ABSORPTIVE CAPACITY IN ORGANIZATIONAL THEORIES: LEARNING, INNOVATION, MANAGERIAL COGNITION

The paper studies an important issue of absorptive capacity that enables the companies to strengthen their position in the competitive global market. The concept of absorptive capacity in open innovation paradigm is defined within the following organizational theories: learning, innovation and managerial cognition. The model which links together and clarifies in a detailed way the relationships between absorptive capacity and the components is proposed.

Keywords: absorptive capacity, open innovation, learning, managerial cognition, knowledge transfer.

Setting the task in general form. Companies nowadays operate under conditions of increasing competitive pressure from globalization, new market players and shorter production cycles [12]. To face these challenges, innovations are considered as major engines to enhance firms’ performance and to strengthen their competitive position in the market [27]. A lot of companies have paid most of their management attention to developing team structures, decision-making and cross-functional interaction that enables efficient and effective internal production of innovations. However, developing internal innovation capacities is no longer sufficient to gain and sustain competitive advantage. Therefore, a trend to intensify collaboration between companies across industry networks and partnerships, opening up their innovation processes has emerged [7].

Analysis of recent research and publications. Such collaborative innovation activities reduce costs and risks of a failure, while at the same time shorten the innovation cycles [27]. It is embraced with the terms open innovation and absorptive capacity. Over the last few decades these important topics have been investigated theoretically and practically by many scientists such as Argote L., McEvily B. and Reagans R. [1], Chesbrough H. [7; 8], Cohen W.M. and Levinthal D. [9], Enkel E. and Gassmann O. [12], Gulati R. [13], Lane P. J. and Lubatkin M. [19], Lane P. J., Salk J. E., and Lyles M. A. [20], Lichtenthaler U. and Lichtenthaler E. [23], Quinn J. B. [27] and others. It was established that open innovation strongly depends on interorganizational knowledge exchange and the capacity of a firm to extend its internal knowledge base with the information received from the external environment [1; 13]. Similarly, absorptive capacity is an influential concept that focuses on recognizing, assimilating and utilizing external knowledge inside the firm [9; 20]. It is considered as an important requirement in the paradigm of open innovation and has become crucial for both internal and external knowledge sourcing [23; 33].

The main purpose of the article is to give a deeper insight into the concept of absorptive capacity. Thus, the theoretical model of absorptive capacity will be introduced. Research on absorptive capacity covers theories of learning, innovation, managerial cognition, the knowledge-based view of the firm, dynamic capabilities and co-evolutionary theories. This paper focuses on three important components such as theory of learning (individual, organizational, interorganizational), innovation and managerial cognition that will be studied with respect to creation of absorptive capacity of a company. The article concludes with a brief discussion of the limitations and challenges of the field and the need for further research.
Main material. The theoretical model of absorptive capacity in open innovation paradigm. Open innovation provides a general view on how companies can benefit from blurring the boundaries between a firm and its environment. It's not just about the cooperation between complementary or competing individual companies, but also the inclusion of external knowledge sources such as universities, research institutes, customers and suppliers [7; 26]. Open innovation is the opening of the innovation processes of the firms and, thus, the active strategic use of the outside world for enlargement of their own potentials [8; p. 108]. Absorptive capacity is crucial in defining the success of the company in recognizing and capturing value from in-sourcing externally developed technology and innovation through collaboration with partners. Therefore, absorptive capacity of the company is an important requirement of open innovation that is inevitably linked to outside-in process dimension of the paradigm.

Cohen and Levinthal define absorptive capacity as “the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends” [9, p. 128]. The firm’s absorptive capacity enables not only to exploit new external knowledge but also allows the company to predict more accurately the nature of future technological developments, and, thus, to enhance the firm’s competitive market position. The fundamental assumption behind the concept of absorptive capacity is that the ability of a company to use the knowledge that exists outside of the company depends on the knowledge that the organization already possesses. This prior knowledge includes basic skills, a common language, and also the knowledge available via the latest scientific and/or technological developments in a research field. For this knowledge is derived from the ability of the organization to recognize the value of new information, integrate it and use it for commercial purposes [9, p. 129]. Accordingly, the development of the organization’s absorptive capacity constructs on prior investments in its members’ individual absorptive capacities, tends to develop cumulatively and to be path dependent, and, moreover, depends on the organization’s ability to share knowledge and communicate it internally [18]. The last point is crucial, since it could be more profitable to apply the new knowledge by other part of the organization than the one that initially has acquired the knowledge. Therefore, relevant background knowledge also comprises awareness of what knowledge the organization already possesses, as well as where and how it is used.

Furthermore, it is argued that besides prior related knowledge as an organizational determinant of absorptive capacity, organization forms and combinative capabilities also need to be considered [32]. The existing organization form influences the way a company processes the knowledge, i.e. the channels of receiving information, decision-making processes, knowledge transfer between organizational units, etc. The firm’s combinative capabilities link and apply currently available and acquired knowledge [17].

Absorptive capacity exists as two subsets of potential and realized absorptive capacities [32]. Potential capacity makes the firm perceptive to acquisition and assimilation of external knowledge [19]. It covers the first part of Cohen and Levinthal description that concerns evaluation and acquisition of external knowledge; however, it does not guarantee commercialization of this knowledge. Realized absorptive capacity captures transformation and exploitation of external knowledge. It reflects the capabilities of a firm to leverage the acquired knowledge and thus, determines the amount of innovations produced by the company. The empirical studies show that namely realized capacity serves innovative output and other outcomes that pertain to creating the competitive advantage of a company. The potential capacity, however, provides firms with the strategic flexibility and the degrees of freedom to adapt and evolve in changing environments [32].
allows firms to sustain the competitive advantage even under dynamic circumstances. Therefore, since potential and realized capacities contribute differently toward building the company’s competitive advantage, it is a necessity to develop and maintain the high level of both of them.

**Interrelated organizational theories.** The following section introduces three concepts in the organization field that are related to absorptive capacity, and, in some cases, even partially anticipating it. The theories are learning, innovation and managerial cognition. To better understand the field of study, the interrelations between the components and absorptive capacity has been graphically conceptualized in Figure 1. Further, contribution of each of them to the development of absorptive capacity and vice versa will be discussed.

![Figure 1 – Interactions of the main components of the research, (author’s own work)](image)

**Learning.** There is a recursive relationship between learning and absorptive capacity. A number of empirical studies statistically prove the recursive notion of absorptive capacity and learning [19; 24; 26]. Increased learning enlarges the organization’s knowledge base in a particular area, which further increases its absorptive capacity and, thereby, facilitates more learning in that area [2; 3]. Their main argument is that the learning potential for absorptive capacity is mainly determined by prior related knowledge and R&D investments, denoted as the “cumulativeness feature” by Cohen and Levinthal. It is argued that the knowledge absorption is easier if people have some common knowledge in terms of expertise, training, or background characteristics that are determined by individual and organizational learning [28; p. 243].

Schilling suggests that failure to invest in learning lower the absorptive capacity of a firm as less background knowledge is available to explore and recognize potentially useful information from the external environment and, thus, gets the firm locked out of new...
technology. Therefore, it is essential to assume that if the costs of acquiring external knowledge are small at the time of learning, it is because the firm has already invested in the development of absorptive capacity.

Cohen and Levinthal argue that the firm’s willingness to invest in developing absorptive capacity depends on the incentives for learning that comes from its environment. These influential exogenous factors are industry demand, scope of technological opportunities, intellectual property rights protection and ease of learning the external knowledge. The more relevant knowledge to the firm available and the greater the potential to improve existing technologies, the more company is motivated to invest in learning and R&D. Similarly, the weaker the protection of intellectual rights and the greater the markets demand then the greater motivation to develop the absorptive capacity of the firm.

In terms of absorptive capacity in organizational theories, further organizational learning and interorganizational learning will be discussed. Since individual learning can be considered as a base for organizational learning, it would not be a separate point of our research but a part of organizational learning.

*From individual to organizational learning.* Inside the organization, learning involves the transfer of knowledge among different organizational units. An organizational unit's internal learning capacity determines the extent to which it can absorb the new knowledge from other units [9]. In addition to prior related knowledge, the organizational units have to create organizational capabilities in order to apply current and newly externally acquired knowledge [17].

Furthermore, basing on communication theory, Gupta and Govindarajan argue that intraorganizational transfer process requires attention the five following major elements a) value of the knowledge possessed by the source unit; b) motivational disposition of the source unit regarding the sharing of its knowledge; c) the existence, quality, and cost of transmission channels; d) motivational disposition of the target unit regarding acceptance of incoming knowledge and e) the target unit’s absorptive capacity for the incoming knowledge [14]. The higher is the value of the knowledge, the higher is the motivation to share and to accept, and the easier and costless it could be done – the more successful and intensive is the organizational learning. However, it should be also pointed out that organizational learning and absorptive capacity strongly depends on individual capacities.

Crossan, Lane and White suggest a model of organizational learning that is well-known and often used in academic contexts. The value of the proposal lies in its integration of three levels of learning such as individual, group and organizational learning into one model, and of two routes of learning: from the individual to the organization and from the organization to the individual [11]. The model addresses 4I learning processes of intuiting, interpreting, integrating, and institutionalizing through which knowledge from different levels is institutionalized in the firm. In turn, this institutionalization creates a context through which subsequent activities are interpreted, and a path-dependent capability development cycle emerges [1]. The first process in the model, intuiting, takes place at the individual level and is defined as “the preconscious recognition of the pattern and/or possibilities inherent in a personal stream of experience” [11, p. 525]. In other words, it is necessary to understand the subconscious in order to understand the way people comprehend new information for which there was no prior knowledge. A limitation of the model is the belief that intuiting is the unique process that explains individual learning. However, most of human learning is a conscious process. The second process, interpretation, occurs at the individual and group levels. It is defined as the explanation through words and/or actions, of an idea of a person to others. The third process of the model of organizational learning is integrating, described as
the process of developing shared understanding among individuals and of taking coordinated action through dialogue and joint action. The fourth process, institutionalizing, means that organizational learning is not a sum of the learning of firm’s members but their learning and knowledge are embedded in the systems, structures, procedures and strategy of the company.

Interorganizational learning is the action of groups working together in order to discover a strategic and operational path to help all organizations involved improve their processes [10; 35]. Successful implementation of interorganizational learning involves collaboration, trust, and empathy [31]. The general types of interorganizational collaborations involving knowledge transfer are consortia, university-corporate partnership, acquisitions and joint ventures.

Interorganizational learning adds a unique value to the firm’s capabilities since, unlike organizational learning, the knowledge acquired in this interactive manner is rare and less imitable. The student firm is able to understand not only observable components of teacher’s capabilities but also tacit knowledge that is embedded in the firm’s processes and social context [19]. Following the theoretical model of absorptive capacity [9], the successful interorganizational learning can occur by fulfilling two criteria: there is some fraction of the teacher’s knowledge and the student firm has some prior basic knowledge about the new knowledge to be able to recognize its value [4]. Thus, student firms have the greatest potential to learn from teachers with similar basic knowledge but different specialized knowledge. However, prior knowledge acquired from the teacher only influences learning when combined with high levels of current training by the teacher’s firm [18].

Further, the concept of relative absorptive capacity was developed that is jointly determined by Cohen and Levinthal characteristics together with other determinants such as knowledge and research similarities, and social similarities [19]. The authors argue that the relative similarity of these characteristics affects the student’s ability to value, assimilate and utilize its teacher’s knowledge. For instance, similarity of lower management formalization and research centralization increase the success of interorganizational learning. In contrast to upper-management formalization and management decision centralization, which have a negative influence on interorganizational learning. The necessity in similarities in research and lower management formalization could be explained through the need of the student firm to understand the teacher firm’s processes and new knowledge, — value and assimilate knowledge. However, differences in upper-management and decision centralization enable the student’s firm to utilize the acquired knowledge in the way it is most profitable for this particular firm.

Innovation. The outside-in process in the open innovation paradigm means the integration of external knowledge and sources of ideas and the associated opening of the innovation processes as the core competences of a company [7]. This can be achieved through the cooperation with customers, suppliers and academia, applying innovation across industries, buying intellectual property and investing in global knowledge creation. For instance, IBM invests heavily in contact with customers, suppliers and other external knowledge sources. Further, the valuable external knowledge is integrated in research projects that aim at creating new products, processes and solutions. In case of Cisco, the company invests in young start-up companies in order to monitor their attractiveness and innovations. Besides evaluating their acquisition potential Cisco also directs the company development towards Cisco standards and Cisco compatible products [12]. By opening up the internal innovation processes through integration with suppliers and customers or other market players, the companies extend new product development activities across organizational boundaries that eventually enables them to generate and apply innovations of a better quality or/and within a shorter period of time.
With respect to such an outside-in learning process, the performance of the company is determined by its ability to internalize the knowledge gained from its partners. According to the capability-based framework for open innovation proposed by Lichtenthaler and Lichtenthaler, namely absorptive capacity of the company defines the success of exploring external knowledge and recognizing the valuable knowledge for the company [23, p. 1318]. Furthermore, the new product development studies of Brown and Eisenhardt, Wind and Mahajan’s argues that the firm’s process of new product development is increasingly driven by its ability to adopt outside technological influences, which is a part of absorptive capacity.

The Not-invented-here syndrome (NIH syndrome) refers to a negative attitude towards the external acquisition of knowledge. Katz and Allen define the NIH syndrome as a “tendency of a project group of stable composition to believe it possesses a monopoly of knowledge of its field, which leads it to rejection new ideas from outsiders to likely detriment of its performance. Such group therefore does not very seriously consider the possibility that outsiders might produce – important new ideas or relevant information to the group” [16]. From social psychology is known that people perceive on the basis of common characteristics as members of social groups. A group to which an individual feels related to is called the in-group. The each individual member of a company feels related to it. In return, this group considers members of another company as a foreign group. The third group thus consists of all other market players. According to the theory of social identity, people tend to emphasize the positive characteristics of their own group or unjustifiably exaggerate and devalue the out-group. This is also reflected in the negative attitude guarantee to external knowledge gained. Therefore, the knowledge of the foreign group is devalued or / and rejected not because it does not fit in the company’s own business model but because of its external nature.

However, it is argued that only through collaboration with other players from the external environment (competitor, supplier, university, etc.), the firm can create incremental or/and radical innovation [21] that enable it to have a competitive advantage in a long run [32]. Therefore, it is necessary to overcome the NIH syndrome. The traditional way of doing that is installing “gatekeepers” [16, p. 134]. “Gatekeepers” absorb, filter and pass on the information form the environment to relevant groups within the organization. Such a role could be assigned to a manager of the organization who, moreover, can develop an appropriate organizational structure, culture and decision-making for successful information exchange.

Managerial cognition. In the managerial cognition perspective, managers are considered to be information workers who absorb, process and disseminate information about issues, opportunities and problems to others [34]. Theory on managerial cognition suggests that managers comprehend the information through their own cognitive lenses. Thus, managers can be considered “cognizers” [6] who reduce the complexity of things by developing mental maps that results in a dominant management logic [5]. More diversity in a firm’s activities increases the comprehensiveness and complexity of the manager’s mental map of the environment. The dominant logic directly influences the organizational form, learning processes and indirectly the level of absorptive capacity [32]. For instance, managers who have classical management logic [33] tend to favor traditional functional forms of organization and do not consider the external environment as a source of valuable knowledge that could be absorbed [32; p. 560]. Such management logic portrays the organizations as a tool to achieve present ends and causes neglection of opportunities posed by a wider environment. In this way, the potential absorptive capacity and the interorganizational learning is low which, in the end, may reduce the amount if innovations.

Information provision is considered an important factor influencing managerial cognition and organizational absorptive capacity [22]. On the one hand, managers themselves may lack the information necessary to recognize and disseminate valuable new practices. Thus, greater...
information provision may lead to a higher degree of managerial awareness. On the other hand, managers can directly positively affect the firm’s absorptive capacity by providing information to potential adopters in the organization [22]. The effectiveness of these managerial actions depends on the degree to which other sources of information are available to individual members of the company. Moreover, McEvily emphasize on the importance of individual’s prior knowledge (education and skills) and their motivation to absorb the external knowledge which is related to individual learning capacities [25].

**Conclusions and directions of further researches.** This paper described a theoretical model of absorptive capacity, studied three organizational theories (learning, innovation, managerial cognition) and their relations with the concept of absorptive capacity.

The results of this study indicate that each of the components of the absorptive capacity construct plays an important role in determining whether the firm can effectively absorb, assimilate and utilize external knowledge. Organizational and interorganizational learning pre-define the initial level of absorptive capacity of a company. Increased learning enlarges the organization’s knowledge base in a particular area, which further increases its absorptive capacity and, thereby, facilitates more learning in that area. Both organizational and interorganizational learning capacities should be developed in the company since they enable acquiring different types and quality of knowledge. Individual learning influences the absorptive abilities of the firm’s members that in the end define the success of creation and transfer of the knowledge inside the organization. Moreover, individuals who can interpret external incentives increase the ability of the firm to draw on external knowledge and fuse it with other existing technologies.

Interorganizational learning and absorptive capacity are crucial for implementing the open innovation approach in the business practice. Here the performance of the company is determined by its ability to internalize the knowledge gained from its partners [7; 14]. High absorptive capacity is associated with the better chances to successfully apply new external knowledge toward commercial ends, producing more innovations and showing better business performance. However, the company faces the challenge of overcoming the Not-invented-here syndrome. Managers can also limit the absorptive capacity of the company by comprehending the external information through their cognitive maps. In this way the organization lose valuable knowledge which may lower its absorptive capacity.

Absorptive capacity is a huge and complicated area of research. Although much has been already elaborated and written on this topic, there is a clear lack of empirical studies proving the conceptual theories. Furthermore, there is the need for further research studying the interactions of the organizational and interorganizational learning, managerial antecedents in terms of creating absorptive capacity.


О.А. Васильєва. Поглиняюча здатність в організаційних теоріях: навчання, інновації, управлінські знання


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Поглиняюча здатність в організаційних теоріях: навчання, інновації, управлінські знання

У статті досліджується важливе питання поглиняючої здатності компанії, тобто її здатності поглинати та використовувати у своїй діяльності нові зовнішні знання, змінюючи таким чином свої конкурентні позиції на світовому ринку. Концепція поглиняючої здатності зрозуміла в рамках парадигми відкритих інновацій та визначається в наступних організаційних теоріях: навчання, інновації та управлінського пізнання. Далі пропонується модель, що пов'язує та роз'яснює відносини між поглиняючою здатністю та компонентами теорій.

Ключові слова: здатність до пізнання, відкриті інновації, навчання, управлінські знання, трансфер знань.

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Поглиняюча способність в організаційних теоріях: обuchenie, innovаcii, управлінческі знання

В статті ісследується важний вpfessor поглиняючої способності компанії, т.е. її способность поглощать и использовать в своей деятельности новые внешние знания, укрепляя таким образом свои конкурентные позиции на мировом рынке. Концепция поглиняющей способности рассматривается в рамках парадигмы открытых инноваций и характеризуется в следующих организационных теориях: обучения, инноваций и управленического познания. Далее предлагается модель, которая объясняет отношение между поглиняющей способностью и компонентами теорий.

Ключевые слова: способность к познанию, открытые инновации, обучение, управленические знания, трансфер знаний.

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