

ЕКОНОМІКА ТА УПРАВЛІННЯ НАЦІОНАЛЬНИМ ГОСПОДАРСТВОМ

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IDENTIFICATION OF THE INTERNAL FACTORS INFLUENCING AN ORGANIZATION'S ABILITY TO IMPLEMENT OPEN INNOVATION

ІДЕНТИФІКАЦІЯ ВНУТРІШНІХ ФАКТОРІВ ВПЛИВУ НА ЗДАТНІСТЬ ОРГАНІЗАЦІЇ ДО ІМПЛЕМЕНТАЦІЇ ВІДКРИТИХ ІННОВАЦІЙ

Urgency of the research. In today's dynamic economic environment organizations are not able to innovate efficiently alone and being forced to revise their innovation strategies. In this context, open innovation is considered as a more effective approach to managing innovation processes that can provide external competencies and competitive advantages for companies operating in a modern marketplace.

Target setting. Empirical studies demonstrate a wide variety of firm-level factors influencing an organization's ability to implement open innovation model, however the relationships among these factors as well as the impact they have on a company's innovation performance are not fully explained.

Actual scientific research and issues analysis. Following researchers have made an important contribution to the development of an open innovation concept: G. Chesbrough, A.K. Crowther, E. Enkel, O. Gassmann, K. Laursen, A. Solter and others.

Uninvestigated parts of general matters defining. Although an exploring of organizational determinants that support implementation of the open innovation model is an area of growing interest among both academics and practitioners, the current understanding of these firm-level factors and their interrelationships is still fragmented.

The research objective. The aim of the paper is to provide a view of the critical internal factors which influence an organization's ability to implement open innovation. An analytical framework of the study strengthens a theoretical basis for a thorough analysis of the relationships among the main factors that have impact on a company's open innovation practice.

The statement of basic materials. Based on the literature review on open innovation management key internal factors have been identified that have impact on a firm's ability to implement open innovation: an organizational mission and value system, a top management style and leadership, an organizational structure, a corporate culture, employees' skills and competencies and an appropriate incentive system, as well as technological and knowledge management capabilities.

Conclusions. As a result of the research a set of firm-level internal factors is defined that should be primarily taken into account in order to increase a company's ability to implement efficiently open innovation.

Актуальність теми дослідження. У сучасних динамічних умовах економіки організації не здатні ефективно впроваджувати інновації самостійно та змушені переглядати свої інноваційні стратегії. У цьому контексті відкриті інновації розглядаються як більш дієвий підхід до управління інноваційними процесами, що може забезпечити зовнішні компетенції та конкурентні переваги для компаній, які функціонують на сучасному ринку.

Постановка проблеми. Емпіричні дослідження виявляють широкий спектр факторів, що обумовлюють здатність організації до реалізації моделі відкритих інновацій, однак взаємозв'язки між цими факторами та їх вплив на інноваційну діяльність компанії пояснюються не повною мірою.

Аналіз останніх досліджень і публікацій. Важливий внесок у розбудову концепції відкритих інновацій зробили такі дослідники: Г. Чесбро, А.К. Кроутер, Е. Енкель, О. Гасман, К. Лаурсен, А. Солтер та інші.

Виділення недосліджених частин загальної проблеми. Незважаючи на те, що вивчення організаційних детермінант, які сприяють запровадженню моделі відкритих інновацій, є сферою підвищеного інтересу як науковців, так і практиків, сучасне розуміння цих факторів на рівні підприємства, як і взаємозв'язків між ними, досі є фрагментарним.

Постановка завдання. Метою статті є висвітлення найважливіших внутрішніх чинників, які здійснюють вплив на здатність організації до запровадження відкритих інновацій. Аналітична концепція дослідження доповнює наявну теоретичну основу для ґрунтовного аналізу взаємозв'язків між основними факторами, які впливають на практику відкритих інновацій у компанії.

Виклад основного матеріалу. На основі огляду літератури з проблематики управління відкритими інноваціями визначено ключові внутрішні чинники, які впливають на здатність фірми впроваджувати відкриті інновації: місія та система цінностей організації, стиль керівництва та лідерство, організаційна структура, корпоративна культура, навички і компетенції працівників і відповідна система стимулювання, а також технологічні можливості компанії та здатності, пов'язані з управлінням знаннями.

Висновки. За результатами дослідження визначено сукупність внутрішніх факторів на рівні підприємства,

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які повинні першочергово враховуватися з метою підвищення здатності компанії до ефективного запровадження відкритих інновацій.

Ключові слова: *інновації; інноваційна діяльність; відкриті інновації; інноваційна співпраця.*

Urgency of the research. During the last decades, as a result of the rapid pace of technological and digital change and a continuously increasing level of business complexity, the “closed” innovation model was gradually disrupted. Numerous studies have found that in today’s networked economy organizations are not able to innovate efficiently alone and being forced to look for new business solutions. Given the challenges of modern shifting market and technology trends, continually rising customers’ needs and expectations it becomes imperative for the companies to review extant innovation strategies and to improve their innovation processes by developing sustainable core competencies. In this context, contemporary theories of innovation management provide convincing arguments that open innovation practice can be considered as a potential source of such competencies and therefore competitive advantages for businesses operating in a changeable marketplace. Empirical studies demonstrate a wide variety of firm-level factors influencing an organization’s ability to implement open innovation, both direct and indirect, however the relationships among these factors and the impact they have on a company’s innovation performance are not fully explained.

Target setting. The paper intends to fill the knowledge gap in the existing studies by specifically exploring the critical internal factors which are shaping a company’s ability to adopt an open innovation model. This includes investigating questions about various types of open innovation processes, implementation mechanisms and firm-level capabilities with special emphasis on managerial dimension in providing an elaborate and flexible internal organizational ecosystem to support open innovation activities. From a practical perspective the relationships among a company’s open innovation enablers may provide the basis for further understanding how modern firms can build open innovation capabilities to sustain their innovation performance. In this study a company’s ability to implement open innovation presents as a systemic approach rather than being focused on the singular firm-level characteristics.

Actual scientific research and issues analysis. In recent years numerous studies have been carried out to examine diverse aspects of the open innovation model as a more effective and efficient approach to managing innovation processes. A wide variety of both direct and indirect factors influencing an organization’s ability to adopt open innovation activities have been extensively investigated by following researchers: G. Chesbrough [1], A. K. Crowther [2], W. Vanhaverbeke, J. West [3], E. Enkel, O. Gassmann, C. H. Wecht [5, 6], K. Laursen, A. Solter [7] and others.

Uninvestigated parts of general matters defining. Although an exploring of essential organizational determinants that support successful implementation of the open innovation model is an area of growing interest among both academics and practitioners, the current understanding of these firm-level factors and their interrelationships is still fragmented.

The research objective. The aim of the paper is to provide a view of the critical internal factors which influence an organization’s ability to implement open innovation. An analytical framework of the study strengthens a theoretical basis for a thorough analysis of the relationships among the main factors that have impact on a company’s open innovation practice. From a managerial viewpoint this will enable practitioners to understand what factors should be primarily taken into account by organizations in order to increase the efficiency of their open innovation management. The paper is structured as follows: first a conceptual framework for exploring firm-level determinants that enable open innovation is presented. Then based on a literature review essential internal factors and sub-factors influencing an organization’s ability to implement open innovation are identified and key interrelationships which exist among the mentioned factors are pointed out.

The statement of basic materials. In today’s dynamic and highly changeable economic environment, where new technologies and processes lead to increased business complexity, open innovation is considered as an effective way to remain competitive. In the open innovation paradigm

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external ideas, competencies and pathways to market are placed on the same level of importance for successful innovation performance as internal resources and knowledge [1]. Studies have shown that open innovation practice provides extended interactions between partner firms that result in a faster technology transfer and knowledge exchange. From a practical point of view the fundamental premise of a collaborative innovation strategy is that it can accelerate innovation and allow organizations to get an access to requisite assets, knowledge, technologies, skills or external competences. Some additional opportunities associated with the open innovation implementation may also include increased speed to market, reduced product development cost and time as well as monitoring of potentially disruptive technologies [1-3].

There are numerous research studies either on factors that are influencing the innovation process in general or the implementation of open innovation in particular. According to *O. Gassmann and E. Enkel (2004)* implementation and diffusion of open innovation model is influenced by external (like the characteristics of an economic sector) as well as internal factors (like capabilities within an organization or its operational processes) [5]. External industry and market-related factors are constitutive for a firm's innovation management. Such economic conditions determine the necessity to revise and rethink companies' innovation strategies. Internal firm-specific factors determine the pathways and mechanisms by which businesses implement their innovation models. This paper is focused on the main internal factors influencing a company's ability with regard to the adoption of open innovation.

Following the principles of the system approach to innovation management the analytical framework of the study includes three key aspects: enabling firm-level factors, open innovation processes (activities) and potential outcomes of open innovation collaboration (Fig. 1).

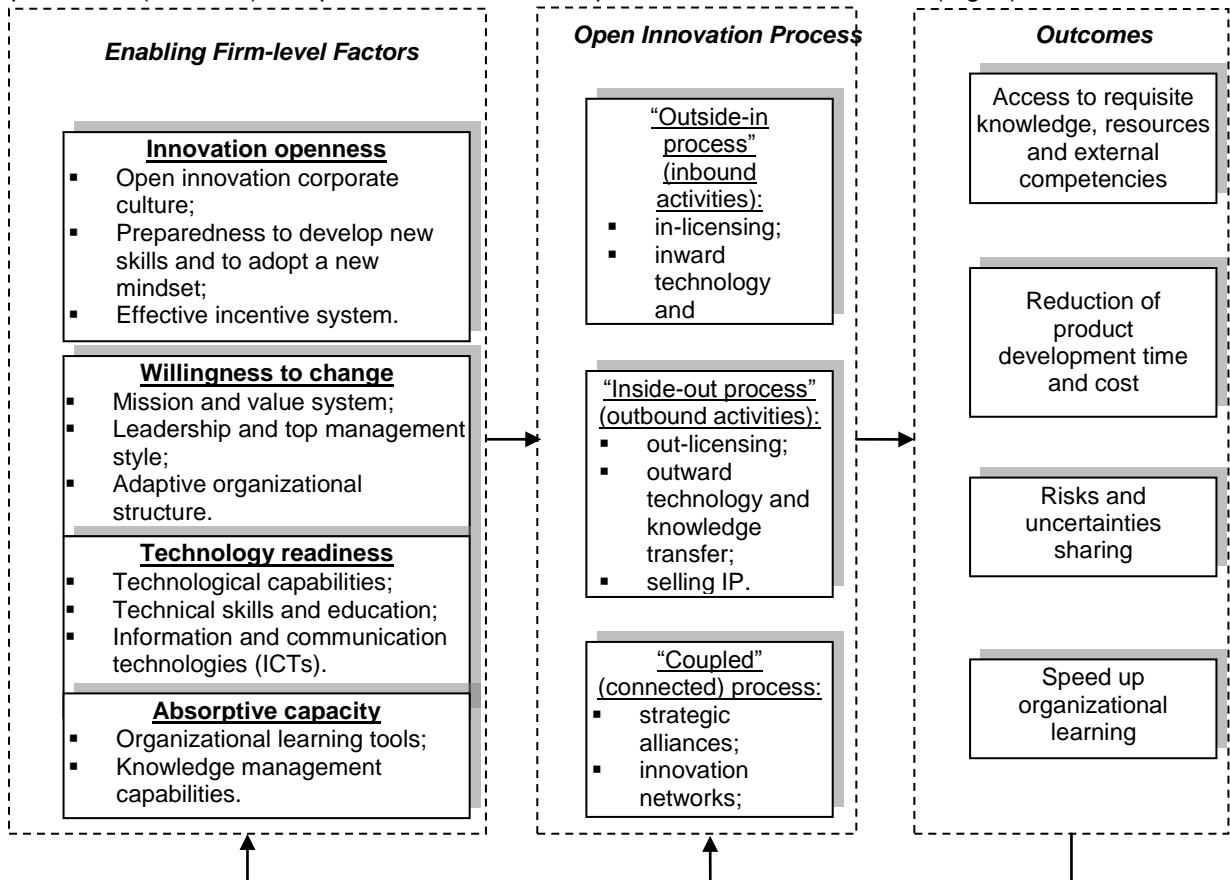


Fig. 1. An analytical framework for exploring internal firm-level factors that enable open innovation
 Source: Developed by authors adapting [1-10]

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The “enablers” can be determined as supportive firm-level factors which have significant importance for increasing the degree of a company’s innovation openness as well as for fostering organizational learning and facilitating technology transfer and knowledge exchange. The mentioned enabling factors can positively influence a firm’s open innovation activity although to a different degree, depending on the economic environment conditions, a level of business complexity and structural firm’s characteristics.

The “open innovation processes” dimension refers to the types of open innovation activities and appropriate implementation mechanisms. In the context of open innovation, following the conceptualization of *H. Chesbrough (2003)* and *O. Gassmann and E. Enkel (2004)* there are three main dimensions to categorize a company’s open innovation practice: the “outside-in process” (inbound activities), the “inside-out process” (outbound activities) and the “coupled” (connected) process [1; 5].

The “outcomes” dimension reveals the potential effects of the open innovation collaboration on a firm’s organizational performance. A number of studies have demonstrated that open innovation collaboration enables businesses to enhance innovation and creates opportunities to gain access to requisite knowledge, resources or external competences, to reduce the time-frame in product development and transaction costs, to share market and technology risks, to facilitate faster market launch, to speed up organizational learning and as a result to promote the innovation efficiency of a company.

It needs to be emphasized that open innovation allows for different outcomes and benefits to be achieved by various actors involved in the collaborative innovation projects. Large companies that keep systemic connections with the open innovation network may gain an opportunity to find the right startups, to cooperate with research institutes and to get an access to “niche” competencies and technologies as well as to expand their extant knowledge base with external ideas. Innovative knowledge-based small and medium-sized enterprises (SMEs) which are seeking to turn their ideas into flourishing businesses but are often confronted with a lack of financial resources, experience and various uncertainties concerning the effective management of innovation process, would gain from access to requisite assets, e.g. investments, external experience, mentoring and expertise.

The literature review recognizes the existence of a wide variety of factors, individual, group as well as organizational, influencing a company’s ability to adopt inbound and outbound open innovation activities. On this basis the main firm-level factors that seem to facilitate an open innovation process in a company can be grouped along the following dimensions: an organizational strategy and leadership, a corporate culture, people involved in the open innovation activities and core organizational capabilities facilitating the open innovation process.

The adoption of open innovation practice implies primarily a systematization of innovation processes and appropriate mechanisms to facilitate strategic managerial decisions regarding what should be invented inside the company, what should be integrated from the outside and what should be developed in cooperation [10]. In this context, key managerial challenges for the implementation of open innovation involve strategic decision-making and goals setting regarding the issues connected with the process of adoption such models.

An examination of a broad range of open innovation research has revealed at the firm-level a wide range of determinants for successful implementation and efficient management of open innovation processes which are highly dependent on the context of the organization. In the research study on early adopters of open innovation models conducted by *H. Chesbrough and A. K. Crowther (2006)* such factors as a top management support, the willingness to make changes, to accept failures and to learn from them were identified as important enablers of the organizations’ open innovation activities [2]. Based on the literature review it is possible to highlight the essential firm-level factors that determine a business firm’s ability to implement and effectively manage open innovation: a company’s mission and value system, an organizational structure, a corporate culture, leadership and a top management style, quality of human resources and incentive system as well as technological and knowledge management capabilities (Tab. 1).

At this point it is important to note that almost in all the literature with regard to the studies of open innovation enablers the complex relationships that exist among the mentioned factors are pointed out.

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Referring to the organizational dimension, most authors agree that a corporate culture which defines a company's attitude towards collaboration, communication, risk-taking and knowledge sharing is a critical factor relating to an organization's ability to adopt open innovation activities. The agreed conclusions confirm also the strong relationships between an organizational strategy, a corporate culture and a top management style in the open innovation context.

Table 1

The overview of internal firm-level factors and sub-factors influencing an organization's ability to implement open innovation

Factor	Sub-factors	Description of factors in the context of open innovation
1) Mission, vision and value system	<ul style="list-style-type: none"> ▪ Corporate strategy; ▪ Innovation strategy; ▪ Learning strategy; ▪ Strategic goals and objections of an organization; ▪ Strategic decision making. 	A firm's corporate strategy needs to be supportive of the open innovation culture and provide favorable knowledge sharing conditions within an organization, which is beneficial for the acquisition of new ideas. It is important to promote the values of innovation openness, which should be embedded in the organization's vision, mission and corporate strategy, to define clear objectives of open innovation collaboration and choose an appropriate innovation strategy given the level of the organization's absorptive capacity.
2) Organizational structure	<ul style="list-style-type: none"> ▪ Organizational differentiation; ▪ Centralization; ▪ Formalization; ▪ Clear distribution of roles, tasks and responsibility. 	Effective open innovation practice requires an optimal business structure. The more flexible and organic the structure, the greater the potential for implementation of innovative ideas. To drive success with their open innovation initiatives modern businesses should pay attention to adaptive organizational structures, one that may involve "hybrid" structures which combine elements of formal and informal structures.
3) Corporate culture	<ul style="list-style-type: none"> ▪ Organizational climate; ▪ Organizational communication; ▪ Collaboration; ▪ Tolerance of ambiguity; ▪ Attitude to innovation and knowledge sharing; ▪ Risk-taking attitude. 	It is important to build a strong open innovation culture that perceives knowledge, experience and continuous learning as an important part of the company's routine operations as well as to provide employee willingness to be involved into knowledge, information and competencies exchange processes with colleagues and external actors, both in terms of donating and collecting.
4) Leadership and top management style	<ul style="list-style-type: none"> ▪ Management style; ▪ Top management personalities; ▪ Top management support with regard to innovation; ▪ Change management experience. 	Top management support with regard to open innovation collaboration is considered as one of the important potential influences on a company's innovation performance. It is an essential factor that should be taken into account in order to create a supportive open innovation climate within an organization.
5) Quality of human resources and an appropriate incentive system	<ul style="list-style-type: none"> ▪ Employees' knowledge, skills and competencies; ▪ Preparedness and willingness to develop new skills and to adopt a new mindset; ▪ Reward system linked to innovation. 	The potential open innovation capabilities of a company are strongly connected with employees' skills, competencies and knowledge. Encouragement of knowledge exchange intentions and appropriate reward system (both monetary incentives and non-monetary awards) are necessary for creating and maintaining a positive open innovation culture in the organization.
6) Technological capabilities	<ul style="list-style-type: none"> ▪ Technology management; ▪ Technology strategy; ▪ Technical knowledge, skills and education; ▪ Information and communication technologies (ICTs). 	Within knowledge exchange mentioned subfactors offer increased potential for advancing effective collaborative activities. In the context of open innovation the use of ICTs can provide additional communication channels for seeking, identifying and obtaining requisite knowledge as well as allow companies to expand available innovation networks.
7) Knowledge management capabilities	<ul style="list-style-type: none"> ▪ Organizational learning tools; ▪ Knowledge absorptive capability; ▪ Knowledge sharing capability; ▪ Knowledge co-creation capability. 	A firm's knowledge management capabilities determine its level of innovation openness. Absorptive capacity is crucial in providing "inbound" open innovation and can be considered as a key element of knowledge management for an effective open innovation practice.

Source: Developed by authors adapting [1; 3; 4; 6-10]

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In practice, open innovation projects have the highest chance of success when there is a clear vision of how open innovation priorities align with a firm's overall business strategy. Many experts in this field emphasize therefore the importance of setting achievable goals and objectives towards open innovation which should be supported at the executive level, preferably by top management of the company. In this regard, numerous studies have found that top management support and leadership climate are key drivers of a company's innovation activity essential to creating supportive open innovation culture and developing appropriate learning strategy [2; 8; 9].

From an organizational point a view, a company's ability to implement and effectively manage open innovation can be presented as a set of acquired skills and capabilities that needs a well-designed and flexible internal organizational ecosystem to support open innovation processes. The effective open innovation management includes the appropriate organization of the open innovation that combines internal and external ideas, knowledge and competencies. Accordingly, the implementation of new innovation model leads to organizational changes and requires internal adaptation. The managers' ability to integrate and apply new principles in the organizational performance as well as to maintain a balance between an open innovative culture and the routine operational processes is therefore one of the important aspects of the firm's open innovation capabilities.

It is important to highlight that finding the right balance of formal routines and business practices with the informal dimensions of a firm's corporate culture, its values, managers' and employees' mindset as well as coordinating complex relationships which exist among the mentioned organizational factors can be challenging, but such a balance is a necessary prerequisite for effective open innovation management.

Conclusions. It should be emphasized that this paper is focused on the key organizational factors and it does not consider all enablers that are critical for a firm's ability to manage effectively open innovation activities. The contribution of this study is to complete the extant theoretical framework on influencing factors and to provide managerial recommendations to companies on how they could adapt open innovation activities to their specific business conditions. Combining different points of view, we identify the following set of firm-level internal factors influencing a company's ability to implement open innovation: an organizational mission and value system, top management style and leadership, an organizational structure, a corporate culture, employees' skills and competencies and appropriate incentive system, technological capabilities and knowledge management capabilities. By adopting a holistic view and following the principles of system approach to innovation management we can assume that changing some factors can cause an impact on other organizational factors which might have a positive effect on a company's innovation efficiency. From a practical perspective the findings of the study will enable managers to understand what organizational factors should be primarily taken into account in order to increase a company's ability to implement open innovation.

Future research can examine more thoroughly the interrelationships among the main factors that are important to open innovation adoption and explore how individual factors and organizational characteristics may impact the outcomes of open innovation collaboration.

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