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EUROPEAN INNOVATION PARTNERSHIP AS A FRAMEWORK FOR OPEN INNOVATION IN AGRICULTURE

EUROPEJSKIE PARTNERSTWO INNOWACYJNE JAKO PODBUDOWA DLA INNOWACJI OTWARTYCH W ROLNICTWIE

Key words: open innovation, system approach, networking, sustainability, productivity
Słowa kluczowe: innowacje otwarte, system, sieciowość, zrównoważony rozwój, produktywność

Abstract. Contemporarily, agriculture is facing many challenges connected with growing food demand and scarcity of natural resources. In meeting these challenges innovation has become of crucial importance. The paper aims at providing an insight on the topic of the needs and possibilities of open innovation and its significance for the transition towards sustainable and more productive agriculture of EU. We argue that given the complexity of innovation process there emerges the need for effective interactions between all actors of agriculture sector. We conclude that new instrument of EU policy: European Innovation Partnership, which promotes open innovation approach should facilitate emergence of networks of collaboration in agriculture. Such an approach will stimulate innovation processes and will help to give better responses to contemporary challenges faced by agriculture.

Introduction

Innovation matters. Today we do not have to prove that innovation has an important role in socio-economic development. It is supported by a large and increasing body of literature and practice. At the same time innovation is a great challenge for societies and economies. The above holds for agriculture as well, as it constitutes an integral part of the EU's economy and society. EU's agriculture faces many local and global challenges in the pursuit of sustainable development that need to be addressed. In order to respond to these challenges, agriculture and actors involved in the sector have to be flexible and adaptive. Farms and agricultural enterprises are in the midst of a pervasive and radical change driven mainly by globalization, population growth, environment and climate change. Organizations must respond to these changes in a way that helps shape the future of agriculture in a sustainable way. In resolving these problems open innovation has become of crucial importance. Given the complexity of innovation processes there emerges the need for effective interactions between all actors of agriculture sector. Thus, nowadays, launching new initiatives, promoting and scaling up open innovation are high priority actions in the field of agriculture policy either in Europe or in other parts of the world. The paper aims at providing an insight on the topic of the needs and possibilities of open innovation in relation to agriculture. Accordingly, the paper focuses on interactive innovation and its significance for the transition towards sustainable and more productive agriculture.

Material and methods

To achieve the aim of the paper, the following subject matters will be discussed: the system approach to innovation, the role of innovation in meeting the challenges faced by agriculture and the European Innovation Partnership for agriculture as a framework for open innovation in the sector. The discussion will be based on the review of relevant literature and EU strategic documents.

Open innovation approach

Innovation is a non-linear, evolutionary, and multidisciplinary process with many iterations. Complexity of this process causes that its every stage requires an access to sophisticated knowledge. Moreover, the ability to create and absorb innovation depends not only on possession of human, financial and technological resources, but also on interactions between these resources and feedbacks between entities, which occur in dynamically emerging and evolving networks of cooperation [Matras-Bolibok 2012]. The importance of cooperation in the field of innovation activity is particularly stressed in the open innovation era [Enkel et al. 2009]. Chesbrough [2006] defines open innovation as the "use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively". It could be therefore stated that both external knowledge and internal knowledge play an equal role in open innovation process. Three core processes could be distinguished in open innovation process. The first one: outside-in process is connected with gaining external knowledge through the integration of suppliers, customers, research units and other knowledge sources. The second one: inside-out process refers to transfer of ideas to other companies by selling IP and/or multiplying technology. And the third one: coupled process that combines two aforementioned processes [Enkel et al. 2009].

Nowadays a new paradigm is emerging, based on open innovation, which is called "open innovation 2.0" (OI2). This new paradigm is an innovation model based on principles of integrated collaboration and co-created shared value. This model of innovation emphasizes the importance of extensive networking between all actors in the society, that goes across organizational boundaries well beyond normal collaboration schemes. Key features of the OI2 are (1) increased societal interactions and (2) the use of the quadruple helix model where government, business, academia and participants from the civil society work together to create new shared value through innovation [Curley, Salmelin 2013].

It is important to emphasize that firms that enter into collaborative arrangements for innovation could achieve many positive effects. First of all, through linkages and collaboration networks they could obtain access to external resources, which they cannot acquire by themselves. Moreover, in networks of collaboration firms could share risk and costs immanently connected with innovation activities. Furthermore, diffusion of linkages within the network contributes to more than proportional increase of benefits and linear increase of costs. Table 1 summarizes the results of selected empirical studies referring to effects of open innovation approach.

Table 1. Results of selected empirical studies on effects of collaboration on innovation activity
Tabela 1. Rezultaty wybranych badań empirycznych nt. efektów współpracy w zakresie działalności innowacyjnej

Author/*Autor*	Conclusions/*Wnioski*
Matras-Bolibok 2012, Pakurár et al. 2012, Nieto, Santamaria 2007, Schilling, Phelps 2007, Faems et al. 2005	The correlation between collaboration on innovation activity and innovation performance is positive/*Korelacja pomiędzy współpracą w zakresie działalności innowacyjnej a efektywnością działalności innowacyjnej jest dodatnia*
Ahuja 2000	Collaboration enables firms to take advantage of economies of scale/ *Współpraca umożliwia firmom osiąganie korzyści skali*
Kijek 2014	Firms which operate in low-technology environment are more eager to collaborate on innovation activity/*Firmy funkcjonujące w środowisku niskiej techniki są bardziej skłonne do podejmowania współpracy w zakresie działalności innowacyjnej*
Almirall, Casadesus-Masanell 2010, Graham, Mowery 2006	In open innovation model the improvement of management of emerging networks of collaboration and control of intellectual property rights of their participants is needed/*Model innowacji otwartej wymaga zarządzania powstającymi sieciami współpracy oraz prawami własności intelektualnej jej uczestników*

Source: own elaboration
Źródło: opracowanie własne

Open innovation in agriculture

Over the past centuries agriculture has become complex in scope and nature, and today is evolving in an environment characterized by rapid changes (in the fields of technology, trade, markets, policies, demography and natural environment), which are generating challenges that are also complex. These challenges are putting new demands on all actors in and around the agricultural sector to innovate and develop new ways of generating knowledge and implementing it into practice with success. Consequently, there is a need and, at the same time, a significant opportunity to create shared value through innovation [Curley, Salmelin 2013, Daane 2010]. The former draw attention to the fact, that agriculture needs knowledge from many different sources, which require relationship and collaboration between different actors in and around the agribusiness to cope with challenges. The old linear model of technology transfer is therefore outdated and should be replaced by an interactive model of innovation systems, which integrate the actors and interactions in the innovation process. The open innovation approach provides a possibility to bring together all actors involved and describe the links and interactions between them. The traditional unilateral model of knowledge transfer from science to practice in agriculture is gradually evolving towards participatory model [Kozera 2013].

It is important to realize that there are many actors in and around the agribusiness that directly influence the decision making of farmers and their innovations [*Agricultural knowledge*... 2012]. The set of actors comprises: (1) the business entities that are involved in the agribusiness (input suppliers, farmers, food processors, retailers, and consumers), (2) actors of the knowledge triangle (farmers, agricultural educators, researchers and advisers), and (3) government (policy makers). In agricultural innovation systems the innovation process implies transformation of knowledge into value through collaborative interactions in which actors share their knowledge to jointly generate and use new knowledge. Ideally, agricultural innovation systems would function as closely related and interconnected systems that are based on well-established relationships or networks among different actors involved in the innovation process. Interactive innovation thinking helps to establish new frameworks for collaboration, partnership and innovation resulting from increased interaction and the emergence of new (hybrid) organizations [Curley, Salmelin 2013, *Agricultural knowledge*... 2012].

Open, systemic approach to agricultural innovation can be an adequate vehicle for empowering farmers to investigate new options to make their business more viable or sustainable. So, innovation systems are needed but they rarely appear spontaneously. If they do, their development proceeds rather slowly and their result is uncertain. For that reason, development of such systems should be stimulated and encouraged, and the coordination between actors should be facilitated. This means there is much that needs to be done to properly establish innovation systems in the EU's agriculture and elsewhere. This is why policy makers must make serious efforts to strengthen the framework supporting open innovation approaches [Curley, Salmelin 2013, *Agricultural knowledge*... 2012, Daane 2010]. In this regard government plays a key role in creating and maintaining an environment that allows open innovation to evolve.

Putting theory into practice: European Innovation Partnership (EIP)

Today we are witnessing that the European Commission (often conceptualized as the government of the EU) is paying significant attention to promoting innovation in the EU. In its Europe 2020 Strategy, the Commission highlights the crucial role of innovation in preparing the EU for responding to challenges we face today and we might face in the future. The central role of innovation is specified in one of the Europe 2020 flagship initiatives – Innovation Union. A new instrument introduced by this initiative that aims at promoting open innovation approach are European Innovation Partnerships (EIPs) that should revolutionize the way of cooperation between public and private sectors, the European institutions, national and regional authorities, and business [EIP-AGRI… 2014, *Agricultural knowledge*... 2012].

For meeting the challenges faced by agriculture in the EU and promoting open innovation in this sector the EIP on "Agricultural productivity and sustainability" was launched by the European

Commission [EIP-AGRI... 2014]. The aim of it is twofold: to increase production and productivity and simultaneously improve sustainability, resource efficiency, and address environmental issues. EIP will support a faster diffusion of knowledge from science to farming and provide feedback on practical needs to science via operational groups. They are intended to carry out projects testing and applying innovative processes, products, and technologies (involving farmers, scientists, advisers or enterprises) [*Communication from*… 2012]. In order to contribute to achievement of the aims of the EIP for agricultural productivity and sustainability the Rural Development Regulation reads as follows: "an EIP network should be set up in order to network operational groups, advisory services and researchers involved in the implementation of actions targeting innovation in agriculture. It should be financed as part of technical assistance at Union level" [*Regulation (EU)*… 2013]. What is worth to point out, EIP connects the nodes of the network of collaboration on the international scale. It provides a working interface between agriculture, bioeconomy, science, advisors, and other stakeholders at EU as well as national and regional level. It will help to accelerate the technology transfer from science to practice and to ensure a systematic feedback about needs from practice to the scientific community [*Communication from*... 2012]. EIP aims at integrating, harnessing and exploiting Europe's potential in the way that leads to creation of new ecosystem of innovation. Implementation of this instrument of innovation policy should create conditions for economic growth and social welfare in Europe [*Outriders for*… 2014].

In order to fulfill their mission the tasks of the EIP network shall be to: provide a help desk function and provide information to key actors concerning the EIP; encourage setting up of operational groups and provide information about the opportunities created by EU policies; facilitate setting up of cluster initiatives and pilot or demonstration projects; collect and disseminate information in the field of the EIP, including research findings and new technologies relevant to innovation and knowledge exchange and exchanges in the field of innovation with third countries [*Regulation (EU)*… 2013].

Conclusions

We believe that innovation has a key role to play in meeting the challenges agriculture is facing today. Transition towards sustainable and more productive agriculture could not be achieved without innovations. However, as agriculture is becoming ever more complex we need new approaches to manage them. In this light open innovation approach in agriculture is particularly needed. This approach means that innovation process involves complex interactions between all actors of agribusiness. Collaboration among them has a great impact on their innovative performance. Agricultural innovation systems can be therefore an adequate vehicle for empowering farmers and firms to investigate new options to make their business more viable or sustainable. As such systems rarely appear spontaneously, their development should be stimulated and encouraged. A key role in this field is undoubtedly assigned to government, which should create and maintain an environment that allows open innovation to evolve. A new instrument of EU policy which aims at facilitating emergence of networks of collaboration in agriculture is European Innovation Partnership "Agricultural productivity and sustainability". It is intended to carry out innovative projects in international networks of cooperation involving farmers, scientists, advisers or enterprises. It should also support a faster diffusion of knowledge from science to farming and provide feedback on practical needs to science. This knowledge exchange will generate new insights and ideas and mix existing knowledge into focused solutions that are quicker put into practice. Such an approach will stimulate innovation from all sides and will help to give better responses to contemporary challenges faced by agriculture.

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Streszczenie

Przed rolnictwem stoi obecnie wiele wyzwań związanych głównie z rosnącym popytem na żywność oraz ograniczonymi zasobami naturalnymi. W sprostaniu tym wyzwaniom kluczową rolę odgrywają innowacje. Celem artykułu było przedstawienie roli innowacji otwartych w tworzeniu zrównoważonego i bardziej produktywnego rolnictwa w Unii Europejskiej. Stwierdzono, że złożoność procesów innowacji implikuje konieczność efektywnej współpracy pomiędzy podmiotami sektora rolnictwa. Wykazano, że instrumentem polityki UE, który zapewnia wsparcie dla innowacji otwartych w rolnictwie jest Europejskie Partnerstwo Innowacyjne, którego funkcjonowanie powinno przyczynić się do stymulacji innowacji otwartych i stworzyć warunki do lepszej odpowiedzi na wyzwania stojące współcześnie przed rolnictwem.

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