Bejinaru, Ruxandra

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Dynamic Capabilities of Universities in the Knowledge Economy

Ruxandra BEJINARU
Ştefan cel Mare University of Suceava
13 Universităţii Street, 720229 Suceava, RO
ruxandrabejinaru@yahoo.com

Abstract. *The purpose of this paper is to analyze how universities can develop dynamic capabilities based on their strategic resources in order to increase their competitiveness in the knowledge economy. "Dynamic capabilities" is a concept introduced by Teece, Pisano, and Shuen (1997) to emphasize the managerial capacity of a given organization of using efficiently its strategic resources in transforming opportunities in business success. They reflect the capacity of the organization to sense, seize, adapt to the changing environment. For a university, the most important strategic resources are information, knowledge, and ideas which constitute its intellectual capital. The present paper is analyzing critically these strategic resources of a university and the necessary conditions to develop dynamic capabilities in order to use efficiently these resources in a turbulent economic environment. Universities are in the knowledge economy the most important hubs for knowledge creation and its transfer to the students, as well as to their communities. At the same time, professors contribute to the development of the generic thinking skills of their students to help them for employability in a future with many new jobs and new business activities.*

Keywords*: competitive advantage, dynamic capabilities, knowledge dynamics, knowledge economy, strategic management, universities.*

Introduction

The knowledge economy increases the global competition between universities since they contribute directly to the generation, transfer and processing of new information and knowledge for society (Bejinaru, 2017a; Dima, 2014; Duderstadt, 2000; Wells, 2017). Strategic thinking becomes more and more important in achieving a competitive advantage in this turbulent world (Bratianu & Bolisani, 2015; Spender, 2014). Knowledge generation and knowledge dynamics constitute strategic resources, and managing the organizational knowledge dynamics can become a core dynamic capability of universities (Ghinea & Bratianu, 2012; Petrusson, 2009; Sadlak & Liu, 2007).

The main goal of this paper is to analyze the issue of dynamic capabilities (Felin & Powell, 2016; Teece, 2009) of universities within the knowledge economy. In order to argue the relevance of the debated subject we systematically approached a series of key concepts and realities strongly interconnected. As the title suggests, the endeavor is to debate the stages of development and implementation of the

dynamic capabilities within the world-wide universities acting in the context of the knowledge economy. Universities have always been considered landmarks from the cultural and moral point of view but nowadays they are being overloaded with social and economic tasks. Throughout the sections of this research paper, we gradually focus on critical ideas related to the subject in order to accomplish the stated mission. We started by presenting the correlations of the organizational knowledge dynamics processes and the functioning of the university. The understanding of the basic knowledge conversion processes at the organizational level (Nonaka, 1991; Nonaka & Takeuchi, 1995) is essential for the further development of the competitive advantage throughout knowledge creation. Within the second section of the paper, we analyze the nature and characteristics of organizational knowledge capabilities. We consider that organizational knowledge capabilities represent a strategic competence for universities and also one of the main sources that generate effectiveness and growth for organizations. Throughout this second section of the paper, we discuss the strong connections between these special organizational capabilities and the gaining of a competitive advantage which ensure prosperity on long-term. We allocated the space in the third section for the presentation of relevant examples of dynamic capabilities from practice in order to reveal their intellectual capital potential for organizations' success (Bratianu, 2011; Stewart, 1999; Sveiby, 1997). What is most important to know about dynamic capabilities is that they really make the difference in the business world and also in the academia. For instance, businesses like Apple, Amazon, Google, and Facebook which are points of interest demonstrated that an ability to detect, shape and seize openings could change enterprises and change national and worldwide economies (Felin & Powell, 2016, p.81). The detailed analysis of the stages of building the dynamic capabilities is presented in the fourth section. To the three major stages of creating dynamic capabilities (sense, seize and reconfigure) are allocated a set of specific activities that we also describe in detail. Within the fifth section of the paper, we present and explain the complex process of building dynamic capabilities, especially for universities in the knowledge economy. We mention that we provided for the subject both theoretical foundations and practical background. In the final part of the paper, we analyze and argue the most important potential implications that the concept of dynamic capabilities may have upon universities world-wide. We addressed this topic because we consider it extremely important as today universities must face too many tasks which are continuously changing (Shattock, 2009; Unger, 2015; Viedma & Cabrita, 2012; Watson, 2010). Furthermore, for big structures like the universities, a major difficulty is the struggle with the adaptation process at a speeding pace. In the final section, we present our concluding remarks and open up perspectives for future research.

Organizational knowledge dynamics

Organizational knowledge is obtained by integrating the individual knowledge of employees. That implies that upon the persons' knowledge elements it is developed the organizational knowledge containing new types of expression. Comprehending the nature knowledge dynamics relies upon the similitudes utilized for knowledge portrayal or metaphors. Today universities play a great role (encompassing

'knowledge' as a key component) being considered 'knowledge pioneers' which are expected to supply knowledge, to provide innovation, to support entrepreneurship, to be leaders both in business and society (Bejinaru & Prelipcean, 2017; Duderstadt, 2000; Guerrero, Cunningham, & Urbano, 2015).

Universities worldwide are fully engaged in intense transformation processes in order to face the new challenges of a knowledge-based economy with globally increasing phenomena, such as emerging migration patterns. As key actors in innovation systems and crucial stakeholders in producing and disseminating knowledge, universities are today at the heart of European agenda politics. They are increasingly questioned about their ability to address the challenge of fast business, technological development, and social change. For the scope of making these organizations more competitive and more sustainable over time, universities must elaborate a vision-building process and introduce governance models of strategic governance of their internal affairs and external relations (Elena-Pérez, Saritas, Pook, & Warden, 2011).

Due to the continuously changing environment, universities undergo intensive transformation processes. In the adaptation process, this type of organizations focusses mainly on their traditional mission of teaching, learning, and research (Goddard, 2017; Guerrero & Urbano, 2012). Today, society asks significantly more from universities regarding their commitment. In such manner they need to focus on the requirements of various classes of partners, such as students and their families; private firms and public institutions; the State and all the national and local governments; and not least, the community.

During the past decades, the expression 'knowledge management' has been utilized, to portray the endeavours of such entities to catch, store, and transfer knowledge. A different perspective positions knowledge as more down to earth: "Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms" (Davenport & Prusak, 2000, p.5). In any case, we think that 'knowledge' is particularly a relevant idea and a superior comprehension may emerge out of its structure since it is multifaceted and has multi-layered meaning. Moreover, considering the learning creation hypothesis, 'knowledge' represents a dynamic human process of defending individual convictions about the "reality". Indeed, people and in this case universities need more knowledge in order to better comprehend the phenomena occurring within their environment (Bejinaru, 2010; Dima, 2014; Nonaka & Takeuchi, 1995).

Knowledge dynamics describes several exchanges of knowledge all through four actions of transformation: socialization, externalization, combination and internalization. These processes happen because of the two methods for communicating knowledge, inferred which is called tacit knowledge and unequivocal which is called explicit knowledge. Throughout the paper we will talk

about each type's influence inside the organization. Knowledge has a particular dynamic that could be depicted as an intrinsic human trademark and the different ways that knowledge moves around develop normally to a specific point. The different sorts, stages, and exchanges of learning began to be affected by men, after long perceptions, judgments lastly appreciation for utilizing it for the advantage of their work. The popular Japanese researchers Nonaka and Takeuchi (1995) developed a research and found that the representatives of a Japanese organization had the capacity to change unsaid learning into unequivocal information all through a dynamic procedure of communication, or more straightforward all through proximity. The aftereffect of this examination was the origination of their popular 'knowledge dynamics' phenomena which is spoken to all through the knowledge spiral. The knowledge spiral communicates the consistent and endless change of knowledge all through the four phases of transformation. To express it all the more particularly, knowledge turns into a vital asset and knowledge creation turns into a basic capacity of the new creating class. Since every single primary capacity of a university is identified with knowledge creation, knowledge exchange, knowledge change, and knowledge dissemination, the college turns into a knowledge-intensive organization with the dominance of scholarly / intellectual capital over some other type of physical capital.

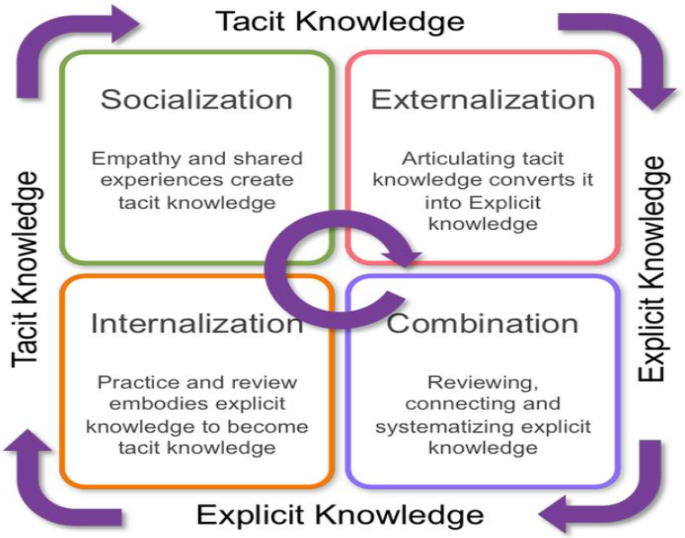

Figure 1. Knowledge dynamics conversion processes (Nonaka & Takeuchi, 1995)

Yet again has been accentuated the need to investigate the intellectual capital and the approaches through which academic management could convert its potential into operational capital, adding value for the university stakeholders and society. Theoretically, the socialization concept can be described as a process while a person is accumulating knowledge from the tacit knowledge transmitted by

another person. Transition of knowledge is happening by observation and not by spoken language Nonaka and Takeuchi (1995) argued that socialization is the most important type in the knowledge transfer cycle because it involves the transmission and transformation of key knowledge generated at the individual level (Polanyi, 1983). The in-depth observations of Nonaka and Takeuchi (1995, p.8) point out that "Tacit knowledge is highly personal and hard to articulate, which makes it difficult to communicate and share with others. In this category are included personal ideas, perceptions, and intuition. Knowledge also includes ideals, values and emotions and images or symbols." Intelligent leaders are able to produce opportunities of socialization in order for the employees to share their experiences and during this activity to gather others' tacit knowledge. Within the university takes place the classic case of inter-generational learning, while youngsters are taught and mentored by heavy professors in order to adapt easier to their jobs (Bratianu & Bejinaru, 2016; Bratianu, Agapie, Orzea, & Agoston, 2011).

Externalization is a process mostly dependent on the skills of using metaphors, comparisons or cognitive models. An appropriate exemplification is given by the metaphor of energy transfer of Bratianu and Andriessen (2008) through which they suggest that externalization can be compared to the phenomenon of converting the potential energy into kinetic energy. The essential idea of this metaphor is that potential knowledge (like potential energy) can materialize and produce effects and operational knowledge (like kinetic energy). Combination is the third process which is described as the blending of internal (old) knowledge and external (new) knowledge. Combination is different from externalization because it happens at the individual level as it is a social process dependent on the transfer of explicit knowledge.

The fourth process of the knowledge spiral is internalization and is the one that has the closest connection to practical learning and social interaction. Understanding the process of internalization needs to pay more attention to Nonaka, Toyama, and Byosiere (2001, p.497), "Internalization is a process of converting explicit knowledge into tacit knowledge. It has a very close connection with practical learning. By internalization, the generated knowledge is shared within the organization. Internalization of knowledge is useful for expanding, extending and rearranging the tacit knowledge belonging to members of the organization." In order to summarize previous ideas, the socialization and combination of knowledge transfer are processes that occur in a social context, while externalization and internalization are knowledge conversion processes happening at individual level, thus the organizational knowledge creation is a continuous process that evolves through the knowledge spiral. In consequence, the influences of knowledge dynamics occur on many levels and can't be avoided and by no means should they be neglected.

The nature and characteristics of organizational knowledge capabilities

The 'capability' of an organization, in a given field, reflects its ability to use its resources as efficiently as possible, in order that the existing potential will turn into beneficial results for the organization as much as possible. An organization is characterized by the existence of resources and capabilities and differentiates itself from other organizations by being able to capitalize on them in a competitive environment. Capabilities are intangible and sometimes difficult to define or evaluate, but they can be clearly identified by the results. For a strategic and successful management, it is very important to distinguish between resources and 'capabilities'. A company can have valuable resources but if it does not have the necessary capabilities to use these resources smartly and creatively then it cannot gain a competitive advantage in the external environment (Teece, 2012; Teece et al., 1997). Capabilities are achieved by integrating in time the quality of human resources, knowledge, organizational structure and cultural organization. In order to better understand this, we will consider some examples. In the field of product distribution, an important capacity is the logistics developed and used by the company. In the field of human resources, the company's ability to motivate employees to be as creative as possible, as is the case with Microsoft, can be highlighted. The management of this company has a special focus on the intellectual power of the employees (Bratianu, 2011).

The phrase "dynamic capabilities" suggests the idea of continuous renewal of organizational competences and focuses on the influence of strategic management for the adaptation and integration of organizational skills, resources and competences for the purpose of meeting the challenges of a global competition (Felin & Powell, 2016; Teece, 2009, 2012). The competitive advantage of organizations (private companies or public institutions) lies in its managerial and organizational processes, shaped by its (specific) asset position, and the paths available to it. Organizations must create a competitive advantage that is difficult to replicate and thus cannot be reproduced by competitors. In this sense, dynamic capabilities can be seen as an emerging and potentially integrative approach to understanding the newer sources of competitive advantage. The most acknowledged components which build up the dynamic capabilities as represented in Figure 2 are product and process development, technology transfer, manufacturing, intellectual property, human resources, organizational learning and management of R&D.

For organizations, worldwide, an increasingly emerging dynamic capability is the ability to be a learning organization (Prelipcean & Bejinaru, 2016). This means the continuous development of a knowledge base and the improvement of knowledge management. The capability of being a learning organization it is also important in order to acquire new knowledge and integrate it into the structure of existing ones. Large companies have even established the post of Chief Learning Officer (CLO), respectively the senior manager responsible for the organization's learning process. Having the necessary knowledge about the resources and capabilities of

the organization, its senior management is prepared, at any time, to identify and develop the core competencies, respectively building the support for achieving the strategic advantage in the competitive external environment. Fundamental competencies are those that contribute to the formation of an organization's personality and allow it to differentiate itself favorably from other organizations in the competitive external environment. By integrating the resources and capabilities of an organization in a creative and efficient way, fundamental competencies are obtained, which give the organization uniqueness and generate value for its customers for a period of time that it wants to be as long as possible.

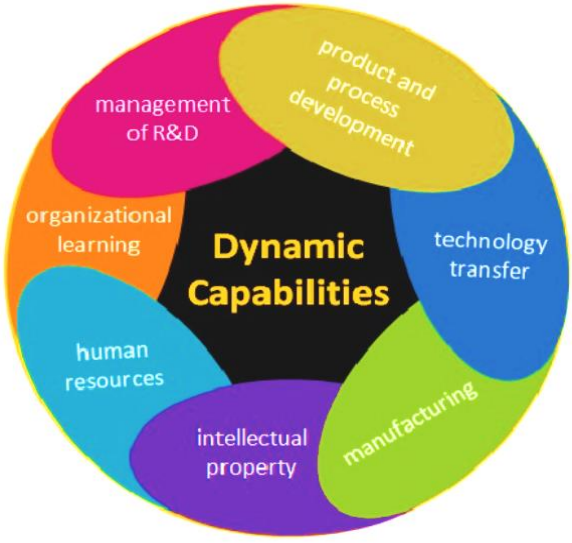

Figure 2. Components of Dynamic Capabilities (Teece, 2009)

In a paradoxical way, some resources and capabilities can turn into incompetence because other organizations are stronger in the field and have provided strategic advantages. For example, companies with insufficient financial capital - in comparison with other much stronger firms - may be unable to buy the latest cutting-edge technology, or cannot hire qualified staff to meet the quality requirements imposed by the beneficiaries. In this situation, financial capital, which is a tangible resource, is a weak point for the firm. Intelligent managers and creators who must responsibly analyze the company's resources and capabilities and find solutions to capitalize on financial capital in the opportunities of the external environment, avoiding direct entry into competition with the most powerful.

Tangible and intangible resources are sources of the organization's capabilities and underpin the development of core competencies and competitive advantages. Intangible resources have the potential to generate fundamental skills superior to the potential of tangible resources. The experience of the last decades has shown that the success of companies has been more secured by intellectual capacity and organizational efficiency than by the existence of primary materials, equipment,

and buildings. The ability to provide effective management of human intelligence and its transformation into quality products and services is becoming more and more a requirement of present and future. A number of statistics also highlight the fact that the share of intangible resources in the total resources of large companies is steadily increasing. There is a very simple explanation for this situation: intangible resources are less visible and harder to understand for competitors to be imitated, duplicated or substituted.

The following question may arise: what is the required number of core competencies for a firm to build a competitive advantage? Analyzes made by major management consulting firms show that this number is three or four core competencies. For Rolls-Royce, for example, the core competencies are engine quality, color, leather, and wood. The other competencies have been outsourced for the most part. If more than four skills are deemed necessary, then there is the danger of dispersing resources and management, and an intense focus is not given to those competencies that have real chances of becoming fundamental in the context of the competitive external environment. At this point, we need to emphasize that not all of the resources and capabilities of a company can be integrated to generate fundamental skills or competencies for the organization. While any fundamental competence is based on a capability, not all capabilities are automatically transformed into fundamental competences. Four criteria can be considered to see to what extent the capabilities of an organization can turn into fundamental competencies. These criteria are value, rarity, cost of imitation, and substitution chances.

A valuable capability is the one which provides value throughout the exploitation of opportunities, removing at the same time the external threats. Such valuable capabilities enable the top management to design and apply strategies in order to obtain value for targeted segments. Rare capabilities are those that are present in very few current or potential competitors. Managers who assess the capabilities of the organization should ask themselves and answer how many other organizations can identify these capabilities to decide whether they can be considered as rare or not. The capabilities that are found in most of the companies involved in the same competition cannot support a competitive advantage for any of them. Competitive advantage is obtained by organizations only if they develop a capability which can be considered unique or very rare. The bigger the cost of reproducing or imitating the capability the stronger the competitive advantage will be.

There are situations in which it is difficult to make a direct correlation between the competitive advantage obtained and the underlying capabilities. In other words, the uncertainty that makes it difficult to identify successful generating capabilities increases the cost of eventual imitation of that capability by competitors. Finally, there may be some social complexity that makes it difficult to imitate the successful generating capability. For example, the organizational culture of Hewlett-Packard is almost impossible to replicate due to its complexity. Capabilities that cannot be substituted are those that do not have strategic equivalents. For example, firm-specific knowledge, a certain environment of trust, the close collaboration between managers and employees could be those type of capabilities very difficult to detect

and replicate by competitors. Once created, the competitive advantage must be maintained as much as possible in order to achieve strategic competitiveness. In order for this type of strategy to be successful there must be considered three factors: the creation of barriers in limiting the imitation of fundamental competences, the capabilities of competitors and the overall dynamics of the external environment, especially the competitive environment.

At the moment when an organization achieves a competitive advantage, the other organizations it competes with will try to identify the resources and capabilities that underpin success and imitate them. The question is how long they will do it. Speed limiting contributes to the erosion of competitive advantage. That's why the organization that made the competitive advantage has to invest continuously to be one step ahead of the other competitors. This means creating new and new barriers for competitors in order to reduce the chance of imitation and to increase the time at the disposal of the organization that created the specific competitive advantage. Time becomes a crucial element of the competition.

If the competitive advantage is mainly based on resources, then imitation can be done relatively quickly because they are easy to identify and replicate. For example, Ford's famous automotive assembly line in the 1920s was successfully copied by General Motors. Intangible resources are harder to identify and so they become harder to imitate. An important barrier to imitation is to create a brand name, as Coca-Cola, IBM, Microsoft, Harvard, MIT, Princeton and many others have done. This name is related to resources, capabilities, and know-how that is the true secret of the company. Imitating capabilities is more difficult than resource because they are not so obvious and explicit. It's hard, for example, to define those capabilities developed by 3M that allow it to launch new and new products on the market. The same can be said about Walt Disney, which has developed an almost unique creation capability in the field of animation films.

Regarding the capabilities of the competitors and external dynamics respectively, we should consider Xerox. This company held a clear supremacy in the market for photocopiers. Almost the name of the company replaced the copying machinery. Almost everywhere, Xerox has become synonymous with photocopying. Through the 1970s, Canon and Ricoh from Japan began to market photocopying equipment at more favorable prices and such performance comparable to Xerox's. The speed of imitation of Xerox equipment has increased and the competitive advantage of this company has begun to erode in favor of Japanese companies.

Examples of dynamic capabilities from practice

Successful businesses must be the references for further designing the development and implementation of dynamic capabilities. For example, the experience of Valve Corporation reveals that the dynamic capabilities of the organization are integrated within the organizational system and thus they should be stimulated throughout the organizational means. Important insights regarding their success were revealed after a series of interviews developed at Valve

Corporation. The harnessing of their capabilities is achieved mainly through organizational design due to the fact that the fundamental principles are embedded in the company's Handbook for New Employees. According to the company's experience there resides a great potential inside the new comers and it can greatly be stimulated by an empowering organizational climate. Throughout the company's Handbook for New Employees is being created the right attitude and motivation of employees in order to align as fast as possible to the company's standards and become productive as soon as possible. The Handbook inspires employees that "The Company is yours to steer – toward opportunities and away from risks. You have the power to green-light projects. You have the power to ship products." Another statement enlarges the perspectives of the employees like "You were not hired to fill a specific job description. You were hired to constantly be looking around for the most valuable work you could be doing." One more strongly motivational phrase provides full integrity and freedom for the members' development while increasing the commitment towards the company "We've heard that other companies have people allocate a percentage of their time to self-directed projects. At Valve, that percentage is of 100" (Felin & Powell, 2016, p.79).

Felin and Powell (2016, p.80) describe that during the interviews they understood that the company supports the ongoing implementation of these principles by continuous support and procurement of resources. "For example, employees are empowered to select the projects and the people, and to initiate new products or platforms without higher approval. This great corporation achieved such a standard by continuously attending its organizational design and daily operations and thus developed the capacity for sensing, shaping and seizing market opportunities. Valve Corporation represents an example of good practices and illustrates that organizational design is the crucial enabler of dynamic capabilities" (Felin & Powell, 2016, p.80).

Considering the practical side of the business, the dynamic capabilities perspective regarding the competitive advantage argues that business success is volatile and needs powerful organizational capabilities for anticipating, shaping and adapting to changing competitive environments. According the dynamic capabilities view it is confirmed the important role of product design and manufacturing, though it argues that "success in volatile industries requires something more than baseline capabilities: namely, adaptive processes and structures that enable companies to change their baseline capabilities, anticipate shifts in market demand, develop and integrate new technologies, learn from market events, and foresee and capture new market opportunities" (Felin & Powell, 2016, pp.80-81).

Stages of building dynamic capabilities

Achieving and maintaining such dynamic capabilities implies not only the continuous improvement of existing capacities but that organizations have a global capacity to create new capabilities to help anticipate and respond to a turbulent global market. In this respect, we must recognize the efforts of companies that have started to experience innovative organizational architectures and have thus

discovered new structures and mechanisms suitable for continuous innovation (Salvato, 2009).

Real time analysis of business practice has brought to attention different types of capabilities which depend on the domain of the function and the level of organizational performance. Another conceptualization of the hierarchy and links of resources and capabilities in the organization have been also presented in Figure 3 and described as it follows:
– „resources are zero-order – they are fundamental for a firm's existence and lasting, a base upon which organizational routines, processes, and capabilities can be developed; they can be a source of temporary competitive advantage;
– operational and functional capabilities constitute a first-order in the organizational hierarchy – they are necessary to renew a firm's competitiveness or to sustain existing income streams; they convey the ability to allocate resources in order to achieve an objective;
– strategic capabilities (core competencies) being a second-order in the organizational hierarchy – integrate resources and lower-order capabilities with reference to the adopted strategy; they are crucial for a firm's competitiveness in a given moment in time;
– dynamic capabilities are third-order – depending on the degree of environmental dynamism, and are built on a cyclical strategic renewal of the resource base as well as of strategic capabilities, i.e., they influence the pace of their alteration" (Wojcik, 2015, pp.97-98).

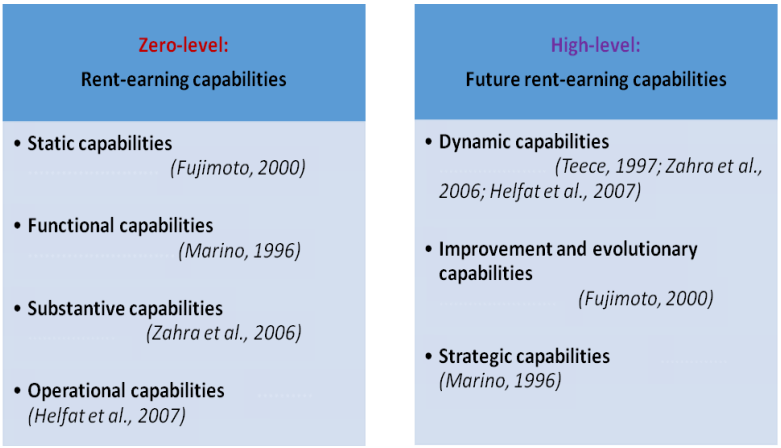

Figure 3. Different types of Capabilities (Kliewe, 2017)

Nowadays and mostly for future strategies – dynamic capabilities are essential because, as Teece (1997, p.516) explains, they represent "the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments." By describing in more detail their nature, consistency and development thus we shall also argue their role, their influence, and their importance. Referring to the representation in Figure 4, as a first instance, dynamic capabilities are distinct from functional, or zero-level, capabilities.

The zero-level capabilities of actually the resources are learned processes which are running the production sector on a global scale, like the assembly plant within the auto-industry. The characteristics of these processes are standardization, presetting and rigor. In fact, Teece (1997) compares the zero-level capabilities to 'best practices'. The functional capabilities, which are also zero-level, often focus on the organization's operational and technical abilities.

At the opposite side, dynamic capabilities are distinct and usually are linked to unique and innovative business models and practices. These features make this type of capabilities very difficult to imitate and this way they ensure a long term competitive advantage. An illustrative case of successful dynamic capabilities is the creation of the iPod. As Apple has identified that the market of .mp3 players is decreasing due to their obsolete design, the company seized the opportunity to create a more fashionable device in a smaller size: the iPod. After this experience Apple extended from the market of personal computers towards the market of electronics which has led to their dominance of both the portable digital music and music player industry (Wong, 2016, pp.1-2).

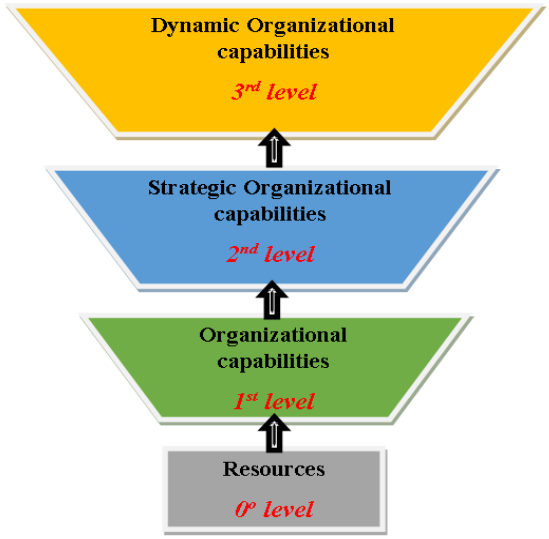

Figure 4. Organizational capabilities hierarchy (Wojcik, 2015, p.98)

The creation of dynamic capabilities may be enabled throughout three main categories of organizational activities that we will further describe and illustrate in Figure 5, in the paragraph below.

1. Sensing; Sensing is activated when the opportunities and needs of the external environment are being identified and analyzed by the organization. For this action is necessary that the leadership continuously monitors and senses the market. For Apple, it worked the creation of a latent demand for a smaller .mp3 player.

2. Seizing; Seizing means to react appropriately to the markets need in order to grow the company's value. This requires developing a competitive advantage by creating fresh business models which will increase the security of capital and

resources. Once again for Apple was the launch of iPod and iTunes which shifted the consumers' interest from computers to electronics.
3. Transforming; Transforming refers to restoring organization actions and keeping up their relevance to buyers. At this stage, managers should permanently streamline, enhance, and change organizational practices. Changing is vital to making feasible, inventive development. On account of Apple, this applies to Apple's cycles of the (iPod Nano, iPod Touch) and iTunes. "Developing up an organizational focus these activities enable firms to hone their dynamic abilities" (Wong, 2016, pp.1-2).

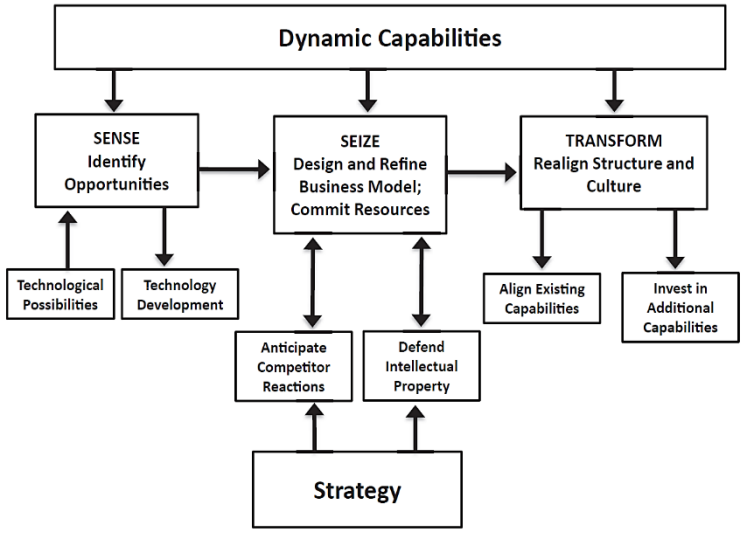

Figure 5. Simplified schema of dynamic capabilities, business models, and strategy (Teece, 2012, p.5)

Building dynamic capabilities for universities in the knowledge economy

The 'University' is attributed a certain set of roles in the global knowledge economy. It acts as a provider of public and private goods in education and research, as well as playing a well-established historical role in delivering solutions for social, economic and political affairs. Also, through its role as a public space, the university acts as a conduit to develop broader societal impacts related to the other scopes and facilitates integration into the wider social and innovation system. At the same time, universities, present a variety of accents in these roles. „Within the future unpredictable business environment and the accelerated knowledge economy development, the universities need to increase their knowledge generation and knowledge transfer toward the society" (Bejinaru & Prelipcean, 2017, p.350). Thus, there is a great relevance in developing dynamic capabilities for the prosperity of the university. Dynamic capabilities enable the university's expansion and work as antecedents for institutional diversification, and thus

utilization of dynamic capabilities can enable strategic advantage and success in the long term (Teece, 2012).

Presently, universities are asked much more in terms of their contribution towards the society which requires a dynamic monitoring of different stakeholders' behaviors, like: students and their families; private and public organizations; national and local governments. Within this context, universities should reconsider their priorities according to the new paradigm which proposes that universities should "switch from creating adaptation knowledge to produce generative knowledge" (Bejinaru & Prelipcean, 2017, p.350) and thus intensively develop their dynamic capabilities.

Universities are usually analyzed from the perspective of "organizational knowledge dynamics being considered as knowledge-intensive organizations" (Bratianu & Vătămănescu, 2017, p.492). According to this view, it becomes "imperative to implement knowledge strategies and practice in universities – as knowledge intensive organizations – on purpose to increase their efficiency and administrative performance" (Bratianu & Vătămănescu, 2017, p.492).

If considering the creation of knowledge within the university and the way in which the researchers are performing academic science and innovation then we can notice the multiplying effect of the research, collaboration and co-authorship networks. Building "collaborative networks may be considered as an effective strategy to produce knowledge" (Leite, Miorando, Pinho, Caregnato, & Gonzaga dos Santos Lima, 2014, p.33). For the case of universities, "networks are setters of a cultural and informational capital in which knowledge changes its nature and begins to circulate speedily in bytes, bringing together researchers from the most distant points of the world at the velocity of gigabytes per second and synchronous time" (Leite et al., 2014, p.33). Within universities, "networks are driving the creation of knowledge and the innovation processes resulting from the exchange of information" (Leite et al., 2014, p.33). It is already acknowledged that "knowledge is the main resource (input) and the most value product (output) of research processes. Networks are the context, virtual spaces and shared mental spaces that give energy to those research processes" (Pinho & Pinho, 2016, p.488). The universities' leaders should focus on developing this type of dynamic capabilities in order to ensure the long-term development of their institutions, staff, and students. From a distinct perspective, this complex process can be put in practice as a service provided to improve scientific knowledge creation.

The importance of developing dynamic capabilities for the universities has been demonstrated also throughout a complex research implemented by Yuan, Li, Vlas, and Peng (2016). The researchers reached the conclusions "(1) that universities create more ideas and capture more licensing value through dynamic management and active orchestration of assets, (2) that a developed factor market accelerates value creation and commercialization, and (3) that a developed institutional environment at the subnational level stimulates value creation but inhibits value capture" (Yuan et al., 2016, p.I). The bottom idea is that these results argue once more the consistency of the dynamic capabilities perspective for the universities.

Referring again to the schema of dynamic capabilities presented in figure 4, we emphasize, this time, the scenarios for each category of the dynamic capabilities available for universities. Thus knowledge-related dynamic capabilities of universities are reflected in the entity's abilities to (1) sense opportunities, (2) seize opportunities, and (3) reconfigure assets and business models in order to approach the challenges of changing environments (Teece, 2009).

Sensing refers to universities' abilities to discover opportunities (Gratton & Ghoshal, 2005). Obviously, sensing capabilities are not evenly distributed among universities (Teece, 2009). The performance of functions like research & development, financial or human investments support and incent each of the university's abilities of scanning, creating and learning but the final outcome still depends on the university's management to employ the appropriate strategy to coordinate them.

Seizing refers to the exploitation of universities' knowledge and technologies through commercialization. Exploiting the patent stock is more efficiently done in concert with the right business models and abundant complementary innovations. The greater the stock of patents of a university then there are bigger chances of leveraging them through contracts with businesses and thus to be more effective at seizing their innovations' potential. "The effectiveness of commercialization depends on the synchronization of business models with the environment" (Yuan et al., 2016, p.4). At this point universities must learn how to deliver according to their clients' needs.

Reconfiguring expresses the flexibility of business models, assets, and routines (Teece, 2009). A good level of this dynamic capability for a university would be achieved when the university is flexible enough to gain more value from its innovations while adapting its strategy to outside contexts. Reconfiguration ability is mainly influenced by the university governance and appropriate asset systematization. Universities can obtain high payoffs if they succeed to exploit technology creation throughout their dynamic capabilities (Yuan et al., 2016, p.20).

The effects of the dynamic capabilities presented above (sensing, seizing & reconfiguring) start while running the R&D activities when financial and human resources are put to work in order to sense opportunities and to create technologies. Throughout the use of newly created technologies, the university engages in activities of seizing the value of the consumed efforts. In order to increase the value obtained through technology creation and commercialization activities, universities should adapt their capabilities to the restrictions and opportunities provided within the global market (Leih & Teece, 2016). This type of efforts consists in reconfiguring capabilities according to the market challenges, improving at the same time their effectiveness (Leih & Teece, 2016). "Dynamic capabilities not only enable universities to "orchestrate" their activities to generate superior benefits but also help them maintain their leadership in innovation-based competitive environments" (Yuan et al., 2016, p.20).

Universities are both economic actors that need to achieve internal efficiency and social actors working on collaborative networks with the public and private sectors (Hong, 2008). Today, entrepreneurship and commitment to external partners are the determinants of this transition. Although the concept of a committed and entrepreneurial university is already debated, today's changing environment ultimately creates the need to deepen the concepts and implement them on a wider scale (Bejinaru, 2017b, p.266). In terms with the allocated expectations, universities must become entrepreneurial organizations aimed at doing the right things, instead of simply doing things right (Guerrero et al., 2015; Guerrero & Urbano, 2012). This approach allows them to be keep their dynamics in building, commercializing and reconfiguring valuable resources in order to face market changes (Leih & Teece, 2016). This type of universities is classified by scholars as 3rd Generation Universities, considering the logic that in the past universities were mainly focused on education (1st Generation Universities) or both education and research (2nd Generation Universities) (Bejinaru, 2017b, p.266).

Conclusions and ways forward

Reviewing the main aspects of dynamic capabilities, we insist that they have a great potential, if they reach a high level, for boosting the organizational value. In practice, the phrase dynamic capabilities represent the organization's skills of integrating, building and reconfiguring both internal and external competences in order to respond as prompt as possible to the changing markets. The capability of being a learning organization it is especially important for universities in order to acquire new knowledge and integrate it into the existing structures.

Universities have to respond to many roles and for sure to continuously diversifying challenges. The increasing rhythm of change represents a real issue for big structures like the universities and implies a set of difficulties in the adaptation process and this is actually the motivation for their continuous struggle. Universities should always design their assets in accordance with the major players on the market and in this sense, the networking between universities and industry could be more effective. In conclusion, the bottom line about developing the dynamic capabilities of universities in the knowledge economy is that throughout improving the sensing, the seizing and the reconfiguring activities universities will proceed towards a secure success.

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