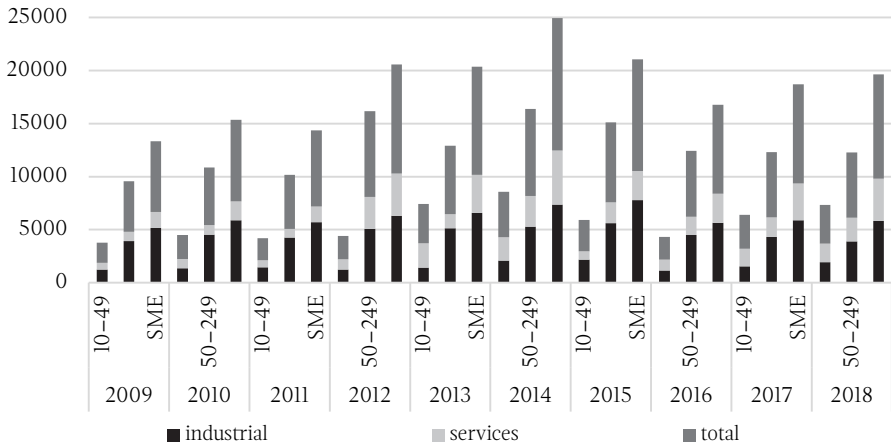
Correlation		Type of business								
		industrial				services				
		IS*	ES*	IS*	ES*	IS*	ES*	IS*	ES*	
scope of business	S*	0.72	0.94	0.95	0.88					
	M*	0.29	0.91	0.88	0.89					
SME		0.32	0.95	0.92	0.89					
Correlation		A*	B*	C*	D*	A*	B*	C*	D*	
scope of business	S*	0.51	0.36	0.92	0.42	S*	0.17	0.64	0.89	0.35
	M*	0.10	0.17	0.80	0.4	M*	0.33	0.64	0.82	0.86
SME		0.32	0.02	0.90	0.80	SME	0.42	0.50	0.85	0.65

**Notes:**

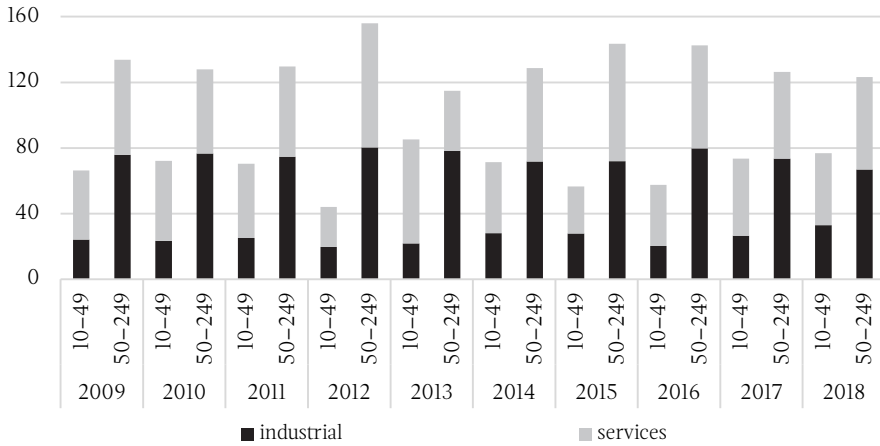
\* S — small business; M — medium-sized enterprise; IS — internal sources; ES — external sources; A — bank credits; B — from the state budget; C — from abroad; D — others.

Source: Own preparation based on CSO (2009–2019).

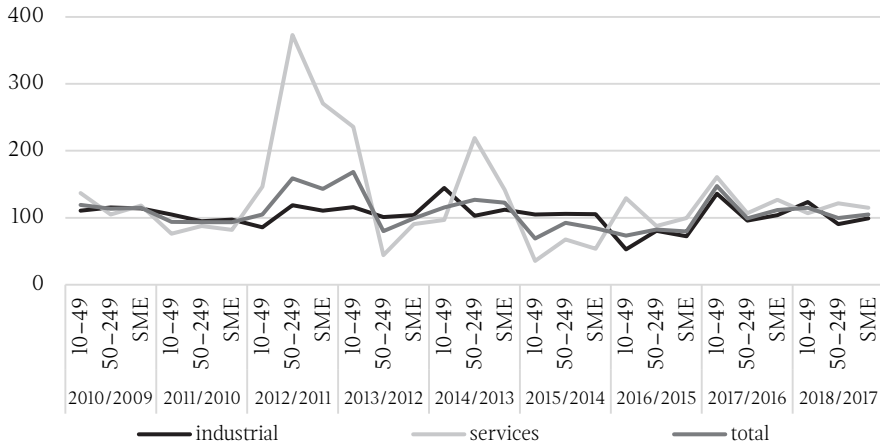
**Chart 1.**  
The level of expenditure on innovations in SMEs in 2009–2018 (in PLN million)



Source: Own preparation based on CSO (2009–2018).

**Chart 2.**
**The structure of expenditure on innovations in SMEs in 2009–2018 (in %)**


Source: Own preparation based on CSO (2009–2018).

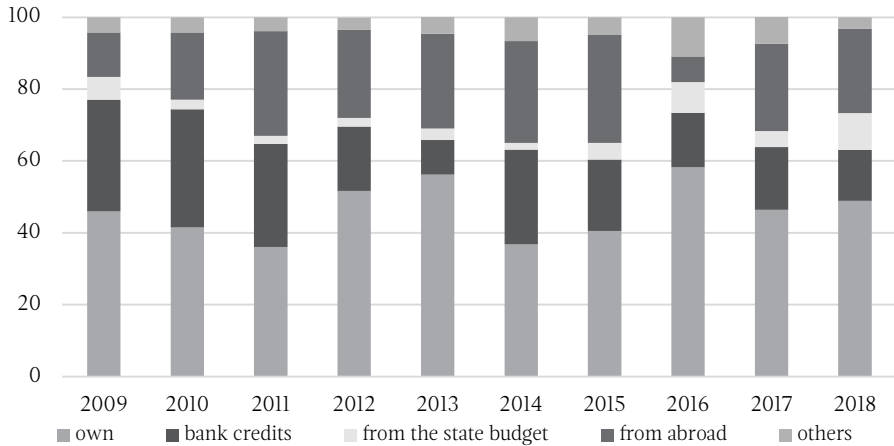
**Chart 3.**
**The dynamics of expenditure on innovations in SMEs in 2009–2018 (in %)**


Source: Own preparation based on CSO (2009–2018).



Chart 4.

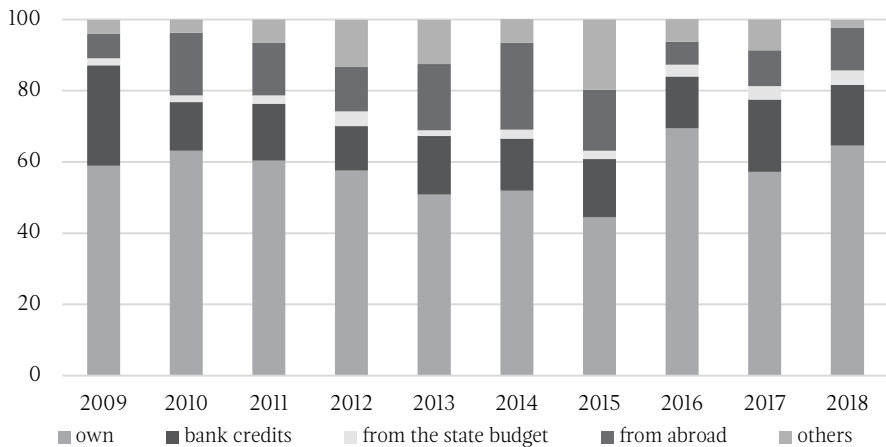
Structure of the financing sources of innovation in small industrial enterprises in 2009–2018 (in %)



Source: Own preparation based on CSO (2009–2018).

Chart 5.

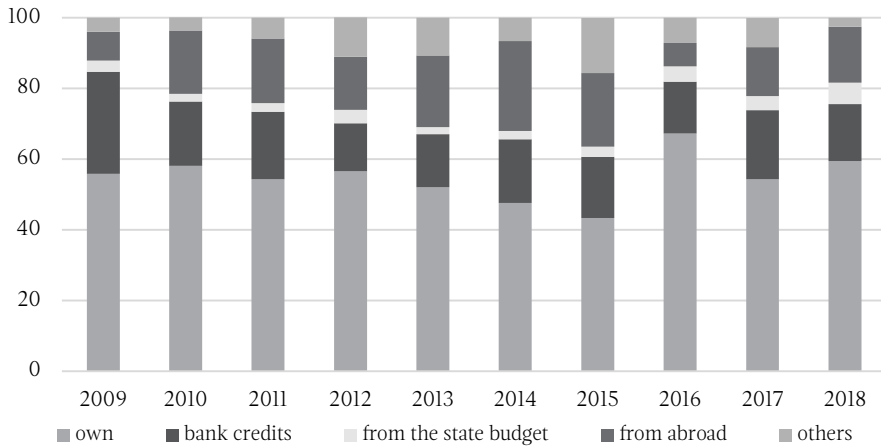
Structure of the financing sources of innovation in medium-sized industrial enterprises in 2009–2018 (in %)



Source: Own preparation based on CSO (2009–2018).

Chart 6.

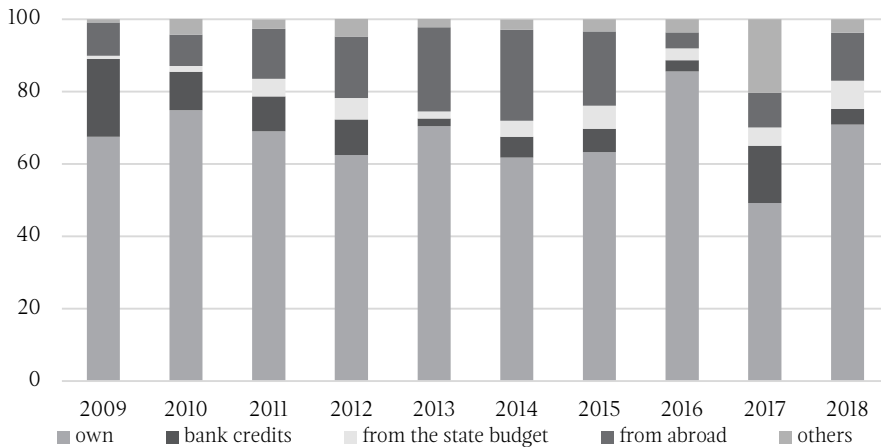
Structure of the financing sources of innovation in industrial SMEs in 2009–2018 (in %)



Source: Own preparation based on CSO (2009–2018).

Chart 7.

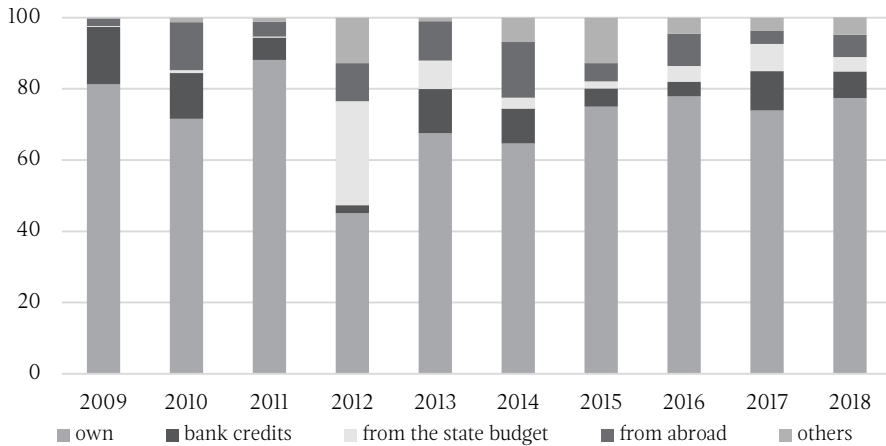
Structure of the financing sources of innovation in small service enterprises in 2009–2018 (in %)



Source: Own preparation based on CSO (2009–2018).

Chart 8.

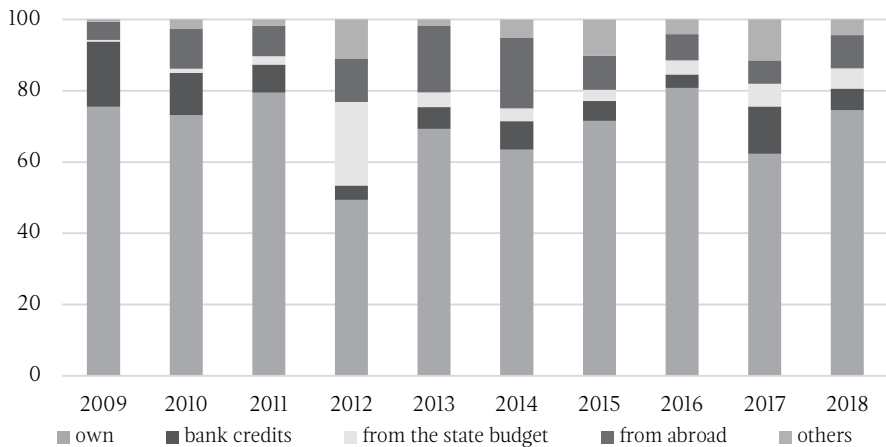
Structure of the financing sources of innovation in medium-sized service enterprises in 2009–2018 (in %)



Source: Own preparation based on CSO (2009–2018).

Chart 9.

Structure of the financing sources of innovation in service SMEs in 2009–2018 (in %)



Source: Own preparation based on CSO (2009–2018).

