OPI Report regarding open innovation competencies in Europe

Author
Ewa Kopczynska (E&D Knowledge Consulting, Lda.)

Contributors:
E&D Knowledge Conculting Lda. (Portugal)
University of Pitesti (Romania)
Inno Hub Valencia (Spain)
CWEP (Poland)
Warp Innovation (Austria)

OPI Project. Reference nr:

2020-1-RO01-KA204-080196

Co-funded by the Erasmus+ Programme of the European Union

Title and acronym: Open Innovation Competences for Responding to Modern Economic Challenges [OPI]

Project type: Erasmus+ KA2 Project, Strategic Partnership for Adult Education

Ref. no.: 2020-1-RO01-KA204-080196

Coordinator: University of Pitești, Romania

Duration: 01/11/2020 to 31/10/2022

Total project grant: 218,081 Euro

Project Website: www.opi-project.eu

Deliverable Number & Name: IO1

Date of Delivery: 21-06-2021

Responsible partner: E&D Knowledge Consulting Lda.

Versions	Issue date	Stage	Contributor
1	21-04-2021	Preliminary report	Ewa Kopczynska
2	21-06-2021	Final report	Ewa Kopczynska Daniela Marta Maciej Markowicz Patricia Cosín Martínez Cezar Popescu Angelica Popescu Michael Dell Gabriela Plaiasu

Co-funded by the Erasmus+ Programme of the European Union

			Daniela Giosanu **Sorin Fianu** **Gabriela Fianu** **Smaranda Gavan**

Contents

OPI Project. Reference nr:

2020-1-RO01-KA204-080196

Co-funded by the
Erasmus+ Programme
of the European Union

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 (Rathelot & Rens 2017).

Shifts in technologies, business models and processes created demand for new competences lacking within the labor market until broad educational system effectively integrates it in curricula. With growing integration of the global market and the need for fast adaptation to changing customers' needs, companies decrease their demand for workers performing routine tasks. Instead, to survive and grow they require employees with new innovation- and future-oriented profile that could contribute to their ability to rapidly respond to market challenges. With the common inability of educational systems to rapidly adapt to the changing requirements of the labour market, in EU, business increasingly struggles to hire competent human resources. 40% (Cedefop 2018) to 77% (EIBIS 2018) of employers' struggle to fill vacancies. Such situation is attributed to lack of candidates with relevant hard, as well as soft skills and lack of relevant previous work experience (Manpower 2017). Within this environment innovation-oriented competencies are becoming critical not only for employability of job candidates, but also for overall economies to be able to successfully compete and flourish within global economy.

To support ability of Europeans and EU companies (especially SMEs) to engage in the modern innovation-based economy, OPI project aims to provide modern tools for development of skills of human resources to contribute to open innovation and competencies of HR specialists to support employees and job candidates in development of required skills. To efficiently respond to this challenge specific and considering the lack of relevant data in the scope of open innovation competencies level across Europe, the OPI partnership covering partners from Romania, Portugal, Spain, Poland and Austria has develop a specific research methodology to be implemented in the 5 countries with the view to gather the necessary to develop a target-group-sensitive knowledge base or the requalification study. With the OPI project highly practical objectives in mind and the Competence Model for Open Innovation as the main theoretical framework the OPI research has looked to understand:

Q1/ What is the intensity of OI processes requiring competencies addressed by OPI?

Q2/ What is the level of recognition for OI competencies among managers and HR professionals?

Co-funded by the Erasmus+ Programme of the European Union

Q3/ What is the level of OI competencies among employees?

The OPI project research phase covered 2 simultaneous research activities to be conducted independently by each partner of the OPI partnership in its country– i/ the desk research aiming to gather state of the art regarding Q1, as well as attempt to identify local sources of information related with Q2 and Q3 and ii/ structured questionnaire research to gather answers to all 3 research questions, with the view to gather cross-sectional information from across the 5 beforementioned countries. The presented OPI research report is a result of combining studies from the 5 countries of the OPI partnership.

Following the OPI research methodology, the following section 2 of this document presents context of open innovation in each of the analysed countries resulting from performed desk research. Further section 3 presents the results of empirical research regarding open innovation processes and competencies across the 5 participating countries, followed by experts perspective (section 4) and conclusions in section 5.

Considering the specific objective of the report as a source of information for development of Methodology and mechanism for building HR staff competencies to support OI competencies development (IO2), OPI development program methodology and contents (IO4), the report is completed with 2 Annexes, Annex1 – Recommendations and parameters for development of Methodology and mechanism for building HR staff competencies to support OI competencies development (IO2), and Annex 2 – Recommendations and parameters for development of OPI development program methodology and contents (IO4).

2. Open innovation in the partnering countries

The OPI project is being implemented across 5 countries with significant differences in innovativeness and its national innovation systems. With Austria and Portugal representing, in the European context, the strong innovators group, Poland and Spain the moderate innovators and Romania, the modest innovator, with innovation performance at the lowest level among EU countries (European Innovation Scoreboard 2020). The countries differ regarding innovation level, economic environment and national innovation systems. That results in the countries different current dependence from knowledge workers with Austria 41.9% of knowledge intensive employment, Poland 39.5%, Portugal 35.8%, Spain 33.3% and Romania 23.3% (WIPO 2020) and their further potential to upskill staff commonly engaged in traditional routine work toward more knowledge-oriented activities.

Co-funded by the Erasmus+ Programme of the European Union

2.1. Austrian open innovation context

Austria represents a group of strong innovators in European context. Following the Community Innovation Survey and Statistik Austria, 62% of Austrian enterprises are engaged in innovation activities. Those activities are especially related with process innovation, while product innovation is conducted in roughly 30% of firms. Those types of innovation occur commonly in large enterprises, while SMEs are lagging. Interestingly, the gap between SMEs and large companies is significantly smaller in case of business innovation activities, which are performed by 55% of Austrian enterprises (WKO 2018). Despite common interest in innovation, weakness of Austrian innovation lies in efficiency of its exploitation. Especially academic sector lags behind international average regarding research exploitation. Moreover, startups are facing barriers to innovation related with insufficient innovativeness of founders, high bureaucracy, restrictive and complicated regulations and lack of early-stage venture capital (Garzik, 2017). The barriers are partially mediated by widespread and high-quality public funding schemes for start-ups. Moreover, public bodies are proactively engaged in support for Austrian innovation and especially in showcasing innovative achievements.

Austria is one of the first countries in the EU to implement an Open Innovation Strategy. However, as per Federal Austrian Economic Chamber report 2019, roughly 1% of Austrian companies declared their active collaboration in innovation. In this group majority of collaboration occurs with University and research centers (61%), private consultants and laboratories (55%), supply chain partners (49%), companies inside own group (47%), customers (34%) and public bodies (26%) (WKO, 2019). Despite collaboration is more typical for large companies and occurs in majority within technological sectors, European Innovation Scoreboard 2020 underlines that SMEs collaboration is one of the strengths of Austrian innovation system, in relation to other EU countries. Meanwhile, collaboration in low and no-tech sectors are aspects requiring improvements.

While Austria has strong participation of knowledge workers in the job force and strong life-long learning, the need for upskilling of employees for innovation, especially in SMEs has been recognized. Programs, such as funding from upper Austria region support 50% of expenses on upskilling of SMEs employees in the fields of digitalization, technology and innovation, underlying the critical role of HR innovation competencies for Austria growth strategy. Despite, doubling of unemployment since the beginning of Covid Pandemics, Austria still suffers significant shortages of some skills, especially in the field of digital transformation, innovation, sustainability, creativity and communication, and those shortages are expected to be increasing in the near future along with increase in the demand. Taking into account specific development directions of Austria, especially transdisciplinary collaboration with specialists from various fields is expected to be more relevant over the next years, as teamwork will become more cross-functional and collaboration processes more inter-organisational.

2.2. Portuguese open innovation context

Portugal represents a group of strong innovators in the European context. Following the Eurostat Community Survey 32,4% of Portuguese enterprises have been engaged in innovation activities between 2016 and 2018, with 28% of companies involved in process and 23% in product innovation. Large companies still remain the leader of innovation activities, with 61.5% of large enterprises engaged in innovative activities, 46.5% of medium and 29.2% of small firms. While Portugal still needs a lot of improvements in the innovativeness area, highly relevant step is increasing recognition among Portuguese managers that implementing continues innovation as a pilar of its strategy is important not only for company growth, but for its sustainability (Fernandes et al. 2017).

However, the innovative performance in Portugal is mainly based on a closed innovation model of in-house innovation. Such situation is typical for product as well as process innovation within the Portuguese companies. About 10.5% of Portuguese companies is engaged in cooperation and only 8.4% cooperates in the innovation area. Such cooperation happens more commonly among large enterprises. Cooperative innovation activities are especially implemented in 3 sectors in Portugal: ICT, financial and insurance sector and energy and water. Interestingly, there are significant regional differences in collaboration levels with regions Centro, Lisbon and Alentejo outperforming other regions in area of cooperation for innovation. On the negative note, in many critical for Portuguese economy sectors, such as i.e. tourism and hospitality, construction and real estate or agriculture collaboration is on a low level, 3.5%, 2.7% and 7.5% respectively.

Due to an impact of strong deviation in market demand on economic situation of Portugal, Portugal is currently strongly focusing on transforming its traditional labor-intensive based economy and open innovation is currently a part of strategic orientation of Portugal. However, open innovation remains in an embryonal stage with strong focus on fostering university-industry collaboration, leaving insufficient space for support of collaboration within the private sector, which might be more relevant in some sectors (Fernandes et al. 2017; Redacao aNoticia.pt 2020; CIS 2020). However, visibility and showcasing open innovation in Portugal results in increased recognition for potential of collaboration to support innovativeness of their organization. However, resistance and preference for in-house innovation is still high, with stronger willingness to collaborate in scope of process innovation rather than product innovation – where co-innovation is more associated with risks of exposure of profits and products (Fernandes, 2017).

Taking into account the increasing role of innovation in Portuguese business environment, skills embedded into open innovation competencies are recognized as highly relevant for employability, especially the ability of working in teams, leadership, communication skills, emotional intelligence, creativity and innovativeness (Castro 2018; Calado 2019). However, in majority those are applied within the internal context, as well as for networking purposes. To be able to take a full advantage of its open innovation potential Portugal needs to overcome its

major human resources barriers – 1/ low innovation management maturity requiring upskilling the executive level management to handle innovation challenges (Fernandes et al. 2017; Santos 2018)., 2/ large number of low skilled people with lack of basic required for innovation competencies (OECD 2018), 3/strong focus on hard/technological competencies within adult education with undervaluing 'soft' innovation-oriented competencies, especially critical for open innovation (OECD 2015), 4/ lack of proactive attitude, innovation mindset and potentially unrealistic beliefs related with individual innovativeness (GEM 2020).

2.3. Polish open innovation context

Poland represents a group of EU moderate innovators. Following Polish Central Statistical Office, in the period 2016-2018 only every fourth industrial enterprise and every fifth service enterprises have been engaged in some kind of innovation activities. Those activities mostly relate to process or product innovation. However, innovation and open innovation activities are more typical for large enterprises rather than SMEs, are especially led by ICT and fintech industry and a few industrial clusters – especially Cracow and Warsaw. However, Poland is facing significant barriers to open innovation related with lack of social capital and lack of trust in one another preventing Poles from effectively creating creative teams across all Polish industries and insufficient cooperation between industry and research and defective research system (Journal Business Insider 2020).

Despite existing in Poland barriers to open innovation, open innovation is not uncommon in Polish enterprises and has shown positive impact on financial performance of companies (Grabowska and Drygas, 2010). However, it is a model more commonly applied in incremental innovation. While open innovation activities are more typical in large enterprises, specific policy tools have been implemented to encourage SMEs engagement in open innovation, showing recognition of the relevance of OI model for growth of companies of all sizes. However, the weakness of the policy tools lies in their strong focus on strictly technological innovation. Next to financial policy measures to support open innovation, increasing number of clusters looks to foster collaborative approach to generating economic growth and innovation. Due to strong pool of technological competencies in Poland, especially in ICT sector, Polish employees are often familiar with collaborative models of products and process development. Their engagement in collaborative innovation often reaches beyond national boundaries, as companies based in Poland often provide outsourcing abroad. While up till now there is a strong focus on technological innovation in open innovation scope, increase in engagement of customers and employees in pro-innovative activities of firms is becoming a growing tendency showing that while open innovation is not yet a common approach there are signs of increasing openness of executives to external ideas and knowledge.

Current Covid pandemics has helped to overcome some issues with resistance to innovation and technology. However, to take full advantage of Polish innovative potential, and especially its role

in open innovation, a number of barriers related with lack of trust in other organisations/individuals and limited innovation and collaboration skills and knowledge (including also knowledge of English required for international collaboration) has to be overcame.

2.4. Spanish open innovation context

Spain represents the group of moderate innovators in the European context. Following Eurostat Innovation Community Survey 31.1% of Spanish enterprises is engaged in innovative activities. In majority, large enterprises drive Spanish innovativeness, with 68.1% engagement in innovative activities. Meanwhile, just 26.9% of SMEs are engaged in innovation. In general, most of innovative activities of Spanish enterprises are related with process innovation (23.8%), while just 14.6% of Spanish enterprises has engaged in product innovation. However, closed model of innovation is at the moment the common approach to innovation. Only 10.7% of companies engages in cooperative business activities. This number is in majority driven by large enterprises with 37.7% of large enterprises engaged in collaborative activities. Meanwhile, just 8.5% of SMEs engages with external partners in collaborative activities.

The existing level of open innovation is driven by big companies that offer private support for collaborative activities in such forms as private start-up accelerators owned by big companies as i.e. Telefonica, private technological centres (as i.e. by Repsol) or corporate venture capital funds to support innovative startups. Big companies drive open innovation performance in Spain through their leading role in innitiating collaborative activities within their vast collaborative networks with such external partners as universities, research centres and other companies.

Open innovation model, while being still rare, is more visible in a few industries, including ICT, energy and infrastructure sector or legal sector. Some of the strongest achievements related with adoption of open innovation can be observed in the legal sector, with the first startup accelerator created by a legal firm in Europe – Cuatrecasas Acelera and Garrigues Innovation Think Tank to help make knowledge related to legal profession available to all.

2.5. Romanian open innovation context

Romania represents a group of modest innovators at the European market with a strong need to catch up in the area of innovation to their European partners. Following the Eurostat Community Innovation Survey, only 14.6% of enterprises has been engaged in innovation activities between 2016 and 2018. Innovation is a part of strategy for 28% of large firms, while the number drops to 13.5% in case of small companies. Among the group of innovative companies, collaboration is relatively rare, but has significantly grown over the last few years. In the period 2014-2016, 17.9% of innovative companies has engaged in open innovation, while between 2016 and 2018 the

percentage increased already to 30.2% showing growing role of open innovation for overcoming innovativeness gap of Romania. The collaborative innovation activities are most commonly performed with engagement of suppliers (9.3%) and private sector customers (7.7%) and are more common within the service than within the industry sector.

Regarding innovation, as well as specifically open innovation activities, it is large enterprises that outperform SMEs. In general, common barriers to innovation in Romanian companies are related to difficulties in finding cooperation partners for innovation, problems with access to funding and high costs of innovation, as well as lack of qualified human resources. As a result, introduction of 'novelties' in Romanian companies is commonly limited to copying products from large companies. Following the European Innovation Scoreboard 2020, human resources, weak lifelong learning and SMEs innovation are the critical aspects of Romanian innovation system requiring improvements to close the innovation gap between Romania and the overall EU community. In this scope not only increase of innovation competencies of employees, but also of managers and leaders are an urgent need (Popescu, 2014).

In the context of open innovation education of executives is lacking as research shows that only 7.48% of entreprises recognises cooperation with others as a viable approach to undertake R&D activities (CNIPMMR, 2018).

However, studies of employers' recognition for relevant skills among job candidates suggests that at the entry level soft skills of high relevance for innovation and open innovation performance are considered as highly significant. Within a research performed by Hipo (2020) communication skills, flexibility and adaptability or proactivity has been defined among 5 most relevant skills for job candidates. However, ability to work well in a team or leadership skills have been considered as less relevant in the opinion of Romanian employers.

2.6. The cross-country perspective

The performed across 5 EU countries desk research shows that, despite strong disparities in the level of innovativeness and characteristics of national innovation system, there are common characteristics of the open innovation context across the partnering countries. In the first place, in the current innovation environment, large enterprises are the main players on open innovation arena. Despite the huge potential for SMEs competitiveness coming from open innovation – especially access to resources that SMEs do not possess individually, SMEs are usually just contributors/participants of open innovation lead by large organisations, rather than recipient of solutions catered for their business needs from open innovation. That is to a big extent due to growing, but still low recognition level for potential of open innovation as a pilar of SME innovation strategy. In many cases, the issue goes even further relating in many sectors with the lack of recognition for relevance of innovation for SMEs sustainability. In that scope, our research

suggests a strong need for education of not only employees, but also SMEs managers and the broad SME environment regarding relevance of open innovation approaches for their competitiveness.

Moreover, while the sectors differ between countries, open innovation is commonly aggregated in a few technology or knowledge intensive sectors, while low and no-tech intensive sectors rarely engage in collaborative activities in scope of innovation. Highlighting and encouraging open innovation in no/low tech SMEs seems specifically of high relevance in engaged countries not only due to their special needs for modernisation after the drop in demand along the Covid-19 pandemic, but also as, with exception of Austria, the private collaboration in non-technological area is not currently efficiently supported by public tools that will help non- and low-tech enterprises to overcome specific regional barriers to open innovation.

In general, open innovation is still at initial stage of development across the countries and faces broad number of barriers, from lack of awareness of open innovation strategies and abilities to integrate it in companies' strategies, through fear of exposure of profits and products during collaboration, to highly common lack of capable human resources to handle challenges of not only of open innovation, but of the in-house innovation as well. Interestingly, despite different innovativeness level, all countries are struggling with the need for improving innovativeness competencies of their human resources. Either in response to expected gap between skilful HR supply and growing demand for open innovation competencies (i.e. Austria) either due to low level of skills in the existing pool of human resources (i.e. Romania or Portugal). That concerns both executive and general staff.

Altogether, in all countries data that would analyse specific competencies for open innovation have not been identified. Partial data extracted from employers' surveys suggest that while such skills as ability to collaborate, communication skills, flexibility and adaptability or leadership skills are considered relevant, their application is commonly considered within a scope of internal activities and networking, rather than collaborative cross-organisational activities.

On a positive note, the tendency to engage in open innovation is growing across all analysed countries, for all company sizes. That trend is however driven by specific sectors such as i.e. ICT and Fintech in Poland or legal sector in Spain. Sectoral context suggests higher openness of the service sector to engage in open innovation. However, increasing visibility of open innovation in those sectors positively contribute to recognition for strategic relevance of open innovation and help to lower behavioural barriers to open innovation, such as lack of trust or lack of recognition for opportunities coming from open innovation.

3. Empirical study of open innovation activities and competencies

Simultaneously to the desk research to obtain up to date and project relevant information regarding the OI processes and OI competencies, a survey-based research has been performed in each country of the partnership. Following the OPI objectives, in each of the participating countries a structured survey has been distributed among HR related professionals. Minimum of 50 responses has been collected in each of the participating countries. To obtain a representative view of their recognition for OI competencies' relevance for the local market and assessment of available pool of OI competencies, 3 professional categories have been included into the study:

- HR specialists external to companies – within HR agencies, employment offices, NGOs engaged in employment and requalification support,
- HR specialists within companies,
- Managers within SMEs which as a part of their obligations perform HR functions.

Questionnaires have been distributed in national languages of the involved countries to ensure high inclusiveness of the research process.

3.1. Sample data

As a result of the research that took place between February and April 2021 in 5 partnership countries – Austria, Portugal, Poland, Spain and Romania, a sample of 267 responses with 264 considered valid have been obtained. In average, each country has been represented by 52.8 valid responses with a variability of the local samples between 48 to 59 responses per country included into analysis (see table 1). In general, the most represented group of respondents performs HR functions within SMEs, as internal HR specialists, either as managers covering HR activities within a broad scope of their professional activities – with a global number of 118 respondents (45% of the overall sample). Respondents performing HR functions in large enterprises represented 22% of the sample and respondents from external HR related organisations (employment and HR consultancies agencies and NGOs supporting employability issues) roughly 30%. The average HR experience differed between countries with the lowest average in case of Spain – 8 years and the highest – 16 years, in case of Poland (see table 1).

Country	Average HR experience	External HR	SME HR	Large companies HR	Other	Min. Age	Average Age	Max. Age	Valid responses	Total sample
Portugal	10 years	28%	50%	20%	2%	22	42	67	50	51
Austria	12 years	23%	44%	25%	8%	37	47	58	48	50
Spain	8 years	35%	33%	35%	0%	21	35	54	52	52
Poland	16 years	42%	55%	2%	2%	29	41	60	55	55
Romania	13 years	19%	42%	27%	12%	24	44	78	59	59

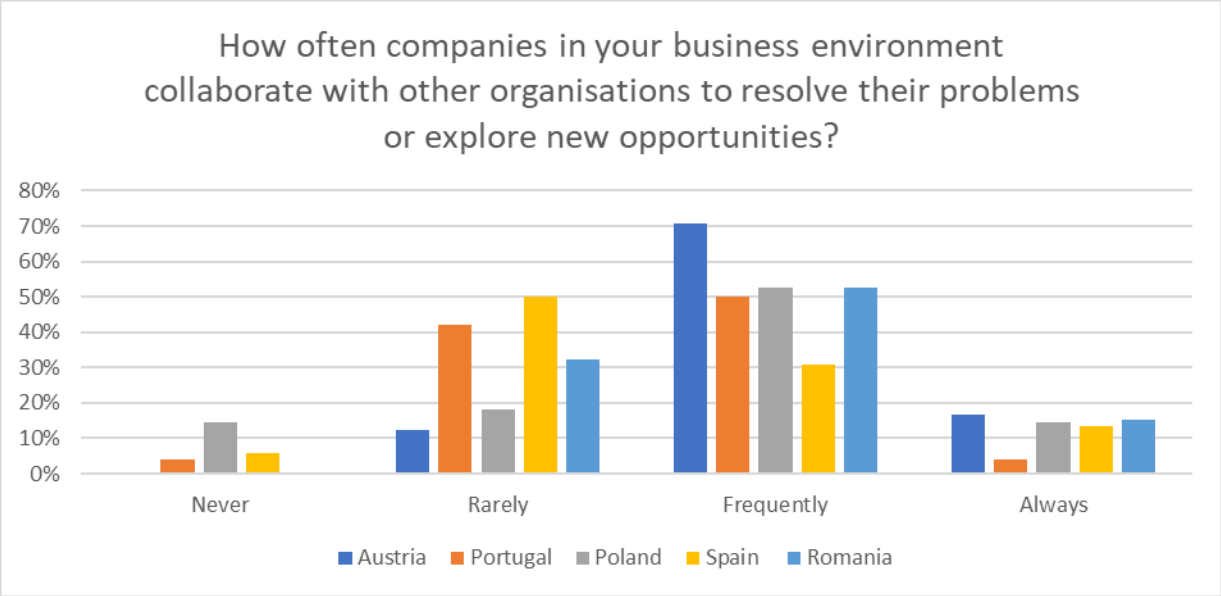
OPI Project. Reference nr:

2020-1-RO01-KA204-080196

Co-funded by the Erasmus+ Programme of the European Union

3.2. Intensity and relevance of open innovation processes

In the first place, the empirical study was looking to assess the need for open innovation competencies within included job markets by gathering information regarding intensity of open innovation processes, the recognition for the need to increase collaboration in the region and the barriers that could potentially obstruct effective development in open innovation area. Asked 'how often companies in your business environment collaborate with other organisations to resolve their problems or explore new opportunities?' the involved HR related professionals have assessed open innovation as frequent in all involved countries (see Figure 1). Non-surprisingly Austria has the highest assessment of open innovation activities, however second position of Romania in this category which has been followed by Poland (with 15% of respondents pointing on collaboration as a standard strategy to resolve problems and explore new opportunities, and 53% as frequent in both cases) were an unexpected result considering preceding data regarding Romanian and Polish innovation contexts. Spain (rarely 50%, frequent, 31%) and Portugal (rarely 42%, frequent 50%) placed in the middle of the sample.

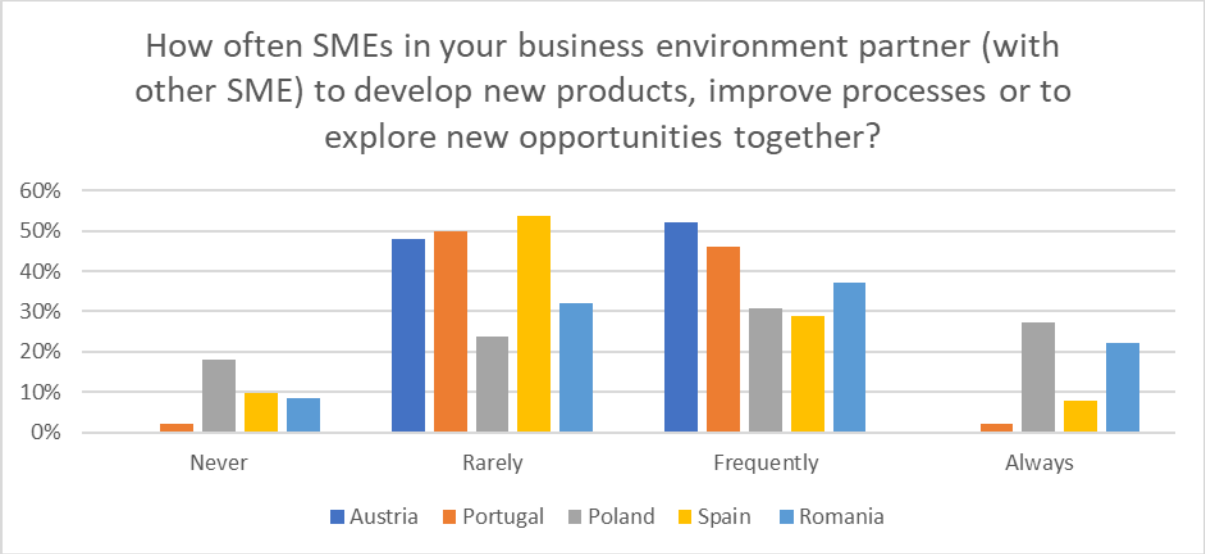


As expected in Austria, Portugal and Spain the perceived frequency of collaboration has dropped when referring strictly to SMEs. However, asked 'How often SMEs in your business environment partner (with other SME) to develop new products, improve processes or to explore new opportunities together (i.e. to develop new products, enter new markets or improve their current processes) respondents from Poland considered collaboration a standard strategy for 27% of SMEs and 31% evaluated it as frequent and from Romania 22% as standard and 37% as frequent (see Figure 2).

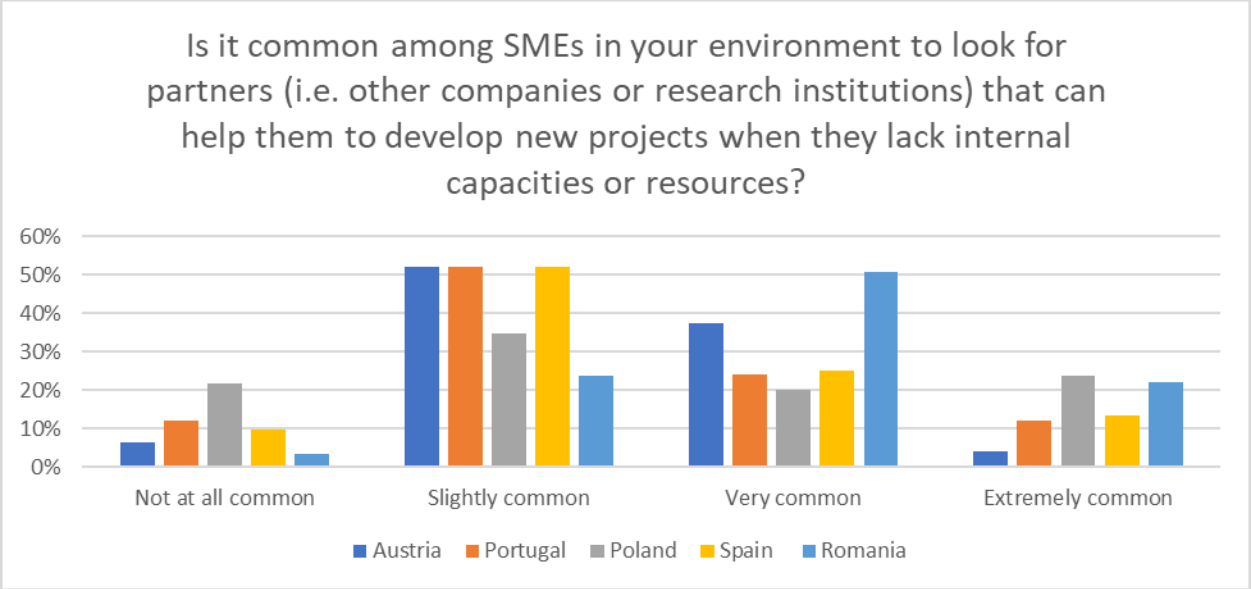
OPI Project. Reference nr:

2020-1-RO01-KA204-080196

Co-funded by the Erasmus+ Programme of the European Union



SMEs perceived interest in open innovation is especially reflected in Romania standing out as a country that according to respondents SMEs very often look to partner, while in more innovative countries Austria, Portugal, Spain, SMEs rarely look for partners for collaborative activities in the scope of innovative activities.

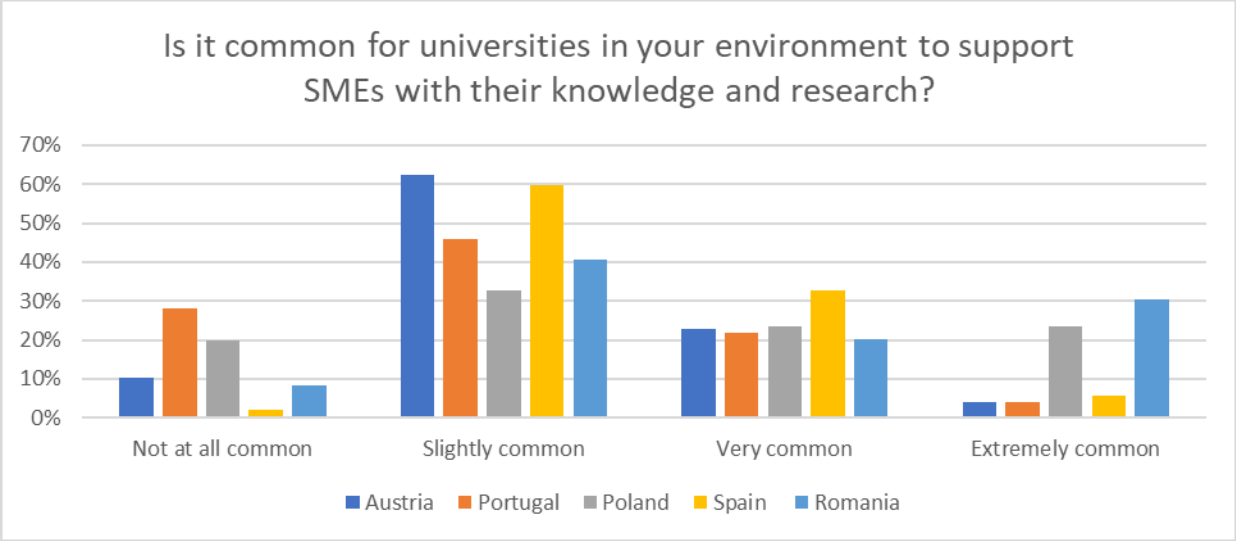


Also support of universities to SMEs have been considered to be most extensive in Romania, where academic support for SMEs is considered to be higher than in case of general population of companies. Meanwhile, perceived collaboration between academia and SMEs is considered as modest to moderate in case of strong innovators as Austria and Portugal, as well as Spain.

OPI Project. Reference nr:

2020-1-RO01-KA204-080196

Co-funded by the Erasmus+ Programme of the European Union



Despite significant differences in perceived occurrence of open innovation, significant majority of Austrian (88%), Portuguese (90%), Polish (75%) and Romanian (97%) respondents consider increasing collaboration in their region as very or extremely important. Meanwhile, Spanish respondents accredited significantly lower relevance to increase of collaboration with 6% considering it not at all important, 42% slightly important, 42% very important and just 10% extremely important. That corresponds to relatively lower recognition for importance of engaging SMEs in open innovation in Spain where 25% disagrees or strongly disagrees that engaging in partnerships (with other companies or research institutions) would allow SMEs in their region to better (faster/more accurate) respond to changing needs of their customers (Poland 11%, Austria 4%, Portugal and Romania 2%, each).

All types of innovation are commonly obstructed by each country's/region's specific barriers. But especially open model of innovation requiring cross-organisational coordination can be highly dependent from overcoming typical barriers to open innovation. Within the study respondents pointed several main barriers which relevance differed depending on a country of residence. 2 barriers that stand out as of high significance in majority of analysed countries are 'fear of collaborating with other organisations due to possible misconduct of partners', which is a universal barrier with relevance across all engaged countries and 'lack of other organisations opened to collaboration opportunities', which is especially relevant in Poland, Romania and Spain. However, the summary of 3 major barriers to collaborate (Table 2) in the scope of innovation shows that the participating countries differ in their specific obstacles to open innovation.

OPI Project. Reference nr:

2020-1-RO01-KA204-080196

Co-funded by the Erasmus+ Programme of the European Union

Table 2. Top 3 barriers to open innovation per country.

Austria	Lack of knowledge how to establish collaboration or find external help to jointly develop new solutions or ideas,
	Lack of ability of organisations with different organisational backgrounds (i.e. public-private, business-academia-governmental support organisations; high-tech/low-tech/no-tech companies) to effectively communicate,
	Fear of collaborating with other organisations due to possible misconduct of partners (i.e. theft of intellectual property, lack of respect for confidentiality etc.),
Portugal	Lack of ability of organisations with different organisational backgrounds (i.e. public-private, business-academia-governmental support organisations; high-tech/low-tech/no-tech companies) to effectively communicate,
	Lack of willingness of organisations to work on aligning their objectives to find a common ground for collaboration,
	Different working cultures between organisations, which does not allow to efficiently develop projects across organisational borders,
Poland	Lack of other organisations opened to collaboration opportunities,
	Fear of collaborating with other organisations due to possible misconduct of partners (i.e. theft of intellectual property, lack of respect for confidentiality etc.),
	Lack of willingness of organisations to work on aligning their objectives to find a common ground for collaboration,
Spain	Fear of collaborating with other organisations due to possible misconduct of partners (i.e. theft of intellectual property, lack of respect for confidentiality etc.),
	Different working cultures between organisations, which does not allow to efficiently develop projects across organisational borders,
	Lack of other organisations opened to collaboration opportunities,
Romania	Very different quality standards and procedures within organisations that make joint work highly difficult,
	Lack of other organisations opened to collaboration opportunities,
	Fear of collaborating with other organisations due to possible misconduct of partners (i.e. theft of intellectual property, lack of respect for confidentiality etc.),

3.3. Open innovation competencies

Recognition for relevance of open innovation skills among professionals performing HR functions in the participating in the study countries is relatively high. However, significant differences between countries can be spotted. Both Romania and Portugal present very high recognition for relevance of all mentioned in the study open innovation skills for current employability. As presented in the results in table 3, all 11 competencies have been considered as very important or extremely important by between 100 and 90% of respondents for Romania and between 100 and 84% of respondents in Portugal. In most knowledge-intensive job market of Austria, while all

OPI Project. Reference nr:

2020-1-RO01-KA204-080196

Co-funded by the Erasmus+ Programme of the European Union

skills were considered important by majority of respondents, the ability to work across various projects and to collaborate with people from different types of organizations (i.e. universities, public authorities or bigger/smaller companies), has been assessed as the least relevant. HR related professionals from Poland and Spain were the most skeptical regarding the relevance of the listed open innovation skills for employability of job candidates. In case of Poland ability to collaborate with 1/ people with different kind of expertise (across different disciplines, i.e. IT, economics, sociology, marketing etc.) and 2/ people from different types of organisations (i.e. universities, public authorities or bigger/smaller companies) have been considered as of significant relevance by less then 50% of respondents. Meanwhile, in Spain the ability to work across various projects have been consider of lower relevance with less than 50% of respondents considering it of high relevance.

OPI Project. Reference nr:

2020-1-RO01-KA204-080196

Co-funded by the Erasmus+ Programme of the European Union

Table 3. Relevance of open innovation skills for employability (by % of respondents considering each skill highly or extremely relevant)

Austria		Portugal		Poland		Spain		Romania	
strong communication skills	92%	ability to establish connection and communicate with people from different organisations (networking)	100%	openness to learn new things initially not related with taken job post	96%	strong communication skills	83%	collaborate with people with different kind of expertise (across different disciplines, i.e. IT, economics, sociology, marketing etc.)	100%
ability to establish connection and communicate with people from different organisations (networking)	90%	proactively look for new ideas (possible improvements, spotting new needs of customers or new market opportunities)	98%	strong communication skills	91%	collaborate with people with different kind of expertise (across different disciplines, i.e. IT, economics, sociology, marketing etc.)	77%	clearly communicate their ideas for possible improvements within the company	100%
effectively adapt to the need to take over new tasks within the company	88%	clearly communicate their ideas for possible improvements within the company	96%	clearly communicate their ideas for possible improvements within the company	91%	share knowledge with other colleagues	75%	strong communication skills	98%
collaborate with people with different kind of expertise (across different disciplines, i.e. IT, economics, sociology, marketing etc.)	88%	collaborate with people with different kind of expertise (across different disciplines, i.e. IT, economics, sociology, marketing etc.)	96%	share knowledge with other colleagues	87%	ability to establish connection and communicate with people from different organisations (networking)	75%	effectively adapt to the need to take over new tasks within the company	98%
proactively look for new ideas (possible improvements, spotting new needs of customers or new market opportunities)	88%	effectively adapt to the need to take over new tasks within the company	96%	proactively look for new ideas (possible improvements, spotting new needs of customers or new market opportunities)	80%	clearly communicate their ideas for possible improvements within the company	73%	openness to learn new things initially not related with taken job post	97%
collaborate with people working in diversified functions (i.e. across production, purchasing, marketing, logistics, finance, management)	85%	openness to learn new things initially not related with taken job post	94%	work across various projects	75%	proactively look for new ideas (possible improvements, spotting new needs of customers or new market opportunities)	73%	proactively look for new ideas (possible improvements, spotting new needs of customers or new market opportunities)	95%
clearly communicate their ideas for possible improvements within the company	85%	collaborate with people working in diversified functions (i.e. across production, purchasing, marketing, logistics, finance, management)	94%	effectively adapt to the need to take over new tasks within the company	58%	effectively adapt to the need to take over new tasks within the company	71%	share knowledge with other colleagues	95%

OPI Project. Reference nr:

2020-1-RO01-KA204-080196

share knowledge with other colleagues	79%	strong communication skills	94%	ability to establish connection and communicate with people from different organisations (networking)	56%	collaborate with people working in diversified functions (i.e. across production, purchasing, marketing, logistics, finance, management)	63%	work across various projects	95%
openness to learn new things initially not related with taken job post	77%	share knowledge with other colleagues	92%	collaborate with people working in diversified functions (i.e. across production, purchasing, marketing, logistics, finance, management)	56%	openness to learn new things initially not related with taken job post	60%	collaborate with people working in diversified functions (i.e. across production, purchasing, marketing, logistics, finance, management)	93%
work across various projects	63%	collaborate with people from different types of organisations (i.e. universities, public authorities or bigger/smaller companies)	86%	collaborate with people with different kind of expertise (across different disciplines, i.e. IT, economics, sociology, marketing etc.)	40%	collaborate with people from different types of organisations (i.e. universities, public authorities or bigger/smaller companies)	60%	collaborate with people from different types of organisations (i.e. universities, public authorities or bigger/smaller companies)	92%
collaborate with people from different types of organisations (i.e. universities, public authorities or bigger/smaller companies)	60%	work across various projects	84%	collaborate with people from different types of organisations (i.e. universities, public authorities or bigger/smaller companies)	36%	work across various projects	48%	ability to establish connection and communicate with people from different organisations (networking)	90%

OPI Project. Reference nr:

2020-1-RO01-KA204-080196

While countries respondents had differed in evaluation of relevance of skills for employability the consolidated data underlines importance of all listed skills, but with primary importance of communication skills, ideation skills and ability to communicate ideas for improvements within a company, ability to share knowledge with colleagues and openness to learn new things, initially not related with the undertaken job post.

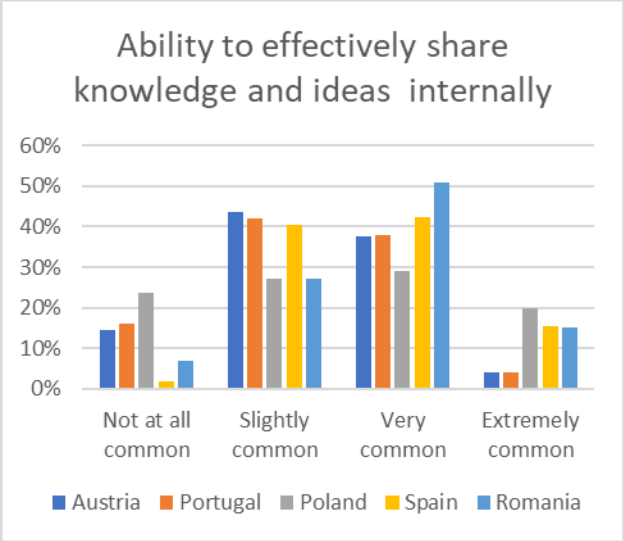
Despite a strong political pressure on collaboration between different types of organisations across EU the ability to collaborate with people from different types of organisations (i.e. universities, public authorities or bigger/smaller companies) is considered as the least relevant.

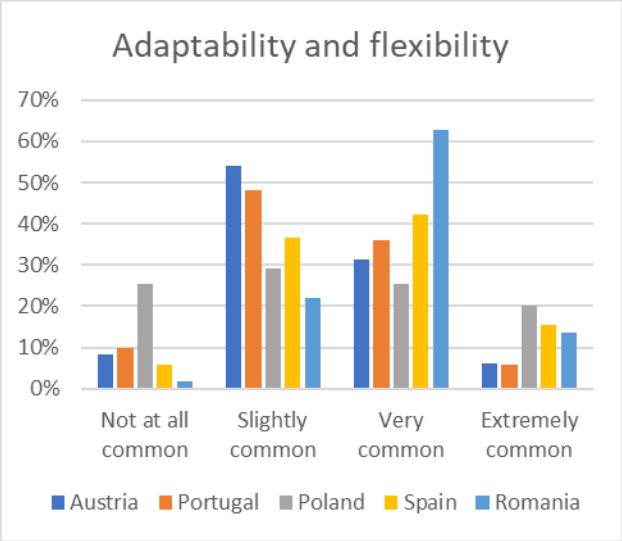
	Skill
92%	strong communication skills
89%	clearly communicate their ideas for possible improvements within the company
87%	proactively look for new ideas (possible improvements, spotting new needs of customers or new market opportunities)
86%	share knowledge with other colleagues
85%	openness to learn new things initially not related with taken job post
82%	ability to establish connection and communicate with people from different organisations (networking)
82%	effectively adapt to the need to take over new tasks within the company
80%	collaborate with people with different kind of expertise (across different disciplines, i.e. IT, economics, sociology, marketing etc.)
78%	collaborate with people working in diversified functions (i.e. across production, purchasing, marketing, logistics, finance, management)
73%	work across various projects
67%	collaborate with people from different types of organisations (i.e. universities, public authorities or bigger/smaller companies)

While all the skills are considered relevant by HR related professionals, not all of them are currently easily available to employers within the available at the job market pool of employees/candidates. Availability of such skills commonly differs between countries and regions. The research results show that deficit of open innovation skills is especially recognized on the Austrian job market, where all the 10 analysed skills are considered rare or very rare. On the Austrian job market only the ability to effectively share knowledge and ideas internally within organization and networking skills were assessed as easily available by significant share of respondents, 42% and 46% respectively.

Ability to effectively share knowledge and ideas internally within organization, as well as adaptability and flexibility were assessed as the least problematic to find within the 5 analysed

countries. However, they are considered by majority easy to find among human resources only in Romania and Spain. In those countries also the average level of ability to share knowledge with other colleagues and communicate ideas for improvements internally is considered good or excellent, while in the remaining countries it is considered of lower quality.





Majority of Romanian and Spanish respondents also assessed availability of ability to manage collaboration between different organisations and effectively share knowledge and ideas externally as high. Those skills are however rarely available in Austria and Portugal. Meanwhile, in Poland the ability to effectively share knowledge and ideas externally has been assessed as easily available by 44% of respondents, however the ability to manage collaboration between different organisations is evaluated as rare with only 13% of respondents considering it easy to obtain within the current pool of human resources in Poland.

OPI Project. Reference nr:

2020-1-RO01-KA204-080196

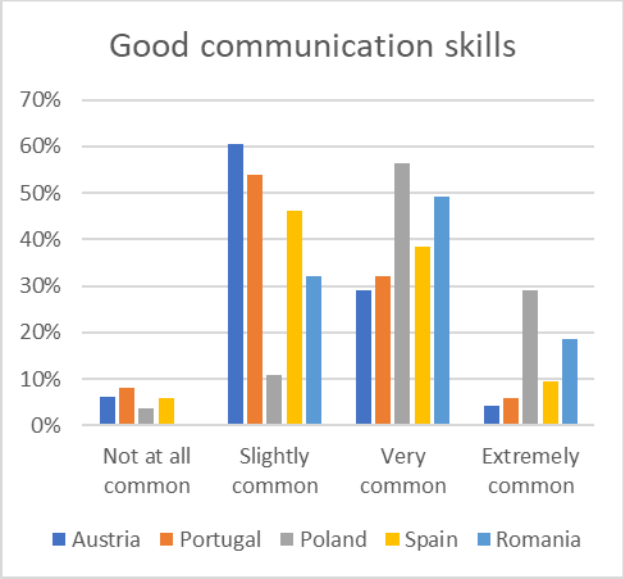
Co-funded by the Erasmus+ Programme of the European Union

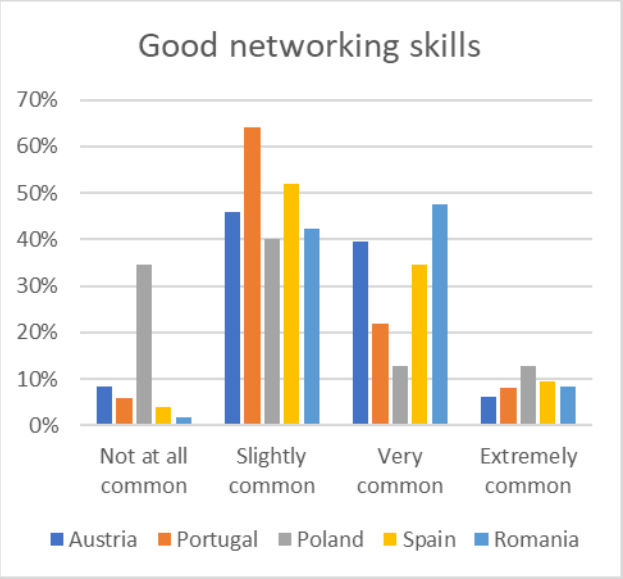
The cross-country results of OPI research suggest that Polish human resources stand out within the sample as strong communicators with roughly 85% of respondents assessing good communication skills as very common or extremely common within the job market. The communication skills are also common within Romanian job market and in a moderate supply in Spain. Meanwhile, similarly to majority of open innovation skills, there is deficit of human resources with good communication skills in Austria. Interestingly, while communication skills are considered relatively rare in Austria, the networking skills are considered as very or extremely common by 46% of respondents. Results suggest that there is a good supply of networking skills in Romania and moderate in Spain. From the other side the strong communication skills in Poland do not translate to networking skills, which are considered rare. While availability of the communication and networking skills differs, majority of the countries' respondents considers the available communication and networking skills of good or excellent quality, with low quality reported by majority of respondents only in Portugal.

OPI Project. Reference nr:

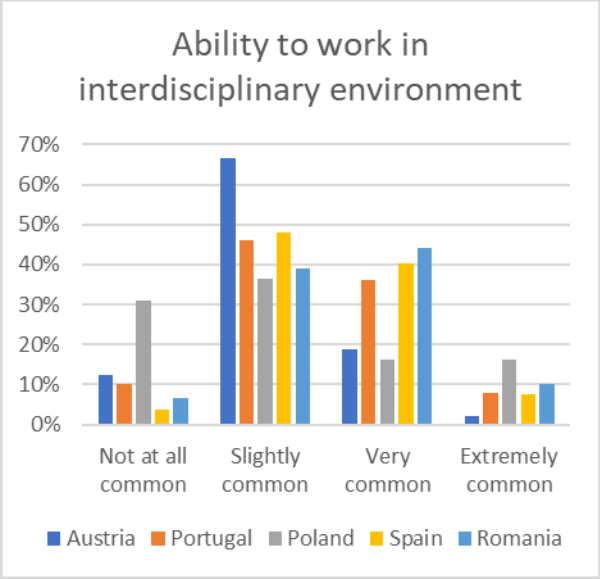
2020-1-RO01-KA204-080196

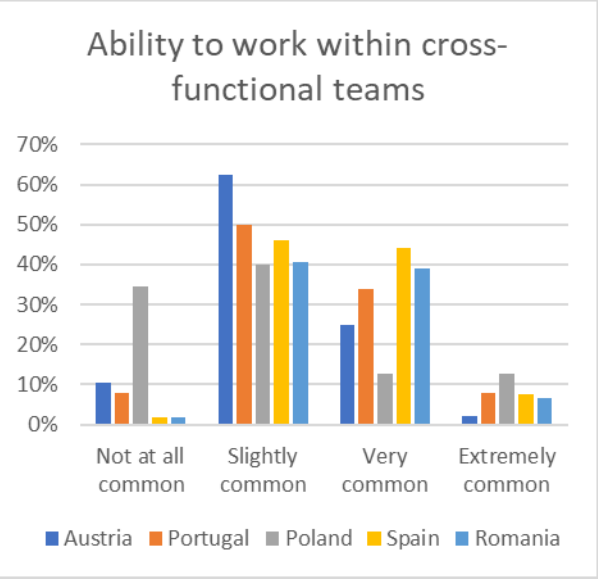
Co-funded by the Erasmus+ Programme of the European Union





Regarding abilities to work with different groups, the access to ability to work in cross-functional teams and in multidisciplinary environment was to moderate level acknowledge in Portugal, Spain and Romania. Meanwhile respondents from Poland and Austria reported significant deficit of such abilities in their job markets. However, job markets across all those countries seem to struggle with access to human resources with the ability to work with different professional communities. Such ability is considered in a moderate supply only on the Romanian job market. Meanwhile especially, Austria, Portugal and Poland point on lack of such competencies within the human resources pools in their countries.



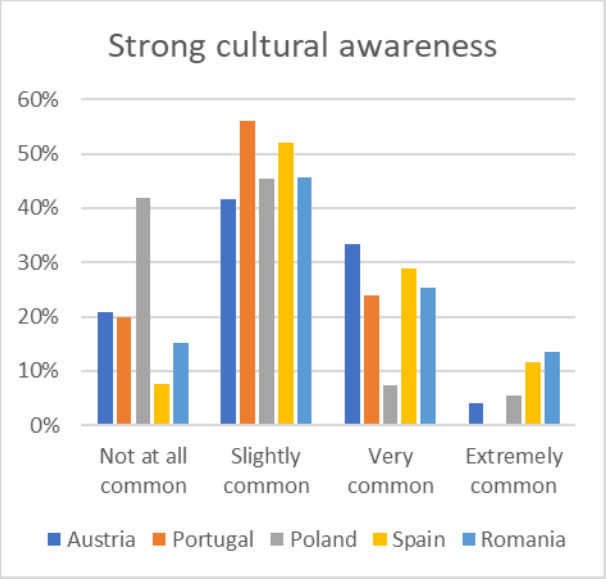


OPI Project. Reference nr:

2020-1-RO01-KA204-080196

Co-funded by the Erasmus+ Programme of the European Union

The most common deficit in skills within the job market has been reported however in case of cultural awareness with especially low cultural awareness considered in Poland and poor availability of such competence across all 5 countries.



4. Expert phase

Following the development of preliminary report based on the two-stage research (desk research and the survey-based research), OPI findings were presented to experts in the 5 engaged countries to discuss the outcome and especially the identified distortion between the field research and previously existing data. In each country 2 experts – 1. - business/industry sector expert (i.e. SME support organisation, cluster etc.), and 2. - HR sector expert (i.e. from employment office/HR agency/experienced company HR specialist). The exception was Portugal where due to high interest in participation 2 experts in each category have been engaged, and Austria where due to one of the experts wishing to remain anonymous, an additional expert has been invited to provide feedback.

In Portuguese context, experts generally agreed with the presented results. However, one of the industrial experts underlined that the results could vary if the research was conducted accounting for specific regions. Industrial, as well as HR experts agreed that the general recognition for the need to work together is visible in a professional context in Portugal and it is highly positive change. Especially, crises, first, the one in 2009 and the current one are improving the willingness to work together and to adapt for engagement in innovation and collaboration. However, there is a need for shift in the general business culture. According to Ana Coelho, Head of the HR department at Anywind, Portuguese still associate collaboration with exposure, and not only due to information exposure, but also considering looking for external support as a sign of weakness.

There is a general agreement among the Portuguese experts that the current not oriented toward open communication culture i.e. limited communication between departments, as well as with outside, is obstructing performance within organisations. Moreover, it is not allowing to fully benefit from those relevant skills that candidates and employees are developing. Paulo Sousa, Executive Manager at the Industrial Association of the Viseu Region underlined that especially enhancing collaboration between universities and companies is relevant in Portuguese context.

In general, the Portuguese experts agree that the communication and networking is a key. But that they should be approached in a broad scope with a strong attention to building a culture of sharing which would include not only networking with external agents. It should also include networking within the organization and the ability to effectively share ideas within organization, across departments and hierarchical levels, communicating them bottom up, as well as externally. That should include the ability to give and receive feedback which is often missing. In this scope, especially communication of employees with top management in both directions, have been underlined as a relevant point to include.

Regarding the assessment of level of open innovation skills in Portugal below such countries as Romania and Poland, which are significantly less developed regarding innovation ecosystem, two of the experts pointed out the cultural aspect of Portuguese society - '…people don't realise how good we are', 'Portuguese always feel that others do better'. However, in context of HR specialists, engaged expert which asked to remain anonymous admits that among HR sector in Portugal understanding of open innovation and needs of the companies is not common, hence the ability to identify and guide candidates able to proactively support open innovation in SMEs is limited. Also Mr. Sousa expressed concern regarding readiness of the HR to engage in open innovation upskilling, pointing out that innovation competencies should be established before open innovation competencies.

The Austrian respondents also underlined that the main issue is that the awareness of the topic of open innovation is still very low, which can impact the research results, as well as be a challenge for reaching the OPI project objectives. Claudia Scarimbolo from the Austrian Federal Economic Chamber has pointed out that strategic focus of companies is influenced by trends and, in Austria, fashion for involvement in open innovation passed a few years ago and currently the strategic focus is on survival and resilience. But the expectation is that the next wave will be 'the sustainable innovation – which probably might increase the importance of collaboration and open innovation again'. S.K., a specialist from a bank sector that wishes to remain anonymous, suggests that segmentation of companies, into those for each innovation is actually relevant and those for which not, should be accounted for. It does not mean that we should focus just on innovative sectors. We also need to make sure that less innovative sectors, such as traditional craft, some subsectors of tourism or personal services 'do not fall behind, overseeing the necessary changes in their businesses and adapt quickly'.

Co-funded by the Erasmus+ Programme of the European Union

Regarding the open innovation competencies, the respondents draw attention to the fact that pandemic had a significant impact on the realistic supply and level of many skills required for open innovation competence, especially social skills, sharing knowledge and ideas, communications skills, among others, were impacted by isolation and the transition of physical distancing to realistic 'social distancing' and boosting the focus on self-interest and "selfishness of a small group". That is an additional challenge next to the key open innovation barriers, lack of awareness, the lack of knowledge how to establish collaboration or find external help to jointly develop ideas and the lack of ability of organisations with different organisational backgrounds to effectively communicate.

Regarding the cross-border aspect the respondents underlined that it is very important for the overall community to make sure that those regions that are falling behind in education, digital literacy, openness for entrepreneurship and innovativeness, catch up. Austrian respondents offered a range of suggestions regarding how to respond to the needs of target groups regarding building their competencies for open innovation. They especially underlined the need to translate the knowledge into SMEs language, but avoiding being banal, or, even worse, childish. Claudia Scarimbolo underlined that often SMEs just do things without giving their processes the "right academic names" – they do innovation, but do not call it innovation as it is integrated part of their daily business, they have innovation processes which are part of their daily business but not called in example "innovation circle". Their open innovation is also often quite informal (e.g. at the winemakers' table in the country side). The training should bring lots of good practice examples from SMEs, discussion panels and success stories. It should be based on e-learning with short learning units to keep the attention, but should also integrate presence learning units and activities aiming at increasing awareness through webinars and physical meet-ups. Low entry barriers should be ensured. They suggested that it would be of relevance to include training in the area for the entrepreneurs and SME owners and managers and that the impact could be improved if the contents were integrated as a module of other trainings, which are by default 'easier to sell' to the target group.

Polish engaged expert found that the presented results of the OPI research are in line with their expectations. They did not find them particularly surprising. However, dr. hab. Krystyna Kmiotek underlined that due to common poor open innovation knowledge and lack of broad open innovation awareness readers can be surprised that service sectors, such as ICT and fintech are open innovation leaders. Regarding open innovation barriers the experts felt that, in general, the national diversification in barriers to open innovation was to be expected. However, it was surprising that 'quality standards and procedures within organisations that make joint work highly difficult' didn't appear among the top barriers in Poland, as i.e. in Romania. Regarding proposed by OPI upskilling while the upskilling in the area is important, it is relevant for realistic usability of the OPI solutions of its target group to account for relevant time limitations.

Therefore, it has been recommended that solutions in the area will account for it and will look to focus on specific examples and avoid long descriptions.

The presented results were also not a big surprise to Spanish experts. However, Alberto Rodíguez, an Open Innovation expert suggested that the low willingness of SMEs to collaborate, as a barrier can be untrue. It can be rather related in reality with the limited willingness to invest resources and lack of motivation in a process of looking for partners. He suggested that whenever companies are willing and put real effort to look for partners, they most likely will find an ideal partner. From the other side, Susana Molino, an HR expert pointed that there are significant regional disparities in Spain which can impact how respondents interpret the importance of increasing collaboration in their region. Also, Spanish companies are resistant to engage in collaboration due to the requirements for organizational changes and learning. Ms. Molino agrees that cultural awareness, sharing knowledge externally, communication and adaptability and flexibility, being most commonly recognized by Spanish respondents, are common within the Spanish job market. The experts pointed that what is being look after within the Spanish job market is specialization. Mr. Rodíguez underlined that inclusion of focus on financial sector – banking, insurance and capital market could be a good way to support realistic employability within the OPI e-learning solution.

The Romanian experts underlined that Romanian society is highly adaptable, but traditionally oriented toward competition and not collaboration, due to the historical background. People are rather good working in small groups, but not on a large scale, which is a weakness that needs to be overcame.

Meanwhile, Romania has a high need for specialists, including the open innovation specialists. Especially such aspects as openness, ability to learn quickly, to transmit ideas quickly and efficiently, managing and engaging in inter-organisational collaboration are needed. The experts did not support the high evaluation of the overall Romanian open innovation competencies by pointing out that the low innovativeness of Romania is a reflection of realistic lack of qualified human resources in the field of innovation. Open innovation competencies are difficult to find and they are more commonly developed internally at the moment. The advantage of Romanians in this scope is however their high openness to the ‘new’. There is also a transition happening and the increasing interest of companies in innovation puts pressure on competencies of human resources. In this line, the OPI program should focus on HR specialists within companies (SMEs), as they are the once really lacking people that could train the candidates. That should include the guidance for different ways to conduct job interviews that would better revile the open innovation skills and documentation regarding skills needed for open innovation. From technical aspects the e-learning should allow the possibility of marking, indicating, and drawing by each trainee, documents sharing and should be stable enough for multiple participants to access simultaneously. Preliminary skills test would be of added value.

5. General Conclusions and their relevance for further development of the open innovation competencies in the scope of OPI methodology

The presented research combining desk research with an HR market survey shows that open innovation is gaining recognition in European countries as a possible pillar of competitiveness, not only among political decision-makers, but also within the business environment. The awareness of the approach is however still limited. Up till now, in majority of countries, it is large enterprises that are the main source of open innovation. Meanwhile, despite high potential of open innovation strategies to allow SMEs to increase their competitiveness and grow despite resource limitations, open innovation among SMEs is still rare. On a positive note, following the OPI research results, respondents in majority of the countries acknowledge high relevance of increasing economic collaboration between organisations in their regions and the willingness to collaborate among SMEs is slowly increasing. However, the need for increase of collaboration was assessed as not of high relevance by nearly half of Spanish respondents. From the other side, the believe that engaging in partnerships would allow SMEs in their region to better respond to their customers' needs is commonly shared by significant majority of respondents from all the countries showing recognition for the relevance of collaborative business activities, such as open innovation among HR related professionals and their high potential to support SMEs competitiveness. Still, the percentage of respondents disagreeing with the need for engaging in collaboration in general, as well as by SMEs in particular, is significant, showing a strong need to improve acceptance of open models of operations and building awareness of their relevance and benefits especially within Spanish communities. Following the expert feedback, the challenge of stimulating open innovation engagement can be more difficult to overcome in some regions then the others and can be faced with resistance to put realistic efforts to invest resources and strategic focus among entrepreneurs. Moreover, the current pandemic seems to have different impact on the openness to open innovation, while in some countries as i.e. Portugal SMEs seem to be more receptive to embrace open innovation strategy as a way to react to current challenges, experts in Austria suggested that the effect in Austria was opposite. And that the companies are rather focused on different ways to ensure survival and resilience.

The skills embedded within the open innovation competence are considered of high relevance for employability in all 5 participating countries. While importance of specific abilities differs between the analysed job markets, strong communication skills, ability to collaborate in interdisciplinary environment and the ability to share and communicate ideas and knowledge internally were considered of key relevance for employability across the countries. Additionally, flexibility and adaptability and networking skills were underlined as important factors of

competitiveness within the job markets. However, experts underlined that networking should be understood broader than building connections with other professionals from other organisations. But a strong attention should be paid to building a culture of sharing that will also include networking within the organization and the ability to effectively share ideas within, across departments and hierarchical levels, communicating them bottom up, as well as externally. That shouldn't overlook often lacking ability to give and receive feedback which is often missing. In this scope, especially communication of employees with top management in both directions, have been underlined as a relevant point to include.

On the other hand, while still considered relevant, the ability to work with different professional communities across organizational barriers and ability to handle work across various projects were suggested as less relevant employability factors. The low relevance of the ability to juggle various projects suggests that current job market across all countries has a high saturation of employment dedicated to singular projects. But, in light of the desk research and the expert feedback, the low relevance of the ability to work with different professional communities across organizational barriers is rather related with low current activity in this area and with the increasing pressure on open innovation should be treated as a future-oriented ability.

Respondents in the most innovative countries in the sample, Austria and Portugal, reported significant lack of relevant skills for open innovation within the job market. Such a gap in skills on the job market is in line with the conclusions of the performed desk research. However, surprisingly and not conforming with conclusion of previous innovation reports, respondents of OPI survey recognized open innovation skills in Romania as significant and above more innovative countries such as Portugal or Austria. While that would be highly positive information if the Romanian innovation skills have been so significantly improved post 2018, when the data for previous reports have been collected, consulted experts suggest that such boost has not taken place. Instead, the cultural context related with self-evaluation of skills were pointed as a significant factor (i.e. tendency to under-evaluate achievements in Portuguese context) and the Romanian experts are confirming that Romania has significant deficit of open innovation skills. However, such characteristics as adaptability and flexibility and openness to new are typical in Romania and are a strong anchor to build upon in the context of open innovation competencies.

In general, the OPI study suggests that in the scope of the open innovation competence, all the included skills:

- ability to work with different professional communities,
- ability to work in interdisciplinary environment,
- ability to work in cross-functional teams,
- managing inter-organisational collaboration processes,
- networking skills,
- adaptability and flexibility,

- ability to share knowledge and ideas internally within organization,
- ability to share knowledge and ideas externally,
- communication skills,
- cultural awareness,

require development within the analyzed job markets, not only to obtain the open innovation competence, but also to develop significant competitive advantage within the job market. However, the strongest impact on employability will result from strong attention to communication skills, ability to proactively look for new business relevant ideas and ability to share and communicate ideas and knowledge internally, adaptability and flexibility and networking. The communication and networking skills have been especially underlined in all phases as important. However, those while still lacking within the job market are becoming the standard requirements. Hence, to impact competitiveness on the job market, within this scope the provided development opportunity needs to be highly specialized and offer participants an edge that will allow them to stand out from other candidates with skills in these categories. Following this logic, attention to developing highly relevant, yet rare abilities can have especially beneficial impact on one's employability, in case of mentioned by the experts highly limited time of participants. Especially, cultural awareness which is a transversal skill of high relevance in scope of both internal and external relations within professional settings and is yet consider rare across all analyzed countries stands out in the study as potentially highly valuable investment in building employability of job seekers. However, following a point brought up by the Austrian experts the recent pandemics significantly impacted among others social skills, ability to effectively share knowledge and ideas, communications skills and this change on the job market should not be overlooked.

6. References

Calado, S. (2019). Estas serão as competências mais procuradas em 2020, Sapo.pt https://eco.sapo.pt/2019/12/13/estas-serao-as-competencias-mais-procuradas-em-2020/

Castro, A. (2018). 9 Competências Valorizadas no Mercado de Trabalho, DACCORD, 8 Mar 2018, http://blog.daccord.pt/2018/03/08/9-competencias-valorizadas-no-mercado-de-trabalho/

CIS (2020), The Community Innovation Survey, 2020 Edition, Instituto Nacional de Estatística, I.P., Lisbon, Portugal

Fernandes, S., Cesário, M. and Barata, J.M. (2017). Ways to open innovation: Main agents and sources in the Portuguese case, Technology in Society 51, pp. 153-162

GEM (2020), Global Entrepreneurship Monitor, 2019/2020 Global Report, Global Entrepreneurship Research Association, London Business School, London, UK

OECD (2015). OECD Skills Strategy Diagnostic Report, Portugal 2015, Directorate for Education and Skills – OECD, Paris

OECD (2018), Skills Strategy Implementation Guidance for Portugal: Strengthening the Adult-Learning System, OECD Skills Studies, OECD Publishing, Paris

Redação aNoticia.pt (2020). Inovação Aberta dá "ganhos" assinaláveis às empresas, mas estas ainda partilham pouco o conhecimento, anoticia.pt , https://anoticia.pt/2020/03/06/inovacao-aberta-da-ganhos-assinalaveis-as-empresas-mas-estas-ainda-partilham-pouco-o-conhecimento/

WIPO (2020). Global Innovation Index 2020. Who will finance innovation? 13th edition. Cornell University, INSEAD, and the World Intellectual Property Organization, 2020

Annex1. Recommendations and parameters for development of Methodology and mechanism for building HR staff competencies to support OI competencies development (IO2).

IO2 Basic description:

Guide for intermediaries to build their required capability to identify critical open innovation mechanisms and competencies, be able to spot potential for requalification and opportunities in open innovation area and encourage and guide individuals through proper upskilling process.

Structure 4 segments (following the application):

1. Building awareness of open innovation and open innovation competencies for modern economy (focus on SME perspective)
- Section especially focused on combating limited understanding of innovation and open innovation and other misconceptions in the area – clarifying possible misconception.
2. Ability to identify open innovation mechanisms and competencies.
3. How to spot potential for requalification based on individual abilities, especially inherent once.
4. Motivating and guiding individuals through building open innovation capacities.

Development stages:

- Identification of best practices that we should include for building capacities of HR professionals – to be presented by UPIT for partners feedback,
- Experts advise for development – collected by everyone, summarise in this Annex and the preceding report,
- Definition of the initial methodology – form, design of chapters (template), final parameters for achieving the IO objectives**,**
- Feedback of all,
- Final methodology to be implemented by UPIT and E&D,
- UPIT and E&D – modules development,
- Presentation to partners and partners feedback,
- UPIT and E&D development of final version for implementation and translation,
- Everyone – translations,
- Everyone piloting, together with other solutions.

Parameters for IO2

Obligatory by application:

1. E-learning format (highly practical asynchronous e-learning),

2. 4 Areas -> i. Building awareness of open innovation and open innovation competencies for modern economy (focus on SME perspective), ii. Ability to identify open innovation mechanisms and competencies, iii. How to spot potential for requalification based on individual abilities, especially inherent once, iv. Motivating and guiding individuals through building open innovation capacities.

Suggested by consultations with experts (section 4 of IO1 report):

1. The focus should be devoted to HR specialists within SMEs and on those that should have competencies to guide HRs that will take over roles in the scope of open innovation, i.e. executive managers or supervisors.
2. The suggested increased willingness to change during crisis can be especially relevant in such countries as Portugal, which suggests that section 1 of the guide should highlight the positive impact of open innovation on resilience to crisis. It would be also relevant to generate better response in Austria where companies main startegic focus is currently survival and resilience. Also underlyining the connection with sustainable innovation which is foresign as the main trend for the future could be of relevance.
3. The strong impact of industry positive exemples on overcoming resistance to engage in open innovation underlines a strong need for inclusion of relevant SMEs examples and success stories and focus on examples especially in the scope of sections 1 and 4.
4. Due to currently minimal understanding of open innovation among SMEs HR experts and the general HR sector the contents should be highly practically oriented with the objective to create strong understanding of open innovation application, applicability of open innovation competencies. Specific procedures and easy to apply paths should be suggested to the user, with the guidance for different ways to conduct job interviews that would better revile the open innovation skills and documentation regarding skills needed for open innovation (section 2).
5. Translate the knowledge into SME language, but avoid being banal of – even worse – childish. Do not get attach to professional terms, but look for expressions that will be more familiar/easy to understand and absorb, by the target group.
6. All contents should maximally focus on examples and descriptions should be kept to necessary minimum to account for significant time limitations of the participants. The learning units should be kept short to keep users' attention.
7. The contents should account for limited motivation/determination of the target group to follow through with the introduction of open innovation process.
8. It was suggested if the chosen format of the e-learning would allow marking, indicating, and drawing by each trainee.
9. It was also suggested that webinars and meet-ups/discussion panels aiming at increasing awareness of the open innovation should be integrated in the methodology.

Annex 2. Recommendations and parameters for development of OPI development program methodology and contents (IO4)

IO4 Basic description:
On-demand upskilling/requalification methodology and tools for unemployed and employees in the need of requalification to enable them to deliver fruits of open innovation within SMEs/ perform functions in the scope of open innovation activities.

Structure – based on CMOI model:

- ability to work with different professional communities,
- ability to work in interdisciplinary environment,
- ability to work in cross-functional teams,
- managing inter-organisational collaboration processes,
- networking skills,
- adaptability and flexibility,
- ability to share knowledge and ideas internally within organization,
- ability to share knowledge and ideas externally,
- cultural awareness,
- communication skills.

Development stages:

- Definition of training methodology and templates – E&D, others feedback,
- Definition of objectives and approach for each module within the methodological parameters agreed – All,
- Training contents development with 2 feedback loops – All,
- Implementation and translations,
- Piloting,
- Minor revision.

Parameters, obligatory defined by application:

- highly practically oriented methodology and learning contents focused on practical requirements of the defined jobs (OI specialist/manager, Network and partnership specialist/manager, Knowledge manager) and targeted at unemployed and in the risk of unemployment population.
- 7 modules following CMOI model.
- Easy to share with HR services and job candidates.

Parameters extracted from IO1 research:

- Considering the project objectives, desk research results and the experts perspective, following the limited relation of the ability to work with different professional communities for employability in a short to medium term the section initially defined as ability to work with people from different types of organisations, should be kept, but should focus on most relevant for SMEs ability to build open innovation based competitive advantage related with methods/strategies for ensuring that SMEs benefit from collaboration with other types of organisations – universities, other SMEs and big companies.
- The ability to manage inter-organisational collaboration process is assessed as very low across engaged party and relevant barrier to SMEs engagement in OI, the low level of competencies in this area should be considered when developing the contents for the module managing inter-organisational collaboration process, also existence of fear of exposure in scope of open innovation especially relevant in some partnering countries should be accounted for,
- Networking is of critical importance, but it is not an uncommon skill so the level should be more challenging,
- Adaptability and flexibility is considered present in all the countries, but the expert feedback suggests that there are serious culturally related differences. That should be factored into the specific module development,
- Communication skills – highly relevant but commonly available, the contents should allow development of a specific scope that would give candidates competitive advantage in the scope of open innovation activities,
- Focus on specific examples and avoiding long descriptions,
- Spanish experts recommended specialization, to take under consideration i.e. focus on a specific industry.
- It is recommended to provide the possibility of marking, indicating, and drawing by each trainee and documents sharing – to take under consideration when choosing the format.
- Preliminary skills test would be of added value – to take under consideration.

OPI Project. Reference nr:

2020-1-RO01-KA204-080196

Co-funded by the Erasmus+ Programme of the European Union