

**EDU WORLD 2022****Edu World International Conference Education Facing Contemporary World Issues****A STUDY REGARDING THE LEVEL OF OPEN INNOVATION  
(OI) COMPETENCIES IN ROMANIA**

Dumitru Chirleşan (a)\*, Georgeta Chirleşan (b), Adriana-Gabriela Plăiaşu (c),  
Daniela Giosanu (d), Angelica Popescu (e), Cezar Popescu (f)

\*Corresponding author

(a) Faculty of Sciences, Physical Education and Informatics, University of Piteşti, Târgu din Vale, no. 1, Piteşti, Romania, dumitru.chirlesan@upit.ro

(b) Faculty of Education, Social Sciences and Psychology, University of Piteşti, Târgu din Vale, no. 1, Piteşti, Romania, georgeta.chirlesan@upit.ro

(c) Faculty of Mechanics and Technology, University of Piteşti, Târgu din Vale, no. 1, Piteşti, Romania, plaiasugabriela@yahoo.fr

(d) Faculty of Sciences, Physical Education and Informatics, University of Piteşti, Târgu din Vale, no. 1, Piteşti, Romania, giosanu@yahoo.com

(e) University of Piteşti, Târgu din Vale, no. 1, Piteşti, Romania, angelica.popescu.1@gmail.com

(f) University of Piteşti, Târgu din Vale, no. 1, Piteşti, Romania, cezar.popescu@upit.ro

**Abstract**

Open Innovation, as the practice of businesses and organizations sourcing ideas from external sources as well as internal ones, means sharing knowledge and information about problems and looking to people outside the business for solutions and suggestions. This paper presents findings from a research study performed in Romania, with the aim to understand the need for and availability of competencies related with collaborative activities in the scope of innovation in the job market, more precisely to analyse and describe the state-of-the-art regarding Open Innovation within Romanian SMEs and their necessary Open Innovation competencies. The study was implemented in the framework of the 2-year project “Open Innovation Competences for Responding to Modern Economic Challenges” (OPI) with reference number 2020-1-RO01-KA204-080196, financed by the European Commission through the Erasmus+ Programme. The quantitative research was achieved Dec 2019 – March 2021, based on validated questionnaire applied to Human Resource managers, containing close-ended questions split in four sections: (1) General information; (2) Intensity of OI processes; (3) The level of recognition for relevance of OI and the OI related competencies; (4) Perceived level of OI competencies. The findings show that currently there is desire for collaboration of SMEs and it is quite frequently practiced, because they do not have the necessary funds and resources for research and development, but increasing SMEs’ collaboration remains a key target in consolidating their Open Innovation. This study supports understanding of Open Innovation in SMEs.

2672-815X © 2023 Published by European Publisher.

*Keywords:* Competencies, open innovation, SMEs



## 1. Introduction

Nowadays, many European citizens face high risk of unemployment due to fast changing requirements of the job market. Technological changes, decreasing relevance of traditional working competencies and key meaning of new ones put many Europeans in high unemployment risk (i.e. due to automation or inadequacy of their competencies) or employment out of their competence profile (skills mismatch) leading to decreased productivity and life quality (Rens & Rathelot, 2017). The constant innovation-related changes, new technologies or business models, create the need for fast adaptation and developing corresponding competences which are not immediately available at the job market. In this scope, taking into account especially the major role of SMEs for EU economy, Open Innovation (OI) provides companies unique chances to engage in forefront innovation in face of often insufficient resources (Vanhaverbeke, 2017). This however requires recruiting specialised staff that could support OI processes. Despite increasing (and expected to increase further) role of such positions as OI specialist/manager, networks and partnerships coordinator, knowledge manager, managers struggle to source recruits with required competencies in this scope, while many EU adults face unemployment or high unemployment risk (Cedefop, 2019; Dabrowska & Podmetina, 2014).

Innovation activity is a source of development for small and medium-sized enterprises (SMEs) all over the world. Whether it concerns investment in research and development (R&D), the acquisition of new technologies or just slight changes in management policies, innovation is a key source for increasing added value and ensuring sustainable development for small companies (Grzeszczak & Posadzińska, 2019; OECD, 2018; Velev & Takov, 2021).

Open Innovation is about exchanging ideas, knowledge and technologies between organizations, customers, universities, scientific actors (Bigliardi et al., 2021; Dahlander et al., 2021; Lichtenthaler, 2011; West et al., 2014). When applying the Open Innovation system, the company can use external ideas and technologies resources provided by the business and science environment (Lassen & Laugen, 2017; Schuhmacher et al., 2018; West & Bogers, 2014) and, at the same time, share their own innovations and technologies with the external environment.

## 2. Problem Statement

As shown by the European Innovation Scoreboard (EIS, 2020), “Romania is a modest innovator. Innovation-friendly environment and Sales impacts are the strongest innovation dimensions. Broadband penetration and Medium and high-tech product exports are the only two indicators showing close to EU average performance. Innovators, Firm investments and Human Resources are the weakest innovation dimensions. Romania’s lowest indicator scores are on Lifelong learning, SMEs with product or process innovations, SMEs with marketing or organizational innovations, and SMEs innovating in-house.” Although in 2021 Romania was perceived as an emerging innovator, since 2014 its innovation performance relative to the EU has remained the same (EIS, 2020). In Romania, the innovation capacity of small businesses is rather low. The SMEs that have lasted the longest on the market are those which invested in innovation activity. A growing number of Romanian companies adopted Open Innovation (OI), the actions being different from one company to other and small companies managed to develop

without having their own research labs. With increased costs and risks associated with innovation, the processes of research, development and exploitation of ideas include collective, intellectual and technological resources. Thus, the needs for Romanian SMEs - especially those in low-tech or no-tech industries - to orient themselves to Open Innovation and invest more in innovation is obvious and seems to be a solution to ensure stability and increase of their business

### **3. Research Questions**

Through our research we envisaged to answer the following questions regarding SMEs:

- i. What is the intensity of OI processes requiring competencies?
- ii. What is the level of recognition for OI competencies among managers and HR professionals?
- iii. What is the level of OI competencies among employees?

### **4. Purpose of the Study**

The purpose of our study was to understand the need for and availability of competencies related with collaborative activities in the scope of innovation in the job market, more precisely to analyse and describe the state-of-the art regarding Open Innovation within Romanian SMEs and their necessary OI competencies, with a focus on key aspects such as the Research and Innovation system and the structures that support collaborative innovation. We also aimed at finding relevant information on the level of engagement of companies in innovation and relevance of innovation activity for the country economy. The study was a part of the project "Open Innovation Competencies for Responding to Modern Economic Challenges [OPI]" aiming to improve abilities of employees and job candidates to support collaborative innovation in Europe. OPI project is financed by the European Commission through the Erasmus+ Programme and has the reference number 2020-1-RO01-KA204-080196.

### **5. Research Methods**

To answer our research questions we implemented a quantitative, questionnaire-based field research. Both the research methodology and the research instrument itself (the questionnaire) that we used to implement our field research have been developed, refined and transnationally agreed in the project consortium, by researchers from Romania, Portugal, Spain, Poland and Austria. The questionnaire was administered by the researchers of the University of Piteşti members in the OPI project team.

The questionnaire was structured in four sections: (1) General information; (2) Intensity of OI processes; (3) The level of recognition for relevance of OI and the OI related competencies; (4) Perceived level of OI competencies. Different types of questions were used in the design of the research tool: introductory questions which had the role of familiarizing the respondent with the topic and the purpose of the research; identification questions that helped us shaping certain envisaged characteristics of the respondent (i.e. age, seniority in work, current position in the company, experience with HR); specific multiple-choice questions with the focus on Open Innovation and OI competencies. These close-ended questions requested answer-options on various 4-point Likert-type scales ('Never', 'Rarely', 'Often', 'Always'; or 'I strongly disagree', 'I disagree', 'I agree', 'I strongly agree' or other similar).

The questionnaire was applied to research representative sample made up through rational non-probabilistic sampling. The sample consisted of 71 people with an experience in HR between 1 and over 30 years, residing in Romania. The questionnaire was been completed online by 59 respondents; thus, the response rate was 84.28%.

## 6. Findings

The data we obtained from Section 1 of the research questionnaire are:

The type-distribution of the organizations participating in the survey was the following: Human Resources agencies (5.08%), employment offices, small and medium enterprises (40.68%), large enterprises (27.12%), NGOs or associations supporting employment or retraining (11.86%), others (20.34%).

The participating companies are active in following fields: automotive, textiles, furniture manufacturing, fish processing, meat processing, banking and commerce, sanitary installations & air conditioning, service providing. Among participants, there was a predominance of the automotive industry representatives, due to the presence within the implementation region of our study of Groupe Renault (one of the top regional and country-wide employers).

An image on the respondents' experience in Human Resources management is given both by their age, approximately 72% are over 41 years old and 32% over 50 years old, but also by the length of service in Human Resources, over 45% of the respondents having more than 20 years of experience in this field. There is approximately uniform distribution regarding respondents' experience gained by holding a management position in Human Resources before and after 1989 (the year of the fall of communism in Romania) when HR managers' profile has changed (starting with early 1990s).

62.71% of the respondents have 2 to 10 years of experience with HR functions and they declared they give special importance to motivation and communication issues, as well as relatively new concepts such as reward management, culture management, performance-related payment or management development.

Regarding the intensity of OI processes (Section 2 of the research questionnaire), more than half of the respondents (59.3%) stated that their companies often collaborated with other organizations to solve their problems or explore new opportunities, while 8.5% of SMEs never collaborated with other SMEs to develop new products, improve processes or to explore new opportunities together. Almost 60% of respondents confirmed a good, even permanent collaboration across SMEs to develop new products or improve their current processes. This is convergent with the SMEs' vision regarding collaboration, as 40.68% of the respondents in the study represented SMEs and expressed the same wish to develop new products through cooperation.

72.8% of the people who answered the questionnaire specified that it is very common or extremely common among SMEs to look for partners (i.e., other companies or research institutions) that can help them develop new projects when they lack internal capacities or resources. Most often, the universities develop research for these companies and support SMEs with their knowledge and research. More than half of the respondents consider that it is common for universities to develop research for companies. This demonstrates the important role that universities play in supporting the business environment.

From the respondents' answers to the question regarding the collaboration between business environment with other organisations, we concluded that few companies wish to collaborate with others in order to develop new solutions or to solve specific problems. The system itself, the lack of experience in the field of research and development management and also the competitive market, made those who do not (want to) collaborate with other organisations become 'individualists'. Also, in supporting the development of this non-collaborative behaviour comes the fear of not losing the position in the market. We cannot fail to notice that almost 8.5% of the respondents do not want to collaborate at all.

Various studies and surveys (Munari & Sobrero, 2005; Stan, 1995) emphasize that with the privatization in Romania, many companies have lost their research structures. As our respondents pointed out, when developing new projects, their companies mainly orient towards specialized research / design companies. However, lately, through the implementation of fiscal policies at national level and through government funding programmes for innovation, based on contractual collaborations, some universities started developing research for private companies.

The participants in the study declared that most common way to support private companies by universities is through providing them qualified Human Resources and very rarely through the collaboration in development of projects / products. Frequently, in geographic areas where strong university centres exist, the percentage of universities that offer support to SMEs is higher. This shows us that where is openness on behalf of companies and universities to collaborate, an important factor is the management, both private and university.

According to the answers provided by all 59 respondents, the biggest fear in initiating and continuing collaborations within the business environment, is the lack of efficient communication skills. Most private companies and government organizations focus mainly on qualified Human Resources in their field of activity, often ignoring the role of a person with communication skills, preferring executive staff (more than 55% of the respondents have provided us this answer).

47% of our respondents believe that different working cultures across organisations help to develop new solutions or ideas, while approx. 33% of the respondents emphasized that the differences of opinions and ideas do not allow the efficient development of projects.

It is pleasantly surprising that we did not find among the first options selected by approx. one third of the respondents (27%) regarding the main obstacles to collaboration in scope of innovation, the fear of intellectual property theft and the lack of respect for confidentiality. On the contrary, these obstacles are on the last place in the respondents' options.

The top identified obstacles in collaborating for innovative purposes expressed by respondents are:

- lack of ability of organizations with different organizational backgrounds to effectively communicate (55%) (i.e., public-private, business-academia governmental support organizations; high-tech/low-tech/no-tech companies);
- lack of knowledge on how to establish collaboration or find external help to jointly develop new solutions or ideas (47%);
- different working cultures across organizations, which do not allow to efficiently develop projects beyond organizational borders (47%).

Very different quality standards and procedures within organizations or fear of collaborating with other organizations due to possible misconduct of partners make joint work highly difficult (33%).

Regarding the level of recognition for relevance of Open Innovation and the OI-related competencies (Section 3 of the research questionnaire), all respondents specified that is 'very important' or 'extremely important' for organizations in their region to increase collaboration, because the engaging in partnerships (with other companies or research institutions) would allow SMEs to better (faster/more accurate) respond to changing needs of their customers.

Findings on the criteria according to which companies choose an employee or the skills an employee must have for professional progress, showed us that strong communication skills (100%), the ability to collaborate with people with different kind of expertise or the willingness to work across various projects (90%) are the main abilities/criteria for a person to find a job. The initiative (proactively look for new ideas), the ability to effectively adapt to the need to take over new tasks or clearly communicate their ideas for possible improvements within the company (95%) are essential for an employee's chance for professional progress.

If respondents' views on how important it is for their organizations to increase their collaborations are divided almost equally between 'very important' (42%) and 'extremely important' (54%), only 35% have strongly agreed that engaging in partnerships would help SMEs more easily find a solution to adapt to customer needs.

When it comes to employees' ability to grow professionally or find a new job, only 31% of the respondents appreciated that the persons envisaged need to have 'openness to learn new things initially not related with taken job post' and respectively 'strong communication skills'. This low result reinforces the result of Section 2 of the research questionnaire regarding the lack of specialized communication staff and shows us the need of the companies surveyed to attract this kind of people with high communication skills.

In a normal logic, it is not surprising that people who do not offer openness to collaborations or who do not have the ability to establish connections in order to work on different projects are not appreciated by HR managers and are not looked for when SMEs search to hire new people.

Regarding the perceived level of OI competencies (Section 4 of the research questionnaire), among the current workforce in Romania, the follows skills are 'very common' or 'extremely common' according to opinions expressed by our respondents: adaptability and flexibility (76%), good communication (68%) and networking skills (56%), ability to work with different professional communities and to effectively share knowledge and ideas internally or externally (30,5%).

The respondents have also opined that in Romania, most of the employees have poor abilities to collaborate with people from different types of organizations (39%), have good capacities to collaborate with people with different kind of expertise (44%), are effectively adapted to the need to take over new tasks within the company and could work across various projects (44%). Some of them are open to learn new things initially not related with the job post that they have taken (58%) and they have good communication skills. Unfortunately, only a small part of the employees is proactively looking for new ideas (spotting new needs of customers or new market opportunities) (61%).

If we want to create the profile of qualifications and the field of experience for the current workforce, by analysing the results from our research questionnaire, the most required skills by employers are communication skills (as shown by 67% of the respondents who have chosen the options 'very common' or 'extremely common'). As a consequence, communication skills also lead to a better ability to effectively share knowledge and ideas. At the other end / pole, with only 49%, the least common requirements are those of adaptability and of working with different professional communities. This shows us that Human Resources are becoming more and more focused on very narrow areas.

People lose the 'versatility' of their abilities. The consequence of this lack of versatility is found in the quite high percentage of respondents (over 49%), who say that the Human Resource does not have the ability to work in multifunctional teams. The employees can't collaborate effectively to develop new products, ideas. All these weaknesses come from the lack of cultural awareness (over 61%).

In the opinion of the respondents, by being attentive only to the specific requirements of the job description, the employees of the companies do not collaborate with people with different types of expertise. Employees are open to learning new things that are not related to the job, they want to adapt to the need to take on new tasks within the company, but are not able to work on different projects (65%) or establish connections and to relate to other people from other companies / organizations (65%).

### **6.1. Limitations of the study**

The evolution of the economic situation during the COVID 19 pandemic it may have changed respondents' views on collaboration, with the questionnaire providing higher percentages of positive responses regarding SMEs' involvement in collaboration. Another limitation is that the sample we used was not representative at the level of Romania (but rational non-probabilistic) and a large size of the sample would have probably brought us more reliable findings. We will take this aspect into account within a future study.

## **7. Conclusions**

Although a growing number of Romanian companies have already adopted Open Innovation, there is need OI and OI competencies of their employees to be reinforced and extended to a larger scale, to better support the growth and development of SMEs and companies and help these adapt to the current competitive market. In terms of innovation in the business sector, Romania is an emerging innovator. Cooperation across SMEs exists but it did not reach yet the desired/necessary level. It is required that the collaboration across companies and between companies and other types of institutions to move to the next level and to enlarge. This collaboration should include the SMEs in need of innovation, universities, research institutes (offering innovative products), and also authorities with competencies in facilitating innovative processes. It is common for Romanian universities to conduct research for SMEs and support them with the knowledge and results of research, as well as to create private-public partnerships between industry and universities. The main obstacles of SMEs in collaborating for innovative purposes are: lack of ability of organizations with different organizational backgrounds to effectively communicate; lack of knowledge on how to establish collaboration or find external help to jointly develop new solutions or

ideas; different working cultures between organizations, which do not allow to efficiently develop projects across organizational borders; different quality standards and procedures within organizations or fear of collaborating with other organizations due to possible misconduct of partners make joint work highly difficult. The skills that are mandatory for employees for a higher Open Innovation of their companies are: communication skills, collaboration with people with different levels of expertise and the desire to work on several projects simultaneously. Initiative or proactivity, adaptability to take on new things and communicating ideas within companies, are essential skills for career advancement of employees in innovative companies.

Currently there is desire for collaboration of SMEs and it is quite frequently practiced, because they do not have the necessary funds and resources for research and development, but increasing SMEs' collaboration remains a key target in consolidating their Open Innovation.

Open Innovation and collaboration are necessary tools for SMEs to survive in the economy of the future.

## Acknowledgments

This work has been carried out within the project OPI (n.d.): “*Open Innovation Competences for Responding to Modern Economic Challenges*”, a KA2/ Strategic Partnership for Adult Education Project (ref. no. 2020-1-RO01-KA204-080196), financially supported by the European Commission through the Erasmus+ Programme. The project coordinator is Universitatea din Piteşti (RO) and the partners are: E&D Knowledge Consulting, LDA (PT); Asociación Valencia Inno Hub (ES); Stowarzyszenie Centrum Wspierania Edukacji I Przedsiębiorczosci (PL) and Warp Innovation OG (AT).

## References

- Bigliardi, B., Ferraro, G., Filippelli, S., & Galati, F. (2021). The past, present and future of open innovation. *European Journal of Innovation Management*, 24(4), 1130-1161. <https://doi.org/10.1108/EJIM-10-2019-0296>
- Cedefop. (2019). 2018 European skills index. Luxembourg: Publications Office of the European Union. *Cedefop reference series, 111*. <http://data.europa.eu/doi/10.2801/564143>
- Dabrowska, J., & Podmetina, D. (2014). Identification of competences for open innovation. *XXV ISPIM Conference – Innovation for Sustainable Economy and Society*.
- Dahlander, L., Gann, D. M., & Wallin, M. W. (2021). How open is innovation? A retrospective and ideas forward. *Research Policy*, 50(4), 104218. <https://doi.org/10.1016/j.respol.2021.104218>
- European Innovation Scoreboard. (EIS). (2020). *European Commission*. [https://ec.europa.eu/commission/presscorner/detail/en/QANDA\\_20\\_1150](https://ec.europa.eu/commission/presscorner/detail/en/QANDA_20_1150)
- Grzeszczak, M., & Posadzińska, I. (2019). Innovative Activity of Small and Medium-Sized Enterprises in Poland and Selected EU Countries. *Scientific Papers of Silesian University of Technology, Organization and Management*, Series No, 139, 153-167.
- Lassen, A. H., & Laugen, B. T. (2017). Open innovation: on the influence of internal and external collaboration on degree of newness. *Business Process Management Journal*, 23(6), 1129-1143. <https://doi.org/10.1108/BPMJ-10-2016-0212>
- Lichtenthaler, U. (2011). Open Innovation: Past Research, Current Debates, and Future Directions. *Academy of Management Perspectives*, 25(1), 75–93. <http://www.jstor.org/stable/23045037>
- Munari, F., & Sobrero, M. (2005). The Effects of Privatization on R&D Investments and Patent Productivity. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.331721>



- OECD. (2018). Policy Note “Promoting innovation in established SMEs”, *SME Ministerial Conference*, 22-23 February 2018, Mexico City. <https://www.oecd.org/cfe/smes/ministerial/documents/2018-SME-Ministerial-Conference-Parallel-Session-4.pdf>
- Open Innovation Competences. (OPI). (n.d.). Erasmus+ Project. *Open Innovation Competences for Responding to Modern Economic Challenges*. Ref. no.: 2020-1-RO01-KA204-080196. [www.opi-project.eu](http://www.opi-project.eu)
- Rens, T., & Rathelot, R. (2017). Rethinking the skills gap. *IZA World of Labor*, Institute of Labor Economics (IZA), 391-391.
- Schuhmacher, A., Gassmann, O., McCracken, N., & Hinder, M. (2018). Open innovation and external sources of innovation. An opportunity to fuel the R&D pipeline and enhance decision making? *Journal of Translational Medicine*, 16(1). <https://doi.org/10.1186/s12967-018-1499-2>
- Stan, L. (1995). Romanian privatization: Assessment of the first five years. *Communist and Post-Communist Studies*, 28(4), 427-435. [https://doi.org/10.1016/0967-067x\(95\)00022-m](https://doi.org/10.1016/0967-067x(95)00022-m)
- Vanhaverbeke, W. (2017). *Managing Open Innovation in SMEs*. Cambridge University Press. <https://doi.org/10.1017/9781139680981>
- Velev, M., & Takov, B. (2021). Innovative Activity of Small and Medium- Sized Enterprises, Economic Alternatives. *University of National and World Economy, Sofia, Bulgaria, issue 4*, 580-608.
- West, J., & Bogers, M. (2014). Leveraging External Sources of Innovation: A Review of Research on Open Innovation: Leveraging External Sources of Innovation. *Journal of Product Innovation Management*, 31(4), 814-831. <https://doi.org/10.1111/jpim.12125>
- West, J., Salter, A., Vanhaverbeke, W., & Chesbrough, H. (2014). Open Innovation: The Next Decade. *Research Policy*, 43(5), 805-811. <https://doi.org/10.1016/j.respol.2014.03.001>