A survey of Open Innovation ecosystems and practices within 6 countries for regional policy recommendations

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Abstract. Open innovation is a consequence of globalization. Companies that wish to prosper can no longer do everything within them. The challenges of today and those of tomorrow are becoming more and more complex and the same company cannot do everything alone. Yes, open innovation is now daily; it is present in schools, large groups and start-ups. This is how we progress better today, by helping each other. Conversely, closed innovation consists of keeping your project confidential, which limits the possibilities of development but also the risk of project theft. In this paper, we discuss some analysis and we propose a survey of open innovation ecosystems and practices within six European countries, which will have an impact on regional level as regional policy recommendations. Open innovation consists of de-compartmentalising the company's innovation process, by opening up some or all of the phases of its innovation process to other company departments or even other companies (suppliers, customers or other partners) [1-5]. As a result, it is not only the search for a technical solution or its validation that is concerned. The business model can be questioned, such as the selection criteria for ideas and solutions, as well as the validation criteria. Open innovation has as its main limitation the confidentiality of the business model resulting from this innovation (how to hide from other stakeholders the mechanisms that make the innovation have a positive impact on profitability and externality factors) as well as the company's development strategy (its differentiating factor, especially in the short term, where innovation is mainly used).

Key words: close and open innovation, policy recommendation, externalization and globalisation

1. Introduction and context of open innovation practices

In this section of the paper, we will present the introduction and the context of the study in order to introduce the need of Open Innovation ecosystems and practices among some EU countries and the possibilities to implement some policy recommendation in a regional level. In this meaning is important to present what is Open Innovation and how is possible to increase the functionality and competitiveness of companies, institutional and educational actors.

20 years ago, the open innovation concept appeared. This term was popularized by innovation researcher Henry Chesbrough in his book: The New Imperative for Creating and Profiting from Technology. Open innovation consists, for a company, in thinking about its innovation and its R&D, no longer from a closed point of view, but by integrating collaborations outside the department dedicated to innovation among employees or even with other companies or partners. Contests, hackathons, start-up incubators… The objective of open innovation is to do business together, in order to make the value proposition even more relevant.

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In this meaning, to take advantage of our strengths and build the future, it is no longer enough to invest; it is imperative to change the approach, to change the view of innovation. From the point of view of companies and their leaders, (...) innovation is the result of a global process in which R&D is only one ingredient among others, to be integrated into a complex organizational approach. Many of the innovations, that have transformed their market in recent years, are not mainly technological innovations. No innovation relies on creation or improvement to create value and differentiate itself from the competition. On the other hand, the different examples of agile innovation share a common point: the national and European innovation support systems would not have, until now, retained them, at least not for the core of their activity!
These forms of "agile"/ "open" innovations, affecting the business model or the organization of the company, are today becoming increasingly important, even dominant in certain sectors [6, 8]. It is the result of at least three transformations:

- Digitization: any idea, any concept first takes a digital form, which makes it more flexible and customizable, facilitates dematerialization but more the association between products and services, and contributes to the acceleration of cycles. Data is becoming a key asset of the economy;
- Interconnection: ideas circulate faster all over the globe, which invites collaboration and copying. The difference between professionals and amateurs is blurring. Value chains are constantly being restructured, often around large "platforms";
- the growing importance of "externalities": the rise of energy and climate issues, awareness of the limits of "classic" political action and the emphasis growing focus on the "social and environmental responsibility" of companies, invite us to take into account the effects of innovations on employment, collective well-being or the environment, or even to make them the central objects of "social innovation".

We can summarise that Open Innovation practice is the result of the combination of several innovative practices, classified into six main categories 'figure 1', as presented below.

1.1. Innovation of product, service and use:

This category of innovation is primarily interested in the product or service, from the point of view of the customer, the user or the user

1.2. Process and organizational innovation:

This typology of innovation concerns the company itself and the way it designs, produces and manages its products and services, both as an organization and in its relations with its suppliers and partners:

- organizational innovation,
- managerial innovation,
- process innovation.

1.3. Marketing and sales innovation:

This typology of innovation concerns the way in which the product or service addresses the market and customers including: brand, marketing positioning; the conditioning; the forms of sale and of distribution; pricing and customer relationship.

1.4. Business model innovation:

This typology of innovation consist in three main point:

- stand out from the competition (ex.: low cost),
- exploiting the company's capacities in different ways (ex.: selling the heat produced by a data-center),
- associate customers, suppliers, distributors, prescribers in an original way.

1.5. Technological innovation:

This typology of innovation concerns of:

- the development of new technologies,
- the advancement of existing technologies,
- an original assembly of more or less advanced technologies (for example bioinformatics).

1.6. Social innovation:

This innovation have in its purpose a social and societal mission and be "social" in its practice as much as in its mission.

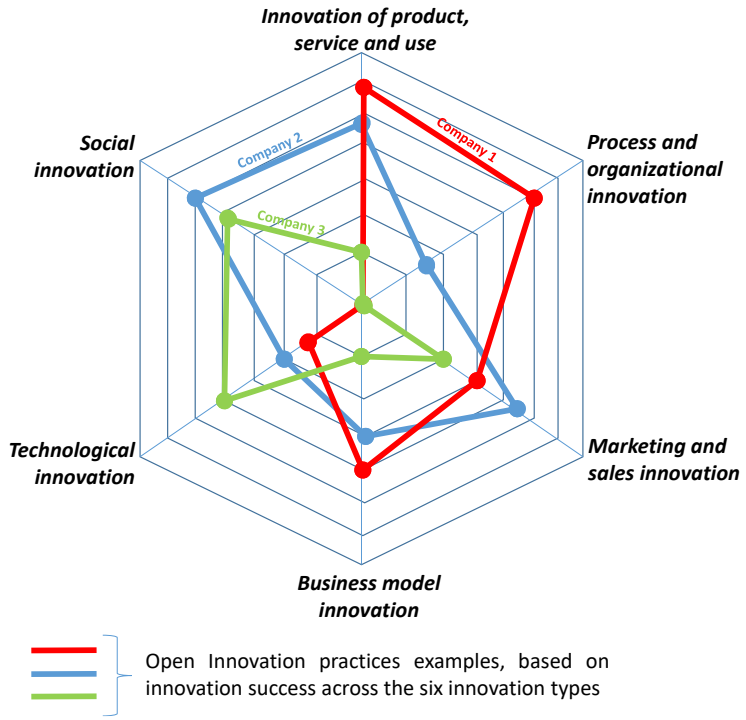

Fig. 1. Examples of companies using Open Innovation, based of combination of six main innovations

2. Methodology and background of study

This paper discuss an analysis and comments the outcomes of a qualitative Survey carried out in the frame of OPEN4U Erasmus+ Project within February-April 2023. The main framework of the project is to find and to improve open innovation practices among European countries summarised and analysed by the partners of the Project via 11 national Focus Groups covering 6 countries (Czech Republic, France, Greece, Italy, Poland and Turkey). The main contribution of that focus groups, proposes a set of policy recommendations applicable at a regional level as well points out some significant Open Innovation examples to be replicated in similar regional contexts.

The main idea of carrying out national Focus groups arose from the need to assess the commonly accepted concept and the actual implementation of Open Innovation approach within the studied countries in order to find the main obstacles to its diffusion and suggest viable policies to regional and local institutions to favour its development within the SMEs' business context.

Our work is based on a regional level research analysis and feedback from participants involved in the project. For the survey, we gathered 143 panellist in 11 meetings (Table.1). The facilitators aimed at singling out the most recent Open Innovation regional strategies and policies influencing innovative ideas, organisations, products, processes, services or methodology. Each focus group was then designed, to involve several actors: innovative SMEs, start-ups and R&D responsible plus local (regional and municipal) institutions, Regional Development Agencies, Chambers of Commerce, VET trainers and academics so to assess and secure their support for the introduction of Open Innovation practices at institutional level [7], [9-12].

The findings of the Focus group Survey were the measurement of Open Innovation awareness and attention at regional level in each of the analysed countries and the identification of areas/sectors/processes where Close and Open Innovation was prevailing. Additional findings based on focus group attendees' discussion were also identification of Open Innovation necessary pre-conditions in terms of both digital readiness and favourable

environment and the devising of a set of policy recommendations at regional level for implementing or improving a favourable ecosystem for a wider adoption of the Open Innovation framework [17-18].

Table 1. Focus groups by countries of OPEN4U project

Country	Focus group	Participants
POLAND	09/03/2023 16/02/2023	21
CZECH REPUBLIC	23/03/2023 24/03/2023	26
FRANCE	24/03/2023 25/03/2023 28/03/2023	26
ITALY	31/03/2023 05/04/2023	20
TURKEY	25/03/2023	30
GREECE	22/02/2023	20
Total Participants		143

So Focus Groups did principally concentrate in assessing the following three major issues:

- Level of knowledge and diffusion of Open Innovation and of National and regional strategic documents and/or regulatory processes with respect to these issues.
- Assessing significant changes in business and professional life. Obstacles that SMEs and professionals face in the implementation of open innovation. Role of decision makers in fostering this change.
- Good practices that can lead the way in spreading Open Innovation: universities, companies or professionals at the forefront of open innovation in their territory.

Our research methodology was based principally on a set of questions, presented below, in order to analyse and to identify the level of knowledge and use of open (or close) innovation practice by actors, involved in the focus groups.

- What do you know about open innovation? Can you recognize the difference between open and closed innovation? Are you aware of open innovation happening at your workplace? If yes, then please explain.
- Please discuss about the strategic documents of government supporting the innovation in your country. Give a space to participants to express their knowledge and experience. In case of no experience, please facilitate the discussion with the information collected in preparation (desk research).
- Which sectors and regions are the most successful in development and implementation of innovation in your country? Give at least 5 different examples that in your opinion can act as outstanding practices recognized in the region(s).
- Please state the examples how the innovations and their implementation are supported in your country. How are employees in your country supported in introducing innovation to their workplace?
- What are the obstacles for SME´s and private companies to develop and implement the innovations? And for employees to be involved in improving business operations?
- How can the national and local policy makers support the companies to bring more innovations? You can also refer to policies of other countries.
- Please name (and shortly describe) good practices of open innovation in SMEs in your country. Refer to different sectors.
- What can senior SME employees, R&D staff, HR experts and employers do to support, initiate, and motivate their employees to develop an innovative mindset? If you already know such solutions that are working, please explain.

3. Awareness, readiness and favourable ecosystem

In the following, we will present our first analytical results from analysis, according to what were the responses, feedback and impressions gathered during the focus groups. So, if many large companies have already adopted Open Innovation approaches, with different modalities and levels of awareness, SMEs are still scarcely aware of the possibilities deriving from the Open Innovation adoption and the model is still struggling to take off and even if they do start, many initiatives are still undertaken without real confidence and without a systematic approach. The issue is that innovation requires tools, ideas and skills and small companies do not always necessarily possess all these resources. Besides SMEs may not have a thorough understanding of their target market or customer needs, making it difficult to develop innovative products or services that meet their customers' needs, plus too often employees are resistant to change, caused by fear of failure and if it involves leaving their comfort zone of established processes or work habits and starting new procedures which imply studying/learning. :

- high-tech, information and communication, manufacturing,
- financial and insurance activities,
- building, construction and landscaping,
- transport, packaging and storage,
- large gross-retail distribution.

Another key problem resides in the organisational and cultural difficulties that limit the development of Open Innovation. Despite positive adoption rates in large companies, many of them only occasionally follow this innovation model, and initiatives (calls, contests, challenges, hackathon etc.) are undertaken without a real overall strategic plan; definitely the lack of systematic approach and vision undermines the effectiveness of this tool and its beneficial impact on the business. A large number of SMEs are not aware or interested in Open Innovation approach, or they gave up almost at the very beginning considering it too risky and/or expensive; this lack of awareness or interest may result in loss of good business opportunities and entrepreneurial growth.
Open Innovation is not necessarily a universal model to be adopted, and not every department in a company can innovate the process and outcomes of their work, as this all depends on the focus of the department. It must be considered that some companies may experience practical difficulties in implementation: management skills, organisational complexity (human behaviour impact on employees), increased costs and poor perception of benefits. Moreover, the technical aspect is only one of the components necessary for the creation of an innovative project: communication, administrative, accounting skills are also needed.
A major problem with the adoption of Open Innovation is the threat of intellectual property. Many innovative project ideas have been, and are, copied and replicated. Therefore, Open Innovation sometimes is avoided as designers and project leaders are obliged to keep confidentiality for their own good and limiting the growth of their project.
Focus group findings show certain OI successful factors standing out. In order to exploit the potential of Open Innovation, employees must be motivated by working with external contacts and collaborations, and their efforts/results must be recognized. Employees need to have self-awareness that Open Innovation poses an opportunity to take advantage of external competence for his/her advantage in terms of professional development as well as the opportunity develop better and faster products or service. To enhance motivation among the employees, each organization can facilitate Open Innovation centrally to reduce the resistance to undertake the effort to change way of working [12].
Ultimately the overall Open Innovation scenario in the analysed countries is an ongoing and promising process, which needs more awareness and knowledge and support of skilled advice. Efforts required to boost its adoption depend on factors such as corporate culture, company size, economic commitment and the reasonable impact on the organisational structure as a whole since Open Innovation permeate the symmetry and stability of the entire business organisation [13-16].

4. Policy recommendation at regional level

Considering the previously described background there seems to be a remarkable latent and yet attainable, value by means of the adoption of Open Innovation practices, provided that actors are ready for a cultural - and not simply organisational – growth effort. Most certainly Open Innovation is a slow process, that must be well rooted and most of all demands people's commitment and well planned process setting. If on one hand several organisations do believe and chose to open, on the other hand the actual effectiveness of their decisions and solutions depends upon the real approach they adopt when dealing with single steps of the Open Innovation process and the set of both internal and above all environmental conditions into which they do operate. Thus in this part of the paper, we will discuss the environmental pre-conditions and policy recommendation by countries, partners

of the project. Each analysed Country has been seen committed to different extent, in creating necessary conditions for the development of Open Innovation and the adoption of its model and paradigm. Some national and local institutions have issued major plans and programs of incentives to boost Open Innovation, and enforced laws and regulations in order to favour and stimulate Open Innovation approach and solutions. Here below we discuss the main results of the Survey.

4.1. Opinions and statements

All participants were quite numerous and various, however they seem to converge on several common ideas impressions and suggestions, which are summarised in the following paragraphs, organised in a five items pattern: concept/glossary, benefits, obstacles, paths and policies. The list of benefits attributed to Open Innovation converge to the following points, due to the similarity of the impressions and opinions of the Focus Group, shortly they focus on:

4.2. Obstacles

The main obstacles coming out from the discussions are related to both businesses/employers and their employees, and can be summarised below.

Those encountered by SMEs, companies and entrepreneurs:

- need for more skilled personnel: SMEs may not have the personnel with the indispensable skills and expertise to conceive and implement innovative solutions,
- scarce access to funds: SMEs seldom have resources to fund innovation, due to their structural limited financial position,
- resistance to innovation: SMEs are often reluctant in adopting new technology because of their limited expertise and resources,
- legal hindrances: SMEs often have problems when coping with the costs and complications deriving from complying with new laws and regulations,
- limited market share: SMEs might not have enough customers or consumers in their selling market to justify large and reasonable investment in innovation.

The obstacles slowing or preventing employees' involvement in boosting Open Innovation came out to be:

4.2.1. hesitation: vague understanding of their role and responsibility or the impending effects of their changes can make it uncomfortable for employees to be involved in boosting new business activities,

4.2.2. motivation: employees might not feel motivated to participate to new ideas or take initiative due to lack of recognition for their efforts or a feeling of disconnect between their role and the company's goals,

4.2.3. shame for possible failing: shame, or even fear, of failing can prevent employees from engaging in the process of enhancing business operations, since they are sceptic about the outcome and thus are not running the risk of any change from their ordinary workflow,

4.2.4. lack of necessary time and focus: working hours and ordinary tasks to be performed can limit the quantity and quality of effort by employees in trying participate to new solutions and ideas to improving business,

4.2.5. behavioural issues: employees might encounter awkwardness when dealing with innovation as they might feel their job in danger because of new processes changing their role, or afraid of showing disagreement towards some choices and decisions made by the management.

4.3. Possible improving paths

It was almost generally admitted that there are several paths SMEs should follow in order to achieve a better and wider diffused approach to Open Innovation practices:

4.3.1. develop a culture of collaboration: SMEs should hearten collaboration both internally and externally. Encouraging employees to share ideas and work together on projects can help generating new ideas and approaches, while cooperating with other colleagues, businesses and departments can provide access to new pieces of information and new viable solutions,

4.3.2. participate in innovation networks and partnerships: SMEs should seek out innovation networks and partnerships that can provide access to knowledge, expertise, and funding. Collaborative networks can provide SMEs with opportunities to share resources and expertise, while partnerships with research institutions can help to develop new technologies,

4.3.3. invest in R&D: SMEs should allocate adequate resources in R&D to support their innovation efforts. By investing in R&D, SMEs can generate new ideas and develop new technologies that can help them stay competitive in the market,

4.3.4. participate in government-funded programs: government offers various programs and funding opportunities to support SMEs in their innovation efforts, they should constantly monitor the official Calls and Tenders at a EU, National and local level in order to catch and profit of any opportunity offered,

4.3.5. train employees and bring them in touch with the world outside of the office: by sending them to conferences, meetings, and seminars: through interactions with other professionals and companies in the field, they will grow experience and knowledge and bring it in the company,

4.3.6. motivate employees to be more innovative by rewarding their efforts: by providing financial incentives, promotions and opportunities for career advancement, and most of all recognizing and celebrating their successes,

4.3.7. promoting an entrepreneurial spirit, encouraging creativity and experimentation: providing a platform for employees to share their ideas and insights and more importantly make them will feel free to express their ideas,

4.3.8. creating a well-equipped work environment: encourages experimentation and risk-taking, by providing the necessary resources and tools encourages employees to develop ideas.

From a more HR managerial point of view, some interesting quick-hints are worth noting:

- setting a clear innovation goal for their team and communicating it clearly,
- challenging employees to come up with creative solutions to current problems,
- providing resources to help employees research and experiment with new idea,
- encouraging employees to engage in reading, research, and attending events that promote innovative thinking,
- encouraging collaboration, brainstorming, and idea-sharing in the workplace,
- giving employees the autonomy to take risks and make mistakes without fear of repercussions,
- rewarding employees for innovative thinking, creativity, and successful projects.

5. Conclusions

In order to provide some conclusions and valuable issues of the presented study, we present in the following the summarised policy makers and the actions to be taken.

Generally speaking all policy makers ought to endeavour in encouraging the scouting and emerging of disrupting innovations, and this by stepping and support several fields and areas:

- the incubation, flourishing and maturation of new technologies,
- the creation joint experiences and laboratories,
- the creation of deep tech start-ups,
- the relationship between businesses and researchers,
- the relationship between businesses and institution, in particular by proposing targeted calls for projects.

5.1. Major steps

In term of approach wed can identify five major steps to implement Open Innovation ‘figure 2’:

5.1.1. Have a medium-term vision of the company

All start with to carry out a good strategy, it is therefore necessary to start from its specific needs. To do this, you must have a clear idea of the medium-term business. This involves thinking between teams to discuss strategic aspects, at the heart of the innovation research process.

5.1.2. Establish a precise roadmap

The second step is to establish a roadmap, clearly specifying all the priority areas of work within the company. You must therefore know all the skills, that can be used directly internally and those that must be sought from external stakeholders.

5.1.3. Look for external partners

This step is fundamental since it is a question of taking concrete action. You are then actively looking for external partners, such as start-ups.

5.1.4. Make your internal teams aware of Open Innovation

It is important to conduct a change management with your internal teams in order to prepare for the collaboration and the transformations that this implies.

5.1.5. Communicate about your project externally

Collaboration in Open Innovation with one or more external stakeholders is an opportunity to improve your positioning as a player in the market. This can leads to change the corporate culture towards better management of innovation and the implementation of new processes.

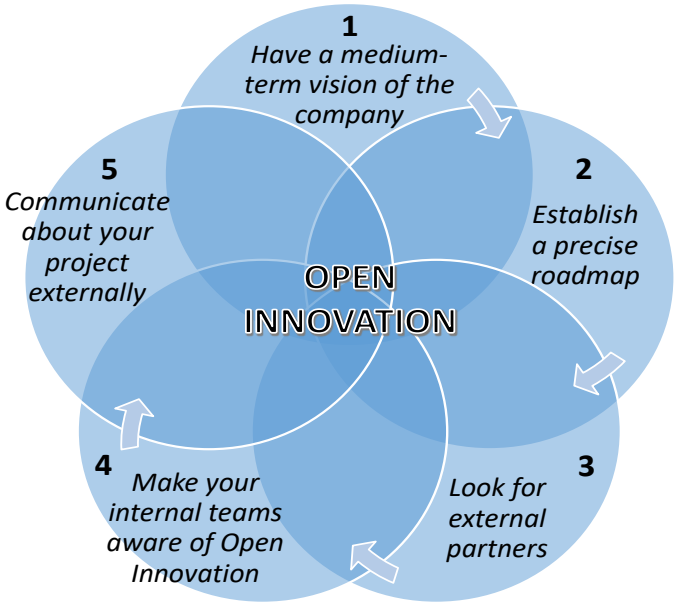

Figure 2. Approach of Open Innovation implementation steps

5.2. Actions

In terms of actions to be taken these should focus on main issues such as:

5.2.1. Funding:

By providing funding to SMEs and companies in general that are working on innovative projects. Policymakers should offer grants, loans, or tax incentives to companies and SMEs to help them develop innovative products or services.

5.2.2. Regulations:

Planning, policies and rules in general can be of a hindrance instead of boosting innovation, especially SMEs suffer this threat and often give up even trying to innovate. National, regional and local policymakers should try to work to streamline regulations and create an ecosystem that is favourable to innovation. In addition, naturally tax exemption of reduction could be a successful move.

5.2.3. Support:

Policymakers could offer services to support SMEs to consider conceive and implement some innovation processes. These actions might be implemented via tutorship and mentorship programs, easier access to research and development advisors and facilities, and increasing networking opportunities. Incubators and accelerators, for the most promising ideas and businesses can also benefit of support in developing and scaling their prototypes.

5.2.4. Education:

Of course, skills and knowledge have a pivotal role in developing the culture of innovation. National, regional and local policymakers should invest in high-quality education both undergraduate and post-graduate programs to accompany students in developing necessary skills and culture in order to succeed in implementing innovation.

5.2.5. Cooperation:

All policymakers must also promote collaboration among entrepreneurs/companies, academic world and research centre and institutions – not locally but also at an international level - to help creating a more animated and dynamic innovation environment where ideas, experiences and expertise can circulate and be shared.

However, innovation itself cannot be planned, it often almost casually emerges from the meeting of actors from different universes: research laboratories, large groups, innovative companies, start-ups, funders, in order to support the dynamics of the closest and sometimes the most distant ecosystems. Favourably the current reduction of communication costs and the consequent narrowing of distances among actors and operators most definitely do improve the chance of meeting/matching of potential partners and enlarge the pool of possible prospect collaborations.

Considering the significant acceleration that change has been lately gaining and the consequent benefits that those who can keep its pace can benefit of diverse nuances of innovative approaches are strongly recommended. Yet, even though environmental and infrastructural prerequisites play an essential role into bringing about and supporting innovation, there is another one, just as important: it is the attitude that must be adopted to accept to think differently in order to pick up the right signals, whether within or beyond the organisation inner circle and/or rather usual circuit. Open Innovation means capturing all – even the weakest – signals, being curious and open, existing and acting in own ecosystem and in those that may become related to yours or those of your customers. Open innovation accelerates the development of the company. Companies, institutional and educational actors can submit their projects to collective intelligence and gain in competitiveness. In general, it is difficult for large groups to trust start-ups that are only a few months old. For start-ups, the slowness of the decision-making process is a major obstacle to open innovation. On both sides, the turnover, the rotation of the personnel, can lead to the end of the collaborative relationship.

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