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## Article

# Study on the Open Innovation Practices in Romanian SMEs

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## STUDY ON THE OPEN INNOVATION PRACTICES IN ROMANIAN SMEs

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**Abstract**

This paper highlights some of the results of the study carried out by the authors within the research project “Integrated system for innovation management in SMEs”, code PN-II-PT-PCCA-2013-4-1319, under way at the Business Administration Research Centre of the Bucharest University of Economic Studies.

The objective aimed at was to show the progress made by Romanian SMEs in adopting the open innovation principles. In order to reach this objective, the authors analysed the available statistical data for the period 2002-2012 concerning the trend of the SMEs’ weight in the total innovation businesses compared to the weight of the large companies, the trend of the number of innovation projects started but unfinished or abandoned, and the trend of the ratio between the weight of the expenses on internal innovation activities and the expenses on external innovation activities for these businesses.

The performed study highlighted the fact that within the analysed period, the weight of innovative SMEs in the total SMEs doubled. Within the same period of time the number of Romanian SMEs that initiated research-development-innovation projects unfinished and/or abandoned went up significantly, which proves that the initiatives of these businesses in developing ever more complex and riskier research projects multiplied. Under these circumstances, the authors’ opinion is that focus is needed on external innovation sources that are typical to open innovation, with an important role in enhancing the performance of the innovation process.

**Keywords:** innovation, R&D, open innovation, SMEs, Romania

**JEL Classification:** O30, O31, O32

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## Introduction

Innovation is a process that begins with a new idea and concludes with market introduction (Brad, S., 2014 and Brad S., 2012). Innovation is an everyday phenomenon that changes progressively the economy and society (Camelo, C., 2010). Along with creativity, this is one of the main sources of development in the knowledge society, being strongly related to entrepreneurship and economic growth (Dinu, Grosu and Saseanu, 2015). During the past years innovation became more and more a common word. Businessmen argue they are concerned ever more with innovation whereas advertisements come up with innovation in an attempt to lure customers, while for mass media innovation is one of the most employed words (Jaramillo et al., 2008). At the same time, academic environments become increasingly preoccupied with investigating innovation, while many public actors, especially those directly involved in preparing and implementing macroeconomic strategies and policies deem that innovation generates value and prosperity for a given region.

Under these circumstances, the taking up of the open innovation principles turns into one of the priorities of organisations, especially of large companies that seek to improve the effectiveness and efficiency of their innovation processes considered to be directly linked to their business performance. Concomitantly, it is an obvious fact that SMEs are concerned with spurring their innovation activities. These businesses develop specific national and regional programmes in an attempt to enhance the performance of their innovation processes, including through the adoption of the open innovation principles.

## 1. Literature review

At macro level, according to Agrawal et al. (2011) cited in Grosu (2015), innovation may facilitate and ensure the development of a poorer country or region. At micro level, innovation is regarded as a key element in achieving sustainable competitive advantages for the success of firms (Maier et al., 2014). According to some authors “innovation is a complex process which ensures communication between the scientific community, market and technology” (Brad, 2006, cited in Procopie et al., 2009), representing basically “the main engine of progress” (Kao, 2007) for both a company and a nation. In a general sense, innovation means the introduction of something new. But for an appropriate use of the term, the authors embrace the definition given by the Oslo Manual according to which innovation is “the implementation of a new or significantly improved product (good and/or service), or process (manufacturing and supply methods), a new marketing method (packing, sales or distribution methods), or a new organisational method in business practice, workplace organisation or external relations” (OECD, 2005, p. 46). Today, the innovation process is one of the most important factors behind the growth and prosperity of the global economy (Maier et al., 2014; Petrariu et al., 2013).

In the context of the previously mentioned conceptual delimitation, the authors of the paper have set out to analyse the extent to which Romanian organisations adopt open innovation principles and use external innovation sources to enhance their own innovation performance. The analysis will be different for SMEs and for large organisations. Lately, SMEs have received a special attention from the researchers. Various studies focused on the argument that SMEs are as innovative as the large companies (Rothwell and Zegveld, 1982; Pavitt et al., 1987; Oakley et al., 1988; Acs and Audretsch, 1990 cited in Tomlinson

and Fai, 2013). It is the opinion of many authors that innovation is even more important for SMEs than for large organisations, being perceived as an important engine of competitiveness (Fritz, 1989; Sweeney, 1983 cited in Radas and Bozic, 2009). Also, SMEs may be a significant source of innovation for large companies in the sense that they may work together in developing some components necessary to the innovation process, the more so as the firms that act as suppliers for large companies are primarily SMEs (Fountain, 1998, cited in Tomlinson and Fai, 2013).

The transition from a closed to an open innovation system is thus ensured and triggered by the development of a company, especially in terms of size and results (Chesbrough, 2006). Closed innovation implies the holding of an absolute control over innovation, since companies themselves generate innovation ideas that they subsequently develop. Quite opposite, open innovation is based on internal and external knowledge that may be developed and capitalized in order to create value for the organisation (Chesbrough, 2003). Open innovation, especially considering the dislocation and knowledge-using processes, is at the same time a challenge for companies as it implies significant investments on their part (Rogbeer, Almahendra and Ambos, 2014).

As stressed by Suh and Kim (2012) and Spithoven et al. (2013), there are few studies that deal with the use of open innovation regarding the SMEs, and their results are different from those obtained by large companies that adopt open innovation. In contrast, SMEs have a pressing need for resources when it comes to innovation and also the internal R & D activities are much less formalized, so that the open innovation process must be differently configured for SMEs (Spithoven et al., 2013; Stanislawski and Lisowski 2015).

Nevertheless, open innovation may be an important factor which triggers success for companies and does not involve the taking of significant risks or the carrying out of major investments (Pamfilie et al., 2013). For Chesbrough (2003) open innovation implies the taking into consideration of the following aspects: organisational culture, the structure of the innovation process, and the business pattern adopted. The culture oriented towards open innovation is based on different principles, amongst which: intelligent persons from outside the company may generate and develop ideas, external research and development activities may create value, etc. (Chesbrough, 2003; 2006). Among the most important benefits from adopting the principles of open innovation for the SMEs include: increased learning ability by using external resources out of the organization, the possibility of acquiring complementary knowledge and know-how in order to improve the activity and the development of the R & D process, thus resulting in the reduction of the innovation costs (Spithoven et al., 2013).

The innovation-oriented structure refers to different mechanisms of capitalization of the internal and external knowledge into ideas, projects, methods, and systems that facilitate the internal and external flows of the innovative process. Business models must be flexible and easily adaptable to various opportunities that may arise, in order to benefit from them and generate value for the company (Chesbrough, 2003; 2006).

Open innovation practices are much more relevant and necessary for the SMEs that are usually constrained by their size and their limited resources. Thus, these companies should cooperate more with big companies to acquire knowledge and equipment in order to meet their innovation targets (Huang and Rice, 2009; Pullen et al., 2012; Spithoven et al., 2013).

Hence, by resorting to open innovation, companies may increase their chances to obtain a better efficiency in creating value and growth, becoming much competitive in the dynamic environment in which they operate (Kolk and Puumann, 2008; Chesbrough, 2011).

However, SMEs should be much more careful in regards to the knowledge that they outsource through the open innovation process as this might lead at the same time to increased competition in the market where they are active (Spithoven et al., 2013).

In order to show to what extent Romanian companies adopt open innovation principles, the present paper uses the results of a library research consisting in collecting, processing, analysing, and interpreting a series of statistical data representative for the studied phenomenon. Structured in two parts, the paper highlights in its first part a series of methodological aspects which were the basis for the research performed, while in the second part, the main results obtained.

## 2. Research methodology

This paper is based on a desk research initiated from the following questions:

- How many Romanian firms had unfinished and/or abandoned innovation projects?
- What are the main problems faced by the SMEs in their quest for innovation? Are they different from those of large companies?
- What is the weight of innovative firms in the category of SMEs, compared to that of large Romanian companies?
- What is the weight of expenses on internal innovation activities compared to those on external innovation activities for Romanian companies?
- What is the main source of financing research and development activities in Romania?

Open innovation is a complex concept that is difficult to quantify, which is why there is still no model in order to analyse this kind of innovation. So far there have been conducted various empirical studies that have analysed among others, the so - called influencers of the "openness" of a company, including: technology and licensing acquisition, outsourcing of R & D activities and the involvement into collaboration networks (Huang and Rice, 2009).

In order to give an appropriate answer to the above questions, a statistical analysis of a series of data provided by the Romanian National Statistical Institute of Statistics (INSSE, 2015) was performed. This analysis follows various indicators linked to the trend of innovation activities in Romanian companies.

The research method on which this paper was based consisted in the statistical analysis of secondary data provided by the aforementioned institution for the period 2002-2012, i.e. the most recent data available in Romania, with regard to the investigated phenomenon. Besides analysing this data, a series of reports on the performance of the innovation process were studied. These reports were published by the OECD and the European Union, such as "Entrepreneurship at a Glance 2014" and "Innovation Union Scoreboard 2015". The results interpretation of these studies contributed to a better understanding of the Romanian SMEs performance framework in comparison with other EU countries.

MS Office 2013 instruments were used to process and analyse statistically the identified data. This led to a simplification of the way in which the followed categories of data are grouped and represented in charts.

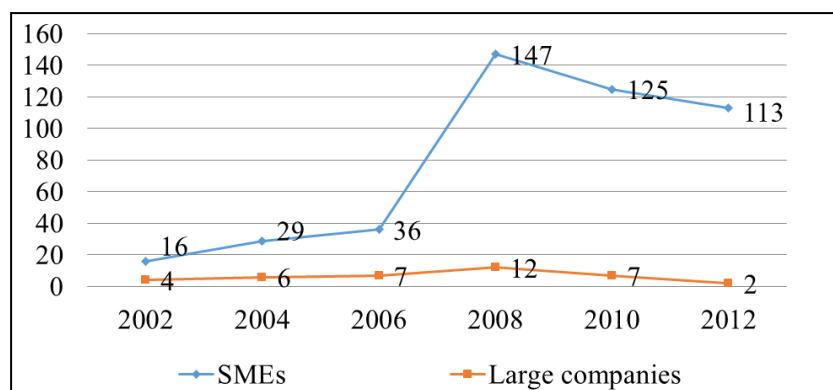
### 3. Results and discussions

The carried out research showed that in the period 2002-2012 there was a significant growth of the number of Romanian firms that initiated research – development – innovation projects, which eventually remained unfinished and/or were abandoned. Their number increased fivefold throughout the ten years analysed, which proves that the complexity of the innovation activities that Romanian firms undertake also went up.

It is ever more important to note that SMEs have increased the number of unfinished and/or abandoned projects, with seven times more such projects in 2012 than in 2002, while in the case of large companies the number of such projects halved in the same period. Among other aspects, this situation may also be due to an increase in the number of innovative companies, i.e. from 3983 in 2002 to 9986 in 2008, and after the economic crisis there were only 5986 innovative companies left in 2012, as shown by the data provided by the INSSE (2015).

It is worth noting the spectacular twofold increase in the number of innovative SMEs throughout the analysed period, while the number of large innovative companies went down from 663 in 2002 to 479 in 2012. This trend is justified by a decrease in the total number of large companies as well, i.e. from 1622 in 2002 to 1196 in 2012 (INSSE, 2015).

The respective situation can be linked to a multiplied number of initiatives put forward by Romanian companies aimed at developing more complex innovation projects which imply taking higher risks in response to the emergence of radical technologies. Also, the growth rate of research-development-innovation projects throughout the same period exceeded the growth rate of innovative firms. (Figure no. 1)



**Figure no.1: Evolution of the number of enterprises in Romania that registered unfinished and/or abandoned innovation activities**

*Source: own representation based on the data from the National Institute of Statistics, 2015*

In this context it is important to understand what are the factors which prevent companies from innovating. According to the study conducted by OECD (2014), based on the data available at Eurostat for the year 2010, these factors are: the difficulty in finding cooperation partners for innovation, markets dominated by established enterprises, lack of funds within the enterprise or group, innovation costs too high, lack of qualified personnel, uncertain demand for innovative goods or services, lack of finance from sources outside the enterprise.

Although Romania has not published data on this topic on Eurostat, thus not being included in this OECD analysis, a selection of 9 countries was made (Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic and Slovenia) all part of the Central and Eastern European Countries (CEECs). This selection allows a relevant comparison, whose findings can be extended also to Romania.

Among the barriers listed above, as can be seen also in (figure no. 2), the innovation costs that are too high represent the main problem faced by both SMEs and large companies in the innovation process, followed by the lack of funds within the company or group. Moreover it can be seen that small businesses that have between 10 and 49 employees have greater difficulties to find innovation partners as compared to enterprises with over 249 employees.

This situation could be improved by adopting an open innovation model, which is based on cooperation with other entities in order to reduce costs and risks involved during the innovation process.

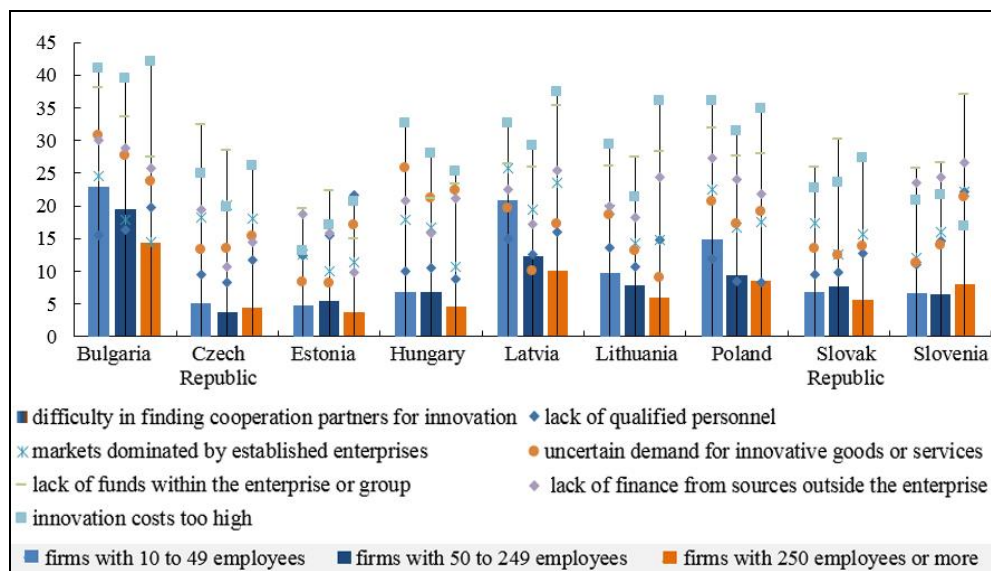


Figure no. 2: Barriers faced by some CEE enterprises during their innovation approach, depending on their size

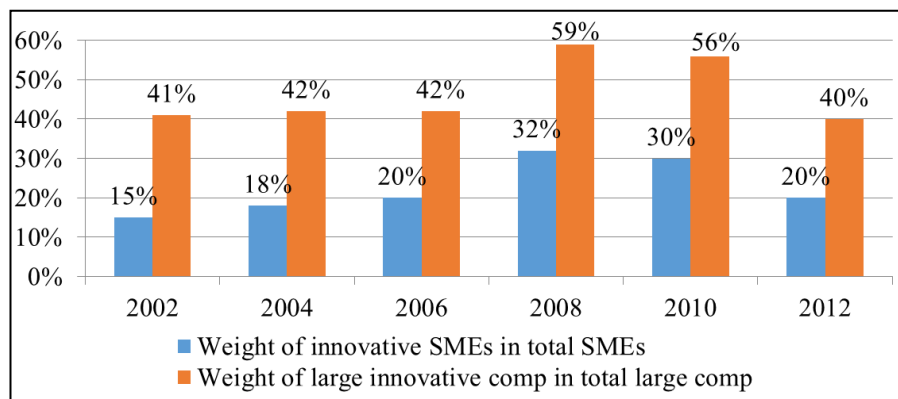
Source: adapted from OECD, 2014, p. 79

In order to better understand the degree of innovation of Romanian enterprises, it is necessary to analyse the percentage of innovative enterprises out of the total of enterprises, depending on the category they belong to. Also it is important to cooperate along the innovation process, considering the results of the above study that highlights the problems faced by the CEECs organizations.

The identification of new optimum ways of encouraging the Romanian companies to adopt open innovation principles can thus be justified by the need to enhance the performance of innovation processes by working together with other partners or by using some external sources of innovation.

The dispersal of innovation, that is the increase in the level of diffusion of the results of innovation amongst a higher number of large companies, but especially amongst SMEs, is a second element that proves how important is to adopt open innovation principles. Especially taking into consideration the fact that the results of innovation no longer concern just a few large companies, but they are much more diversified.

This aspect, as also shown in (figure no. 3), is evidenced by the fact that the weight of innovating SMEs in the total SMEs increased twofold, going up from 15% 2002 to 32% in 2008, then a decrease down to 20% in 2012 followed. It is expected for such weight to increase in the coming period. In 2012 the number of large innovative companies (their number weighting 40%) was two times higher than the number of innovating SMEs (weighting 20%). This may also be due to resources available to large companies, especially financial resources, which allow them to invest appropriate amounts of money into innovation processes. However, SMEs had a higher rate of growth with regard to these processes within the analysed period.



**Figure no. 3: Evolution of the weight of innovative enterprises in the total number of Romanian enterprises, by dimension type**

*Source: own representation based on data from the National Institute of Statistics, 2015*

The decrease in the share of innovative enterprises out of the total of enterprises in 2012, as compared to the previous analysed period (2002-2010) - marked by a growing - involution can be justified by the innovation index for Romania, according to European Union's analysis. Thus, as shown in (figure no. 4), starting with 2011 Romania's Innovation Index



registered a downward trend and in 2014 reached a minimum level, which positions Romanian country among the "modest innovators" countries.

This situation is largely due to the decrease in the share for the innovative SMEs that collaborate with other entities in the innovation process (-12% in 2014 as compared to 2013) and the decrease in the share of SMEs innovating in-house (-7.3% in 2014 as compared to 2013). To this is added a -20% drop of investments by venture capital firms and -21% share of the sale of new inventions (EU, 2015).

The mentioned results highlight once again the importance of adopting open innovation principles that encourage the cooperation between the firms and public-private partnership, thus improving the performance of the innovation process for Romanian SMEs.

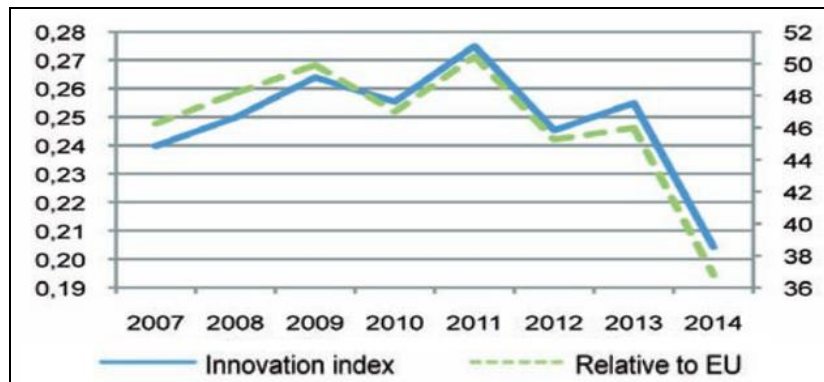


Figure no. 4: Romanian Innovation index

Source: European Union, 2015, p.67

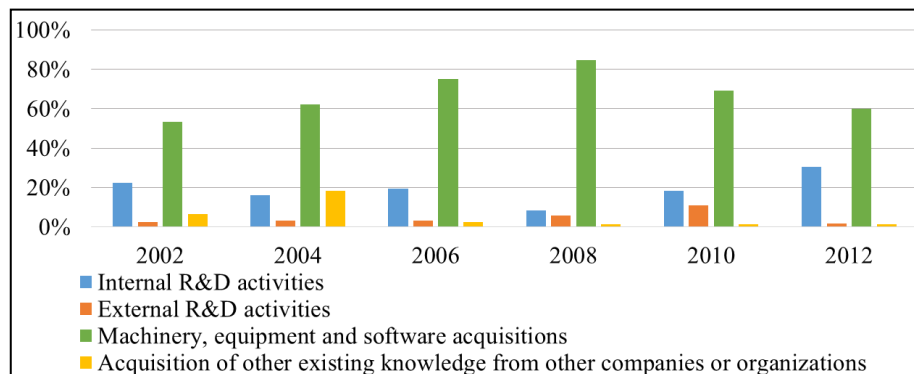
The results highlighted in figure no. 4 are largely due to poor funding of the Romanian R & D activities, the budget for such activities is 0.39% of GDP in 2013 as compared to 0.57% of GDP in 2008 (Eurostat, 2015). This indicator represents the share of R & D expenditure in GDP for all areas of activity, the biggest drop being recorded in the business sector from 0.22% in 2007 to 0.12% in 2013 (Eurostat, 2015). To improve this situation, we consider it necessary to find solutions to encourage the transfer of knowledge and stimulation of open innovation for enterprises in Romania, especially.

In order to establish to what extent Romanian companies adopted open innovation principles, an analysis of the expenses of the companies that develop product and/or process innovation was carried out, depending on their specific activities.

And as shown in figure no. 5, the companies use the largest part of the resources to purchase machinery, state-of-the art equipment, software, and buildings in order to develop some new or substantially improved products and services. So specific activities of capitalizing the external sources of innovation, which are a particular feature of the open innovation and which can contribute to increased performances of the innovation process should be more focused on.

The analysis of the expenses on acquiring external R&D services and/or external knowledge - as activities dealing with the capitalization of external innovation sources -

highlight a significant increase in such expenses, from 2% in 2002 to 11% in 2010, followed by a decrease to 1.6% in 2012 due to the significant increase in the internal R&D activities after the economic upturn (figure no. 5).



**Figure no. 5: Evolution of the innovation expenses' structure in Romanian companies, by activities developed**

*Source: own representation based on data from the National Institute of Statistics, 2015*

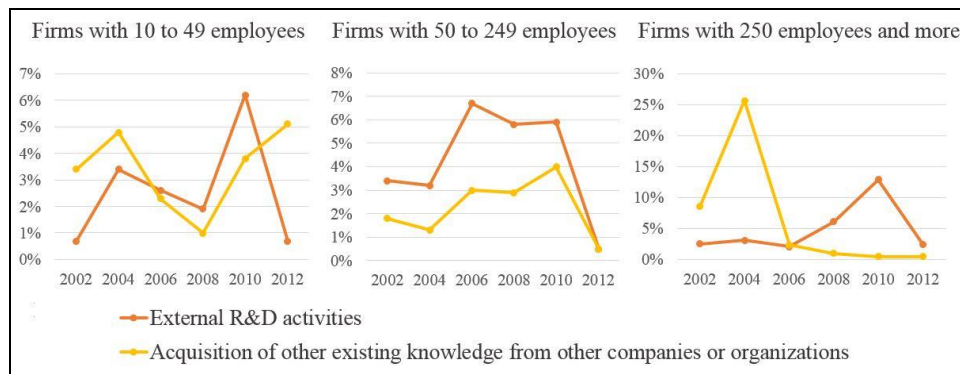
The involution of this type of expenditures after 2010 shows that Romania is in an early stage of adoption of the principles of open innovation, companies resuming to at most bilateral ties and specific actions to respond to needs of the moment. We believe that it requires a long-term strategy to encourage the SMEs to develop long-term collaboration with a number of partners, moving from bilateral ties and punctual involvement in multi-collaborative innovation networks. Also such a recommendation is formulated for all EU member states, according to the study "Boosting Innovation and Knowledge Transfer Open in the European Union" made in 2014 in the European Union.

The creation of networking and collaborative innovation systems would contribute to the "integrating value across different nodes throughout the ecosystem" that can lead to the creation of new markets and more performant business models (EU, 2014). To achieve this goal, it is required the development of a specific legislative framework, ensuring an adequate infrastructure to create a national innovation system so that the SMEs are supported in this endeavour.

As shown in figure no.5, redirecting a higher share of the costs of innovation to the R&D activities abroad or acquiring knowledge from other organizations (2002-2010), contributes significantly to increasing the capacity of enterprises to develop internal R & D activities (2012). Hence it is necessary a thorough analysis of the evolution of R & D external expenditures carried out by SMEs, and by those with the acquisition of knowledge from other organizations. (figure no. 6)

Throughout the analysed period the weight of the expenses on external R&D activities was higher in the case of large companies and reached a maximum of 12.9% in 2010 in the total innovation activities, while for SMEs the same weight peaked at 6% in 2010. As regards the acquisition of knowledge from other organisations it was noted that, along with a significant increase in 2004 largely due to the large companies, in the period 2006-2012 the small companies reached a maximum weight of their expenses on the acquisition of

knowledge from other organisations, compared to the middle and large-sized companies in the case of which this activity weighted in terms of expenses less than 1%.



**Figure no. 6: Evolution of the acquisition costs of external R&D services and other external knowledge, in Romanian companies depending on the size of organization**

Source: own representation based on data from the National Institute of Statistics, 2015

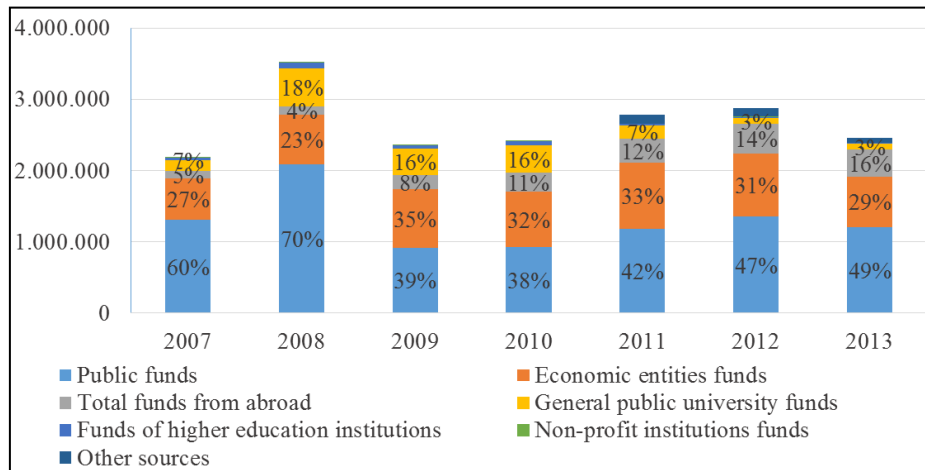
The significant decrease of the share of R & D activities and external acquisitions of existing knowledge in other organizations after 2010 – especially for medium and large companies from Romania is due to weak performance in innovation, highlighted by the evolution of the Romanian Innovation Index, shown in figure no. 4.

To answer the last question on identifying sources of financing for research and development in Romania, data was analysed by NIS, for the period 2007-2013. The analysis showed that, during that period, the largest share in the structure of R&D expenditures is held by public funds (which represent around half of total spending on R & D), followed by funds allocated by enterprises (representing about 30%). To these main sources there are added the university funds, those of non-profit institutions and the funds coming from other sources.

It is important to note the steady substantial growth of foreign funds allocated to R&D spending from 5% in 2007 to 16% in 2013. This is due to the process of European integration and together with it to facilitate the access to programs funded by European Union and to multinational companies that have expanded operations in Romania. (figure no. 7)

Even if new elements appear that contribute to fostering the innovation process of Romanian enterprises, their performance in innovation and in particular the SMEs are still at an early stage, requiring an increase in the share that they own out the total R & D expenditure.

The external research and development activities involve the acquiring of knowledge from other organisations in order to come out with new or significantly improved products and/or services. However it can be noted that there is necessary to increase the weight of certain kinds of new external knowledge to be acquired, such as know-how, copyrights, patents and other type of knowledge. This can be obtained through a better capitalization of the results of university research (Cretan and Gherghina, 2015).



**Figure no. 7: Financing sources of R & D expenditures in Romania**

Source: own representation based on data from the National Institute of Statistics, 2015

**Conclusions**

The results of our study show that the Romanian companies were capable to innovate throughout the analysed period of ten years (2002-2012), a phenomenon which happened along with the opening towards collaboration and the taking up of more ambitious research projects. The further evolution in the period 2012-2014 is a negative one, particularly due to the reduced level of cooperation of Romanian SMEs with other entities and due to lower investments in venture capital, which led to poor performance innovation and thus to the decrease of innovation index for Romania.

Particularly it was found that significantly more SMEs innovated, and actually their number doubled throughout the analysed period. In the same period the number of Romanian SMEs that initiated unfinished and/or abandoned research – development – innovation projects also went up. Such phenomenon highlights that the initiatives undertaken by these companies to developed ever more complex research projects multiplied, a fact which involves a higher risk imposed by the emergence of an increasing number of radical technologies. The main barrier faced by SMEs more than large companies in their quest for innovation is the high costs involved in this process. This could be overcome by increasing the cooperation and participation of these enterprises in innovation networks.

Taking into consideration the results of our research, we can draw the conclusion that by adopting the open innovation principles and focusing on activities dealing with the capitalization of external innovation resources, Romanian SMEs may increase the performance of their innovation processes. The results of this study can be an opportunity to launch future research aimed at identifying the most appropriate ways to enhance the innovation capacities of the Romanian SMEs.

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### References

- Brad, S., Mocan, B., Brad, E. and Fulea, M., 2014. Leading Innovation to Improve Complex Process Performances by Systematic Problem Analysis with TRIZ. In: EPFL Lausanne, *TRIZ Future Conference 14, Global Innovation Convention*. Lausanne, Switzerland, 29-31 October 2014. Lausanne – Switzerland: Elsevier.
- Brad, S., Fulea M., Mocan, B. and Brad, E., 2012. Systematic Innovation for Improving Competitiveness of a Master Study Program. In: C. Oprean, N. Grünwald and C. V. Kifor Eds., *International Conference on Engineering & Business Education, Innovation and Entrepreneurship*. Sibiu, Romania, 18-21 October 2012. Sibiu: Lucian Blaga University of Sibiu Publisher.
- Camelo, C., 2010. Strategic consensus top management teams and innovation performance. *International Journal of Manpower*, 31 (6), pp. 678-695.
- Chesbrough, H., 2003. *Open Innovation: The new imperative for creating and profiting from technology*. Boston: Harvard Business School Press.
- Chesbrough, H., 2006. *Open Business Model: How to thrive in the new innovation landscape*. Boston: Harvard Business School Press.
- Chesbrough, H., 2011. The Era of Open Innovation. *MIT Sloan Management Review*, winter issue, pp. 35-41.
- Cretan, G.C. and Gherghina, R., 2015. Funding Higher Education in a few EU Countries: Implications for Competition and Competitiveness in Higher Education. *Journal of Knowledge Management, Economics and Information Technology*, V(1), pp. 1-22.
- Dinu, V., Grosu, R.M. and Saseanu, A.S., 2015. Romanian Immigrant Entrepreneurship: Utopia or Reality? An Overview of Entrepreneurial Manifestations of Romanian Immigrants in Andalusia, Spain. *Transformations in Business & Economics*, 14(1(34)), pp. 48-64.
- European Union, 2015. *Innovation Union Scoreboard 2015*. [online] Available at: <[http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/files/ius-2015\\_en.pdf](http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/files/ius-2015_en.pdf)> [ Accessed 4 August 2015].
- European Union, 2014. *Boosting Open Innovation and Knowledge Transfer in the European Union*. [online] Available at: <[https://ec.europa.eu/research/innovation-union/pdf/b1\\_studies-b5\\_web-publication\\_mainreport-kt\\_oi.pdf](https://ec.europa.eu/research/innovation-union/pdf/b1_studies-b5_web-publication_mainreport-kt_oi.pdf)>, [Accessed 4 August 2015].
- Eurostat, 2015. *Research and development expenditure, by sectors of performance % of GDP*, [online] Available at: <<http://ec.europa.eu/eurostat/tgm/refreshTableAction.do?tab=table&plugin=1&pcode=tsc00001&language=en>> [Accessed 6 August 2015].
- Grosu, R.M., 2015. Best practices in the field of returnee entrepreneurship. *Amfiteatru Economic*, 17(39), pp. 799-814.
- Huang, F. and Rice, J., 2009. The role of absorptive capacity in facilitating "open innovation" outcomes: A study of Australian SMEs in the manufacturing sector. *International Journal of Innovation Management*, 13 (2), pp. 201-220.

- INSSE, 2015. *Tempo Online*. [online] Available at: <<https://statistici.insse.ro/shop/?lang=ro>> [Accessed 10 February 2015].
- Jaramillo, B., Jenkins, C., Kermes, F., Wilson, L., Mazzocco, J. and Longo, T., 2008. Positive Deviance: Innovation from the Inside Out. *Nurse Leader*, 6(2), pp. 30-34.
- Kao, J., 2007. *Innovation Nation: How America is losing its innovation edge, why it matters, and what we can do to get it back*. New York: Free Press.
- Kolk, A. and Puumann, K., 2008. Co-Development of Open Innovation Strategy and Dynamic Capabilities as a Source of Corporate Growth. *Working Paper in Economics Tallin University of Technology*, no. 173, pp. 73-83.
- Maier, A., Keppler, T. and Maier, D., 2014. Innovation the new trend in today's challenging economy. In: The Bucharest University of Economic Studies, *The 13th International Conference on Informatics in Economy, Education, Research & Business Technologies*. Bucharest, Romania, 15-18 May 2014, Bucharest: Publisher Editura ASE
- OECD, 2005. *OSLO manual, Guidelines for Collecting and Interpreting Innovation Data, 3rd Edition*, [online] Available at: <[http://epp.eurostat.ec.europa.eu/cache/ITY\\_PUBLIC/OSLO/EN/OSLO-EN.PDF](http://epp.eurostat.ec.europa.eu/cache/ITY_PUBLIC/OSLO/EN/OSLO-EN.PDF)> [Accessed 19 November 2014].
- OECD, 2014. *Entrepreneurship at a Glance 2014, OECD Publishing*. [online] Available at: <[http://dx.doi.org/10.1787/entrepreneur\\_aag-2014-en](http://dx.doi.org/10.1787/entrepreneur_aag-2014-en)> [Accessed 27 July 2015].
- Pamfilie, R., Onete, B., Bumbac, R. and Orîndaru, A., 2013. Open Minded Companies for Better Innovation Performance. *Towaroznawcze Problemy Jakości*, 4 (1), pp. 22-30.
- Petrariu, R., Bumbac, R. and Ciobanu, R., 2013. Innovation: a path to competitiveness and economic growth. The case of CEE countries. *Theoretical and Applied Economics*, 5(582), pp. 15-26.
- Procopie, R., Pamfilie, R., Bobe, M. and Carceag, M., 2009. Innovation - global vision on the product in the socio-economic environment. *Textile Industry Journal*, 60(2), pp. 90-96.
- Pullen, A.J., Weerd-Nederhof, P.C. and Groen, A.J., 2012. Open Innovation in Practice: Goal Complementarity and Closed NPD Networks to Explain Differences in Innovation Performance for SMEs in the Medical Devices Sector. *Journal of Product Innovation Management*, 29 (6), pp. 917-934.
- Radas, S. and Bozic, L., 2009. The antecedents of SME innovativeness in an emerging transition economy. *Technovation*, 29 (6-7), pp. 438-450.
- Rogbeer, S., Almahendra, R. and Ambos, B., 2014. Open-Innovation Effectiveness: When does the Macro Design of Alliance Portfolios Matter? *Journal of International Management*, 20 (4), pp. 464-477.
- Spithoven, A., Vanhaverbeke, W. and Roijakkers, N. 2013. Open innovation practices in SMEs and large enterprises. *Small Bus Econ*, 41(3), pp. 537-562.
- Suh, Y. and Kim, M.S., 2012. Effects of SME collaboration on R&D in the service sector in open innovation. *Innovation: Management, policy & practice*, 14 (3), pp. 349-362.
- Stanislawski, R. and Lisowska, R., 2015. The Relations between Innovation Openness (Open Innovation) and the Innovation Potential of SMEs. *Procedia Economics and Finance*, iss. 23, pp. 1521-1526.
- Tomlinson, P.R. and Fai, F.M., 2013. The nature of SME co-operation and innovation: A multi-scalar and multi-dimensional analysis. *International Journal of Production Economics*, 141(1), pp. 316-326.