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Dynamic Capabilities Trends: A brief review of the state of the art

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Abstract— Dynamic capabilities (DC) is a relatively young area, being a subject of interest and research of the recent year, hence its literature is mainly conceptual. In this article, we review briefly the current state-of-the-art, the literature over the past 10 years and how its related with competitive advantages and management. This article presents a brief literature review, proposing to guide future research, which will be conducted in a near future and work on a dynamic competency model which allows organizations to continuously develop these skills, aligned with the best models and to develop more effective strategies, which will lead to a continuously improvement.

Keywords— Dynamic Capabilities, Exploration, Exploitation, Competitive Advantages

I. INTRODUCTION

How do organizations adapt, survive and anticipate changes [1]? The ability to systematically anticipate changes and to be able to react to them is termed, by several authors, as dynamic capabilities [2]. The dynamic capabilities (DC) are used to explain the competitive advantages of organizations with the objective of creating and sustaining superior performance [3]. The concept has been applied to strategic management [4], but also to several other areas such as marketing and technology [5], innovation management [6], internationalization [7] and knowledge management [8]. In the literature, we found several papers mentioning the origin, development, and future directions of dynamic capabilities [9], concepts, antecedents and outcomes [10].

There are two different approaches in dynamic capabilities: one focused on specific processes and another on processes of generic knowledge [11]. Several studies have been performed to understand why organizations fail or succeed in a volatile organizational world. Dynamic capabilities state that organizations should use and renew their tangible and intangible resources and capabilities to sustain competitive advantages in rapidly changing environments [8]. The strategic management area is concerned about understanding how organizations manage to generate and maintain competitive advantages [4]. Dynamic capabilities appear as an extension of the resource based point of view (RBV) [8]. Some authors refer to dynamic capabilities as a specific routine that has been often subjected to extensive empirical researches outside the resource-based point of view [12]. The resource-based point of view defends that for resources to be a source of competitive advantages, they must be valuable, rare, inimitable and imperfectly substitutable (VRIO) [12]. VRIO focuses on the internal perspective. According to Cardeal and António (2012) [13] the “O” of VRIO refers to Dynamic Capabilities, which are the “organizations” needed to turn resource packages into competitive advantages. DC represent behavioural orientation

towards the constant integration, reconfiguration, renewal and re-creation of resources and capabilities in response to the constant market changes to remain competitive and focused on the internal processes or routines [13].

In this paper, Cardeal and António (2012)[13] identify a set of factors that determine dynamic capacities and distinctive competencies. These factors are organized into three categories: processes, positions and paths, which explain the essence of dynamic capabilities and their competitive advantages. These competencies can only provide competitive advantages if routines, skills, and complementary assets are difficult to imitate.

This article aims to become the basis for a literature review aimed in developing a dynamic competency model which will allow organizations to continuously develop these competencies aligned with the strategy. Thus, the research objective was not to make a statistical inference, a meta-analysis or even to express conclusions in terms of the DC researched, but rather to promote a brief analysis of existing literature in the last 10 years.

This paper is organised in 5 sections. Following a brief introduction in section 1, section 2 presents an overview of dynamic capabilities, concepts, perspectives and the relationship between DC and Competitive Advantages. Section 3, presents the relationship between the concepts of exploration, exploitation and dynamic capabilities. Section 4 provides an analysis of DC and the role of managers. Lastly, the conclusion expresses the objectives for the future and provides guidelines for further research.

II. DYNAMIC CAPABILITIES PERSPECTIVES (DC)

Currently there is a high consensus on the definition of Dynamic Capabilities according the authors Ambrosini and Bowman, (2009) [4]. DC can be understood as the capabilities to measure the sources, inputs and methods of wealth creation and capture from private companies operating, most of them, in environments of quick technological change [2]. This author, Teece et al., 1997 [2], also defines the specificity of the word “dynamic” and “capabilities”. “Dynamic” refer to the ability of organizations to renew their competencies to respond to new business changes and challenges. “Capabilities” emphasizes the key role of strategic management in adapting, integrating, reconfiguring and exploiting both internal and external organizational changes. It also refers to the requirements needed to respond to a new and disruptive changing environment. To the contrary of Resource-based view (RBV), DC offers extensive empirical research streams and have several adjectives such as equability, homogeneity and substitutability than traditional

Resource-based view (RBV). It's crucial to mention that dynamic capabilities vary with market dynamism [13].

The DC concepts, which have been developed in the recent years, are focusing in strategy and a new perspective of efficiency. Regarding the efficiency there is an important mention to underline, the resource based perspective. The resource based perspective has the capability to identify unique resources inside a company, analyse in which market these resources can have greater advantages and decide if these advantages are commonly used by a market integration, sales of relevant outputs or sales of the assets to a related business. This resource based point of view has measured the integration and diversification of resources into a new strategic line focusing on the inside of organizations and not on the outside. It's important to mention that dynamic capabilities are capabilities that give companies competitive advantages in changing environments. Besides the clear advantages of DC it's important to mention that dynamic capabilities are effectively replaceable because they must have common key features to be effective though they may be different in terms of certain details. DC may be a source of competitive advantages but are not sustainable [12] and effective capabilities depend on the dynamics of the market. Dynamic capabilities become difficult to sustain in high-speed markets. In moderately dynamic markets, competitive advantages are destroyed from the outside world. DC allow the mobilisation of resources to address the opportunities and capture value [14]. In high-speed markets, the threat to competitive advantages comes not only from outside the company, but also from within the company through the possibility of the collapse of dynamic capabilities [12].

Dynamic capabilities focus in developing, changing and renewing the most appropriate resources, as defined by the market and strategic needs (Ambrosini and Bowman, 2009)[4]. According to Ambrosini et al (2009) [4], DC involve four main processes, reconfiguration, leverage, learning and creative integration. Recent researches have tended to focus on specific product and technology aspects [16]. The author [17] affirms that changing the operational capabilities of an organization where business opportunities quickly disappear may not be beneficial, which means this change should be empowered into organisations where the context is slightly different. [17] also affirms the relationship between the operating environment and DC depends on the context and not only on the technological dynamism.

The concepts of Dynamic Capabilities, Competencies and Ordinary Capabilities (OC) have different meanings and it's important to distinguish them regarding the scope of this paper. The author Teece (2007;2014)[14][15] made a complete description of these notions. As mentioned before, the DC is linked to management to capture opportunities and understand the market needs. DC are related with processes that implement fundamental business systems [1]. On the other hand, competencies are related with the operational capabilities that support more technical activities. When it comes to the relationship between DC and OC, DC are related with adaptation, orchestration and innovation, while OC are related with specialized personnel, facilities and equipment, processes and routines. The OC are considered a strong methodology when organizations are based in good practices and specialized employees, however good practices by themselves are insufficient to maintain a crucial competitive advantage.

Although the competitive advantages and sustained competitive advantage are very similar their meanings are slightly different. According to the author Barney (1991)[18], the competitive advantage occurs when a value creating strategy is not being simultaneously implemented by any current or potential competitors. The sustained competitive advantage has the same definition with competitive advantage however it also contains the fact that other firms are unable to duplicate the benefits of this strategy thus, contribute to a dominant market position of a company. The competitive advantage is created and sustained through a highly localized process with several enhances, such as national values, culture, economic structures, institutions, and histories since all of them contribute positively to a competitive success [19]. A company only achieve sustained competitive advantage by implementing strategies that explore the strengths and benefits of their internal resources, neutralizing external threats [18] and when the company resources and capabilities are valuable, rare and socially complex [20]. Although the author Barney assumes this 'resources-first' strategy other authors, such as Porter (1980)[21], suggest that companies should start by analyzing their competitive environment, then choose a clear strategy and only afterwards acquire the resources needed to implement this strategy.

Over time, organizations are improving processes and routines aiming to gain competitive advantage. These routines are considered hard to imitate and thus can be a gain and an advantage in dynamic markets [13].

The concept of RBV is linked with both competitive advantages and sustained competitive advantage since it analyses companies' internal resources with the aim of identifying capabilities and competencies, at internal level, which will contribute to a competitive advantage. In other words, RBV examines the link between the characteristics of a company and its performance [18]. RBV is considered an approach that addresses concerns about how resources are merged into competitive advantages. The contrast between RBV and DC refers to a distinction between resources and capabilities and its very clear according to Cardeal et al. (2012)[13]. The disadvantage of implementing an RBV framework is the fact it doesn't adequately explain why certain organizations have a competitive advantage in situations of rapid and unpredictable changes [2]. To overcome this disadvantage the authors Eisenhardt et al., (2000)[12] have developed a methodology to extend the understanding of dynamic capabilities and RBV with the aim of understanding how these capabilities are influenced by market dynamics and how these evolve over time, both internally and externally to the organization. It's also important to mention that RBV does not address how the resources/capacities were transformed into competitive advantages. The advantages are in the way we configure the resources and not in the capabilities themselves (Eisenhardt et al., 2000)[12].

The connection between DC and Competitive advantages is mentioned by several authors (Teece, 2014; Ambrosini et al., 2009)[15][4]. The competitive advantage brings into DC a dynamic context which is crucial to overcome the static view of RBV. According to Eisenhardt et al., (2000)[12], the long-term competitive advantages are related to resource configurations and not to dynamic capabilities. The value of competitive advantage is connected to the ability of changing the resources base: create, integrate, recombine and free

resources. Currently, for a company to maintain a competitive advantage it needs to implement several disruptive concepts which are crucial to achieving a leading position. These concepts are well described by Teece (2007)[14], namely the concepts of Sensing, Seizing and Transformational Capabilities. Sensing refers to the understanding of what the market wants. Companies that understand what the market wants are in better position to foresee future events, understand opportunities and threats, create routines and implement processes of search and exploration [1]. Seizing, is the moment of capturing the opportunity and mobilization of resources to search for opportunities, managing threats and identifying new technologies, suppliers, innovation, etc...

To identify opportunities, organizations need to constantly scan, investigate and exploit through technology and markets, through analysis and knowledge, customer needs and technology alternatives, evolution of structures and markets, suppliers and competitors [14]. According to Teece (2007) [14], in economies exposed to rapid technological changes, the dynamic capabilities framework presented at the level of organizational and strategic competencies can enable organizations to gain competitive advantages. This framework integrates and synthesizes concepts and research sources of strategic management, business history, industrial economies, laws, organizational sciences, innovation studies. In 2008, Teece (2007)[14] adds on his model of dynamic capabilities, besides the concepts of sensing and seizing, the continuous renewal (transformation). Smith et al., (2007) [8] presents a model arguing that sustainable performance in organizations comes from market dynamism, which influences dynamic capacities; and from exploration and exploitation capabilities, which influence the learning process, which in turn serve as input to the dynamic skills and knowledge management (social and technical elements). These components influence operational routines and organizational capabilities and the organization's ability to reconfigure these routines and resources [8]. Dynamic capabilities directly affect the resource base of firms, which in turn are factors of competitive advantages [4]. Dynamic capabilities affect the value creation of the company through its impact on the core resources. These impacts can result in competitive advantages that may be temporary or sustainable, depending on the dynamism of the environment. This means that the advantages of the base feature can be of short duration due to changes in customers and/or competitor behavior [4]. Instead, dynamic capabilities allow companies to continuously update the stock of resources in order for companies to continue heading towards a moving target [4] however, maintaining these capabilities can include costs such as training and specialists.

According to Makkonen et al., (2014)[17], dynamic capabilities and innovation offer a competitive advantage and support the evolution of future capabilities which guarantee to companies a dominant position in the market.

The author Hoang et al., (2010) [22] mentions in his work that a combination of external and internal skills is critical to change different environments. Regarding the context of different projects, Hoang et al., (2010) [22] refers to multidisciplinary project teams, which may be insufficient to promote complex learning across the boundaries of the project and the enterprise. Managers need to make more significant investments in terms of resources allocation and organizational structure to build internal exploration

competences before attempting to leverage external exploitation [22].

Zhan et al., (2013)[23], in the study of International Joint Ventures (IJV), show that in IJV's financial and competitive advantages are not limited to distinctive resources, but also on the way they blended, integrated, deployed and used these resources in action [23]. Organizational ambidexterity (sequential, simultaneous, or contextual) can be found in complex sets of decisions and routines that allows the organization to sense and seize new opportunities through the reallocation of assets [24].

Lin Y. et al., (2014) [25], note in a study that dynamic learning capability has a great effect on organizational performance and it is important that organizations are able to develop a model that allows them to have dynamic learning capacity so as to absorb information and knowledge through the interactions developed in business and through resource development programs. Therefore, according to these authors, the competitive advantages do not result only from VRIN resources but also from the development of dynamic capabilities, especially dynamic learning [25]. Nieves et al., (2014)[26] argue on the basis for the exploitation activities underlying dynamic capabilities and affirm that routines and activities are a conditioning factor that can limit the introduction of changes in organizations. Nieves et al., (2014) [26] go further affirming that in environments subjected to changes with low turbulence the existing organizational knowledge constitutes a base to build change processes which will improve the adaptation of organizational resources to different and substantial changing conditions.

III. EXPLORATION VS EXPLOITATION

O'Reilly et al., (2008) [1] refer that strategy-related researches define dynamic capabilities as organization's ability to reconfigure existing assets and capabilities and explain long-term competitive advantages. O'Reilly et al., (2008) and Raisch et al., (2009)[1][27] also refer to the concept of ambidexterity as the ability of organizations to simultaneously achieve, "explore" and "exploit". This concept of ambidexterity also makes part of the DC in exploration and exploitation and occurs when organizations depend on organizational or operational competencies. The meaning of exploration is related with the fact of creating new things, research, discovery, autonomy, innovation and variation. By the opposite, the concept of exploitation refers to processes within the organization, namely their efficiency, increasing productivity, control, certainty and reduction of variation. The combination of exploration and exploitation is associated with better performances, and a steady increase in innovation and learning [1]. Although these concepts share the same objectives, innovation and learning inside an organization, they are slightly different. The combination of exploitation and exploration in internal or external skills have different outputs. For instance, in a combination of internal exploration with external exploitation the output is an improved R&D project performance while in a combination of internal exploitation and external exploration the output is a reduced R&D project performance. Hoang et al., (2010) [22] also affirm that internal exploration competencies lay the necessary foundation to leverage external experience. Competitive pressures contribute to exploitative innovation and to performance, while environmental dynamism

attenuates it. Environmental dynamics grow up and have a positive association with exploratory innovation and financial performance [28]. There are authors such as Goksel et al., (2007)[5] that argue that marketing resources influence the development of exploitation capabilities while technological resources influence the development of exploration capabilities.

IV. THE ROLE OF MANAGERS AND RESOURCES

The current role of managers is crucial for maintaining dynamic capabilities in their organizations while these are impacted by organizational processes, systems and infrastructures. This concept of ambidexterity is fundamental since it requires leaders to continually design and relocate their business to the marketplace [1]. Although the ambidexterity is not a source of competitive advantage, it facilitates new resources configurations which can offer a competitive advantage. The efficiency and innovation do not need to be related with strategic commitment but need to highlight the role of senior teams in building dynamic capabilities [1].

Regarding the role of managers, it's also important to include several concepts. One of the main concepts, as mentioned previously is the concept of Seizing. This concept allows the involvement of senior teams on strategic intent and the alignment of business strategy with several business models. It also includes reconfiguring, where operational capabilities can provide competitive advantages at a certain time. Another important concept is knowledge management, as it focuses on solutions for managers to create, retain, transfer and use tacit and explicit knowledge [8]. Another important concept is the process of homogenization. This concept have a significant impact in organizations known for having a high performance and where exploitation is the key factor driving out exploration [28]. The influence of DC is also relevant and adequate for all level of managers. The lower-level managers make important decisions about different business units which are crucial for a company survival [29]. These decisions have several implications for the enhanced scope of DC inside companies, which can be extended, internally, to all business levels [29] that can give a different overview of DC, which is more focused in individual managers and top management [15].

The ability of the CEO and top management to recognize the key developments and new trends and then align the organization in their implementation, is a characteristic of organizations with dynamic capabilities [15]. The senior management teams with high maturity, are becoming more focused internally and even more homogeneous regarding success. The concept of success requires leaders to reallocate resources from mature and declining enterprises to emerging growth opportunities. Dynamic capabilities relate to the renewal of resources in order to reconfigure them into new capabilities and competencies.

The management is carried out so that terms such as exploration and exploitation are constrained by organizational and market pressures [30]. If the nature of the organization is rigid it tends to restrict or even counteract the exploration [30]

The concept of dynamic capabilities requires a good performance in sensing, seizing and transforming thus the effectiveness of dynamic capabilities can be compromised by a weak strategy [15]. The ability of management to develop dynamic capabilities is the key to the success of service

business development [31]. The overall ability of organizations to adapt to changes, diversity, and create strong strategies and very good dynamic capabilities, will increase financial indicators [15]. One of the key elements is the importance of leadership related to the organizations ability to conduct discovery, co-creation and change. To implement these concepts, managers are crucial to managing resources allocation properly and measure the economic activity. The DC framework proposes a theory that doesn't only accommodate companies with internal inefficiency but also companies which have weakness dynamism.

CONCLUSION

The results of this study have presented a methodology focused in dynamic capabilities which require internal and external guidance by the management team to implement it in organizations structures. It is correct to affirm that organizations which deal with dynamic capabilities must learn which are the customer needs, which are the new technologies, what aspects of the business model are working and whether the current strategy is effective in leading the company to achieve market leadership. The adaptation of concepts as exploration and exploitation could be an advantage in organizations which are implementing DC. This relation could be based in a problem-oriented research, since it helps generating new constructs, mechanisms and patterns. Wu (2010) [32] affirms that industrial environments of low or medium volatility can profit and gain competitive advantages through resources mainly if they increase the concept of VRIN in organizations. In the opposite, in highly volatile environment where companies cannot rely on previously accrued business resources to gain competitive advantages, a completely new strategy should be adopted.

With this study, it is evidenced that dynamic capabilities are the main source of competitive advantage for companies which implement them, since companies that can quickly integrate learn, and reconfigure their internal and external resources can adapt to rapid environmental changes and thus increase or maintain their competitive advantages.

In this study, it has been understood the benefits of DC in organizations regarding their future research objectives, which DC are needed to be developed and how management should develop dynamic skills in order to organizations achieve the required success. It has been also demonstrated the organizations influence ability to innovate (increase exploration) and replicate existing methods in new contexts (increase exploitation).

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