

OPEN INNOVATION PRACTICE: EXPLORING OPPORTUNITIES AND POTENTIAL RISKS

Yuliia Lazarenko¹

Abstract. In modern business reality, given a tendency towards digitalization of the economy, expanding network cooperation and the increasing role of knowledge and technology transfer, the principles of interaction between actors of innovation process are changing drastically. These factors determine a shift from the traditional “closed” innovation model towards open innovation practice. The advantages of open innovation activities are widely discussed, however, a large number of enterprises, involved in such projects face various challenges in managing open innovation. Thus, from a managerial perspective, it is essential for modern companies to find the right balance between benefits and potentially negative consequences of the open innovation model. Although it is an important issue for innovative enterprises to analyse possible risks and benefits of participation in open innovation projects, appropriate managerial instruments of exploring opportunities and threats of such collaboration are still not sufficiently researched. The *purpose* of the paper is to improve the typology of a company’s open innovation activities and to explore the opportunities and potential risks of open innovation in modern organizations. *Methodology.* To achieve the above-mentioned purpose of the research, the following scientific methods were used: structural-logical analysis, comparative analysis, systematization, formalization, graphical method. The *results* of the research show that companies need to develop specific innovation capabilities related to knowledge management in order to provide successful implementation of open innovation: knowledge absorptive capability, knowledge sharing capability and knowledge co-creation capability. A theoretical framework for understanding the linkages between a firm’s organizational capabilities related to knowledge management is offered as a result of the study. The improved typology of a company’s open innovation activities in accordance with the direction of knowledge flows (inbound or outbound) is presented. Based on research findings key potential risks of open innovation practice are systematized which include primarily loss of core knowledge and technologies, problems in protecting intellectual property and complexity in managing interactions with collaboration partners. *Practical implications.* From a managerial standpoint as a result of the conducted research, the main opportunities and risks of open innovation are defined, which should be taken into account in order to make the right decision on this type of collaboration. Appropriate managerial countermeasures are proposed in the paper to be practically applied to prevent risks of open innovation implementation. *Value/originality.* The improved typology of a company’s open innovation activities in accordance with the direction of knowledge flows (inbound or outbound) is presented, as well as main risks and managerial challenges of open innovation practice are systematized.

Key words: innovation, innovation performance, innovation management, open innovation, innovation collaboration, risks.

JEL Classification: O31, M10

1. Introduction

In modern turbulent business reality, given a tendency towards digitalization of the economy, expanding network cooperation and the increasing role of knowledge and technology transfer, the principles of interaction between different actors of innovation process are changing drastically. Without dynamic innovation capabilities which refer to an organization’s

ability to develop new competencies in order to adapt to changing business environments, modern companies are not able to survive in the market from a long-term perspective. These factors determine a shift from the traditional “closed” innovation model which is mainly focused on internal research and development towards open innovation practice which is based on the principle of structured interaction of multiple partners involved

Corresponding author:

¹ Kyiv National Economic University named after Vadym Hetman, Ukraine.

E-mail: lazarenko.yuliia@gmail.com

ORCID: <http://orcid.org/0000-0003-0337-8239>

in a business ecosystem, to jointly develop an innovative product, service or technological solution and provide its commercialization.

The advantages and positive aspects of open innovation activities are widely discussed in modern innovation management research. However, a large number of enterprises involved in such collaborative projects have to cope with various challenges in managing open innovation. Thus, from a managerial standpoint, it is essential for modern companies to find the right balance between possible benefits and potentially negative consequences of open innovation collaboration.

2. Actual scientific research and issues analysis

During the past years, many studies have been conducted, which embrace various aspects of open innovation practice. A significant contribution to the development of an open innovation paradigm has been made by the following researchers: G. Chesbrough, W. Vanhaverbeke, J. West, E. Enkel, O. Gassmann, K. Laursen, A. Salter, and others. Although it is an important issue for innovative enterprises to analyse potential benefits and risks of participation in open innovation collaborative projects, appropriate methods and managerial instruments of finding a balance between opportunities and threats for such type of cooperation are still not sufficiently researched. Previous studies related to open innovation strategies have produced mixed results and many questions posed by authors investigating open innovation implementation remain unresolved.

The paper deals with the concept of open innovation, which assumes that modern innovative companies make use of external ideas and knowledge, as well as technological and managerial solutions, instead of relying only on their internal resources for enhancing innovation capabilities. It intends to improve the typology of a company's open innovation activities in accordance with the direction of knowledge flows (inbound or outbound), as well as to identify main risks of open innovation practice and to provide a set of managerial countermeasures for their prevention. The paper is structured as follows: first main forms of open innovation process are presented, which differ with regard to the direction of knowledge flows. Then specific innovation capacities of an organization related to the effective implementation of open innovation tools are identified. As a result, key potential risks of open innovation practice are systematized and appropriate managerial countermeasures to be practically applied for their prevention are proposed.

3. The essence of the open innovation approach

In the process of searching for ways to enhance their competitiveness, many companies have to re-invent their business models in response to the market and make use of alternative approaches to innovation

management. Consequently, an open innovation paradigm is emerging, where business entities strive to exploit internal as well as external flows of information, knowledge, technologies, and paths to market and develop their innovation capabilities. It emerges in place of the "closed innovation" model which emphasizes the importance of internal research and development and views that profitable innovation performance requires organizational control. The integrated definition of the open innovation concept was proposed by Henry Chesbrough and is most commonly described as "the use of purposive inflows and outflows of knowledge to accelerate internal innovation and expand the markets for external use of innovation, respectively" (Chesbrough, 2003). While the traditional "closed" model of innovation process is based exclusively on ideas, knowledge, and experience within the company an "open" innovation practice assumes that a firm's innovation capacity can include also external competencies and assets outside the organization (Chesbrough, Vanhaverbeke and West, 2006, Chesbrough and Crowther, 2006). The closed innovation concept has been challenged by various factors, which are related to globalization, digitalization, technology intensity, knowledge transfer, and new emerging business models. In order to succeed in a modern market ecosystem, the company is no longer able to innovate in isolation, it has to scan its business environment, develop its absorptive capacity, motivate the external knowledge acquisition, and integrate it with its own internal innovative activities. Therefore, today companies enter a new phase of innovation development where the source of their innovation potential can be discovered outside the organizational structure.

The open approach to innovation process fits with the contemporary business environment. The open innovation concept presumes that strategic advantage a company has over its competitors often comes from inbound and outbound open innovation activities. Within this model, innovative companies have an opportunity to make use of external ideas, knowledge and technologies in order to foster innovation. Complementarily, business entities can open up their own innovation processes so a firm's unused innovation could be shared and benefit other companies. These benefits can be used, as long as business entities are able to create a reliable ecosystem of open innovation, i.e. a network of customers, suppliers, competitors and other stakeholders which collaborate with a company and contribute to the innovation process.

4. Types of an organization's open innovation activities

Following the conceptualization of H. Chesbrough and O. Gassmann and E. Enkel, in the context of open innovation, there exist different forms and mechanisms

to overcome a company’s boundaries along its innovation process (Chesbrough, 2003; Gassmann and Enkel, 2004). The “outside-in process” (inbound activities) makes it possible to acquire ideas, knowledge or technologies from external sources such as customers, suppliers, competitors or other actors. Under this form of interaction, an organization gets an opportunity to explore and acquire knowledge from outside of the firm according to its internal needs. The “inside-out process” is based on the organization’s knowledge sharing capability and assumes that business entities can use external ways to create profits and facilitate the outgoing knowledge through the exploitation of their internal knowledge or technologies by other companies. In this way, unused inventions developed within the company are made accessible to other partners involved in the open innovation ecosystem. The “coupled process” combines the main features of “outside-in” and “inside-out” processes (Gassmann and Enkel, 2004).

The figure below (Figure 1) provides a typology of an organization’s open innovation activities and some mechanisms on how to implement them.

According to the open innovation practice, knowledge has become the key business resource for modern innovative companies. The open innovation model puts

new demands on core organizational competencies. Within the open innovation framework, three key organizational capabilities related to knowledge management are essential to enable effective open innovation practice (Fig. 1): knowledge absorptive capability, knowledge sharing capability, and knowledge co-creation capability.

Knowledge absorptive capability relates to a company’s ability to recognize, explore, modify, apply, as well as transform external knowledge. Within the open innovation framework, this capability focuses primarily on knowledge acquisition. Knowledge sharing capability refers to the firm’s willingness to gain new knowledge, as well as to its ability to prepare and perform the process of transferring knowledge through organizational activities. Three main dimensions of a company’s knowledge sharing capability can be distinguished: knowledge sharing readiness, knowledge interchanging richness, and continuous knowledge integration which covers knowledge accumulation, combination, storage, as well as transforming ideas gained from systematic knowledge exchange (Kokanuch and Tuntrabundit, 2010). In an open innovation context, knowledge co-creation capability deals with collaboration within external networks and can be defined as a company’s

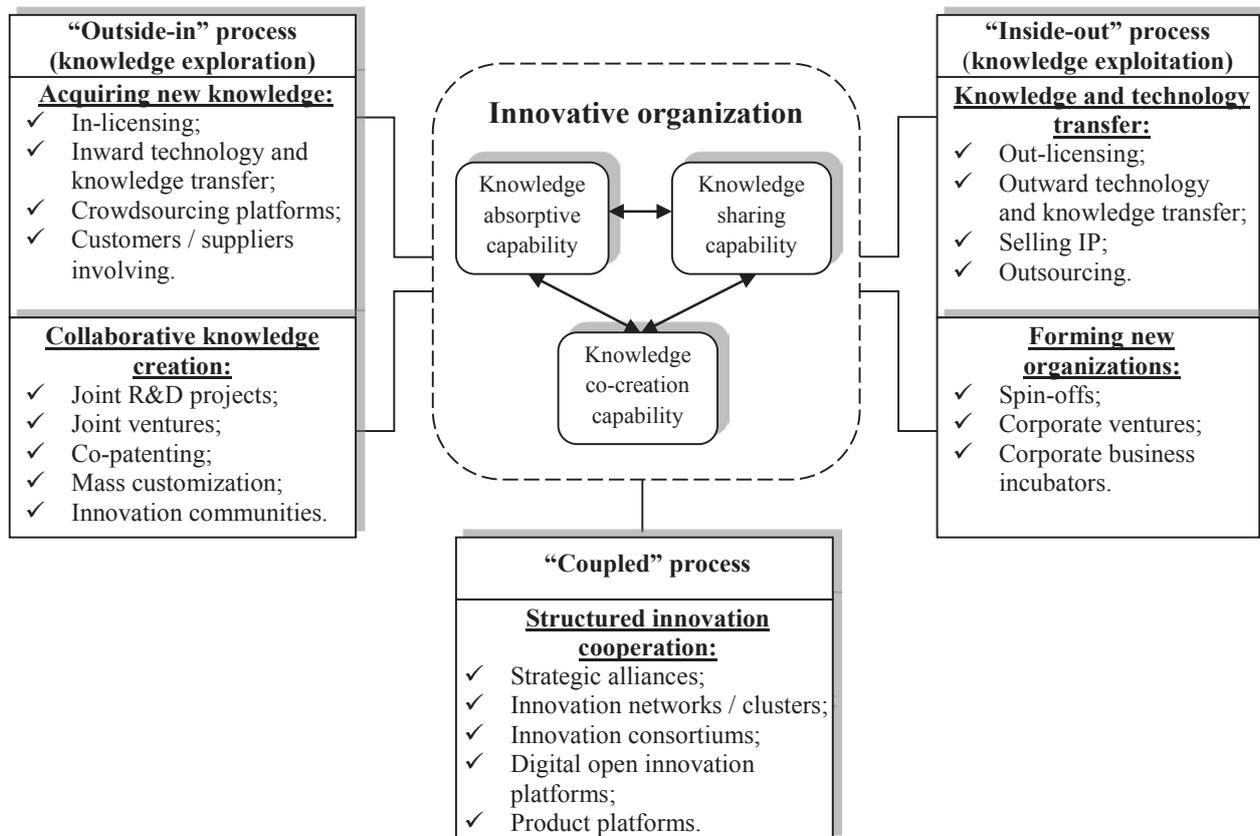


Figure 1. A typology of an organization’s open innovation activities

Source: Developed by the author adapting Chesbrough, 2003, Chesbrough, Vanhaverbeke and West, 2006, Chesbrough and Crowther, 2006, Gassmann and Enkel, 2004, Hjalmarsson, Juell-Skielse and Johannesson, 2017

ability to explore, combine, and coordinate different types of competencies and knowledge flows in inter-organizational relationships in order to synthesize new knowledge, technologies, and innovative decisions.

On this basis, a firm's open innovation capability can be defined as a dynamic ability to manage its knowledge base by using inbound and outbound information flows and subsequently transform internal and external knowledge and ideas into new products, services, processes, structures or business solutions for the benefit of the firm and its stakeholders. The open approach to innovation shows promising potential of making the innovation process more effective, adaptive, and dynamic. However, it is necessary to emphasize that for an efficient open innovation implementation, all the company's organizational capabilities related to knowledge management need to be specific and integrated.

5. Opportunities and potential risks of open innovation implementation

The adoption of open innovation tools by a company is now a matter of strategic choice. A number of studies on open innovation provide the arguments that collaboration with external partners tends to be beneficial to a company's performance. The results of the study conducted by K. Laursen and A. Salter reveal a significant relationship between using external knowledge sources and a firm's innovation performance: the efficiency of the innovation process is positively correlated with a firm's absorptive capacity (Laursen and Salter, 2006). With regard to business sectors, effective examples are related to the software industry, where open informational sources and innovation platforms have become an important part of the business model, especially in digital change (Chesbrough and Crowther, 2006). However, open innovation practices differ across companies due to many reasons: these business entities have various strategic choices, key managerial challenges and techniques as they face different problems and risks in implementing open innovation.

According to recent research, the primary reason that drives modern companies to implement the open innovation practice is the search for effective ways to achieve revenue increases and new products development. Some empirical studies show that besides the direct impact on a firm's innovation performance, there are also additional opportunities of open innovation practice, which include access to requisite knowledge, resources, markets or external competences, reduction of product development time and cost, risk sharing and faster market launch (Chesbrough and Crowther, 2006; Ullrich and Vladova, 2016).

Open innovation tools can be used in various phases of the research and development cycle. During the early stages of the innovation process, such techniques can be useful for exploring potential technology options for

product application. At the later stages of the innovation process, they could be implemented in order to provide new platforms for product introduction and focus on ready-for-market technologies. However, there are some contradictions in reasoning about open innovation implementation. It needs to be emphasized that despite the expected positive effects, many enterprises still hesitate on a decision whether to open up their innovation processes. The open innovation model has its limitations, therefore, the decision of whether to implement the open innovation model and to what degree the innovation process can be opened to enable effective external collaboration requires a thorough understanding and weighted analysis of the potential opportunities and risks of open innovation.

Research on open innovation barriers, risks, and difficulties has discovered many organizational factors that influence open innovation implementation. On this basis, we have organized a large number of these factors into four main areas, which can be described as typical difficulties for open innovation in modern organizations: the collaboration challenge, the managerial challenge, the organizational mindset challenge and the knowledge-sharing challenge. Some of these challenges refer to difficulties in inter-organizational cooperation and arise from the divergent objectives and conflicting interests of actors engaged in open collaborative projects. At the intra-firm level, main challenges in the transition from a closed towards an open innovation model in general could be related to changes in corporate culture, organizational structure, incentive system, and employees' skills and abilities.

The main potential risks of open innovation practice and appropriate managerial countermeasures for their prevention are systematized in Table 1.

The potential risks of open innovation model implementation include primarily loss of knowledge, technologies and core organizational competencies, technological and market uncertainty, complexities of managing interactions with collaboration partners. Besides the high degree of innovation, openness can lead to difficulties for enterprises in protecting intellectual property and appropriating the benefits of innovation. Most of the problems in managing open innovation activities relate to coping with a resistance to change from an organizational perspective because established corporate culture often hinders this type of change. Unwillingness to change traditional organizational practices, especially when it comes to sharing knowledge and intellectual property with partners outside the organization, also restricts successful open innovation practice. That is why open innovation model calls for a specific type of organizational mindset, which requires the building of a new corporate culture that values outside competence and knowledge and perceives continuous learning as an important part of the company's routine operations.

Table 1

Potential risks of open innovation implementation and managerial countermeasures for their prevention

Description	Suggested managerial countermeasures
Technological risk	
Technological uncertainty in open innovation processes; problems in identifying perspective external technology sources; inability to adapt to technology changes; limiting development of internal skills and technological competencies.	Formulation of a corporate technology strategy; development of long-term purposes for external technology exploitation decisions; thorough evaluation of the managerial limitations of external technology exploitation.
Market risk	
Market uncertainty; lack of transparent market information regarding potential collaborative partners, as well as customer needs and expectations.	Working with different sources of market information to understand potential partners (especially customers) and their expectations; applying open communication.
Risk of losing intellectual property (IP)	
Risk of losing proprietary knowledge; risk of losing control of IP ownership; abuse of IP by collaborative partners; inadequate IP laws and regulations.	Implementation of precaution measures for the possibility of information leaks regarding IP, internal "know-how", inventions and valuable technologies; developing protection agreements; formulation of offensive, as well as defensive corporate IP strategies.
Knowledge sharing risks	
Insecure disclosure of core market knowledge and a company's distinctive competencies to its rival organizations, which may lead to information leakage and losing competitive advantages.	Strategic protecting and continuous development of a firm's internal knowledge base; involving trustworthy partners; extending existing products with elements, which are difficult for open communities to replicate, especially in collaborations with rival enterprises.
Collaboration risks	
Conflicting interests and uncooperative behaviour of partners; potential dependence on external partners; the complexity of cooperation that leads to collaboration obstacles; misunderstandings among partners due to lack of trust and poor communication.	Thorough expertise of potential partners; establishing long-term relationships with external partners to enable mutual trust and effective collaboration; detailed analysis of potential risks and opportunities before deciding on open innovation collaboration.
Organizational risk	
Employees' unwillingness to change traditional organizational practices; resistance to change; insufficient expertise and support for open innovation; higher complexity of managing open innovation.	Foster a corporate culture of open innovation; development of a corporate learning strategy; design suitable incentive system to motivate employees; establishing appropriate organizational structure.

Source: Developed by the author adapting (Lichtenthaler, 2010; Coras and Tantau, 2014; Ullrich and Vladova, 2016)

6. Conclusions

The study found that modern companies can open their own innovation processes to provide access to external ideas and to enable better utilization of their hidden innovation potential. However, highly varied and diversified partnerships can lead to increasing complexity and managerial difficulties, thus, it is crucial for companies, especially for small and medium-sized enterprises to select them accurately. To provide successful implementation of open innovation, firms need to develop specific dynamic innovation capabilities related to knowledge management. The development of such capabilities is often connected with strategic organizational changes. Central challenges to cope with

in shifting from a closed to an open innovation model include, therefore, overcoming employee resistance to change, establishing a new corporate culture and organizational mindset, as well as investment in the building of new innovation competencies.

To summarize, participation in open innovation projects for modern companies is nowadays a matter of strategic choice and, in order to make a right decision on this type of collaboration, business entities should carefully weigh up the advantages and the risks of open innovation model. Future research can investigate main firm-level characteristics, which may influence the effectiveness of open innovation implementation in the business sector and examine the firms' pathways to building and strengthening open innovation capabilities.

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