

Dynamic Capabilities as Organizational Routines: a Systematic Literature Review

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Abstract

The intent of the article is to investigate actual organizational routines as evidences of the dynamic capabilities in the organization. Apart from intense debate around dynamic capabilities theme over the last couple of decades, there is still no consistent understanding about their actual applicability. Organizational routines arises on academic literature as an option to investigate such dynamic capability applications with no indication on which specific function or area these routines could be searched for. Looking forward to meet the indicated goal, we performed a systematic literature review in relevant journals with a search strategy limited to the last four years. From forty-four articles selected, internationalization and entrepreneurship were among the areas with relevant representation for future research of dynamic capabilities as organizational routines. This study contributes to the continuous evolvement of dynamic capabilities view and its applicability. From the managerial point of view, the article sheds light on dynamic capabilities strategic implementation purposes.

Keywords: organizational routines; dynamic capabilities; systematic literature review.

Resumo

O propósito deste artigo é investigar as rotinas organizacionais existentes como evidências das capacidades dinâmicas na organização. Mesmo com um debate intenso sobre o tema capacidades dinâmicas nos últimos vinte anos, não se conseguiu ainda um entendimento consistente sobre sua real aplicabilidade. Rotinas organizacionais são apontadas em literatura acadêmica como uma opção para investigar estas aplicações das capacidades dinâmicas sem indicar em qual função ou área específica estas rotinas podem ser procuradas. Para atingir o objetivo mencionado, elaboramos uma revisão sistemática de literatura em periódicos relevantes com uma estratégia de busca limitada aos últimos quatro anos. Dos quarenta e quatro artigos selecionados, internacionalização e empreendedorismo se encontram entre as áreas com representatividade relevante para pesquisas futuras sobre capacidades dinâmicas como rotinas organizacionais. Este estudo contribui para a evolução contínua da visão das capacidades dinâmicas e sua aplicabilidade. Sob o ponto de vista gerencial, o artigo lança alguma luz sobre a implementação estratégica das capacidades dinâmicas na organização.

Palavras-chave: rotinas organizacionais; capacidades dinâmicas; revisão sistemática da literatura.

1. Introduction

Starting with the internet in the 1990s, several science fields have presented rapid growth leveraged by unprecedented historical technological innovations. In line with the evolutionary theory approach, firms strive to keep up with changes in an external environment supported by these technological advances (Nelson & Winter, 1982). Dynamic capability (DC) view (Teece, Pisano, & Schuen, 1997) has been debated as a strategic approach to cope with this choppy environment. Adaptability to this dynamic environment in order to reach and sustain competitive advantage is in the core of the DC concept (Dosi, Nelson, & Winter, 2000; Teece & Pisano, 1994; Teece et al., 1997). Firm routines has an important role as a constitutive element of DC and could indicate the presence of these capabilities in a firm (Eisenhardt & Martin, 2000; Winter, 2003; Teece, 2007).

Even with this intensive discussion about routines as a DC constitutive element, there is a lack of attention in literature on which specific routines and which areas or functions of the firm formal structure these DC could be identified. The purpose of this article is further explore this open topic in recent literature in searching for better understanding of which specific routines and in which areas of the firm DC are currently being considered.

In this dynamic and turbulent scenario, efforts on identifying resources that are rare, valuable, non-imitable and with no substitutes as per the resource-based view (Barney, 1991; Wernerfelt, 1984), might not be enough to sustain competitive advantages. Also, firm efforts to cope with external industry threats (Porter, 1980, 1985) might not be the answer either to maintain organizational performance above competitors. Teece et al. (1997) have shed light on the subject with the dynamic capabilities view emphasizing the need for integration, building and reconfiguration of internal and external competencies to deal with environments characterized by these rapid changes.

Eisenhardt and Martin (2000) criticized this tautological aspect of the DC construct as a sufficient condition to sustain competitive advantages. Besides suggesting DC as a still non-sufficient condition to sustain competitiveness, the authors also have contributed to the DC view by expanding the usefulness of the construct for firms operating in environments with low dynamism. DC are defined as organizational and strategic routines for reconfiguration of resources as a response to environmental variations (Eisenhardt & Martin, 2000). Since these two initial conceptual articles have been published, the subject has received extensive academic coverage with many unfinished debates on its concept, background and indicators (Winter, 2003; Meireles & Camargo, 2014).

Through a systematic literature review, this study aims to further explore and evaluate applicability of firm routines from the perspective of dynamic capabilities. The following questions applies: (1) what are the most relevant studies found in the last four years that connect organizational routines and dynamic capabilities? (2) which subject groups have received greater academic attention linking routines and dynamic capabilities? (3) what specific organizational functions are addressed by academic studies in assessing their specific routines under the lens of dynamic capabilities?

Answering these research questions aim to contribute to the field of dynamic capabilities view and their applicability as a firm strategic initiative. It also shed some light to its practical implementation from the managerial point of view.

2. Theoretical background

2.1 Organizational routines

Firm routines study has its roots in the Behavioral Theory of the Firm. In their classic book, March and Simon (1958) indicate that for a type of stimulus that has been repeatedly tried in the past, the response would be highly routinized. According to the authors, these routines are part of the firm development and learning acquired in some previous period through an appropriate response to this class of stimulus. Nelson and Winter (1982) indicate that firm routines represent all regular and predictable standardized behaviour of such firms. As a metaphorical parallel to the biological evolutionary theory, the authors associate these routines with genes inherited from genealogical ascendants and subject to mutations based on the environment. Nevertheless, the authors also highlight there is a significant amount of business behaviour that does not resemble this definition.

Feldman and Pentland (2003) define firm routines as a repetitive and recognized pattern of interdependent actions, involving multiple actors. The routine concept definition is splitted into its ostensive aspect, formed by its explicit steps as already described and its performative aspect, which involves the perceptions and judgments of the actors in the execution of those routine steps. The authors suggest the ostensive aspect as having a guide function, reference and accountability element. The performative aspect refers to the action itself allowing creation, maintenance and modification of the running routines. Assuming a view of routines as standardized, repetitive, and explicit steps in the organization, the distinctions between formalized routines for various organizational situations are evident. However, for the same routine, Feldman and Pentland (2003) understand there are important differences between the

explicit routines to be completed, and the steps and procedures actually performed in its execution. Based on this assumption, they challenge the premise that routines causes organizational inertia. Nonetheless, that there are more empirical efforts showing routines as a cause of inertia and stagnation than efforts indicating them as a source of flexibility and change (Feldman & Pentland, 2003).

In their empirical study, Becker and Zirpoli (2008) showed the variations between what is explicit as a rule and what is actually executed. They concluded among other points that these evaluations are important to alert management about the need to revise routines or to include more effective process indicators to follow the adherence between rule and execution. The authors also found that any novelties applied to the organizational routines are a source of anxiety and loss of security.

Nelson and Winter (1982) recognize routines as sources of damping for natural conflicts between departments and organizational actors in the fulfilment of their functions. Nevertheless, based on the conceptions and variations between the ostensive and performative aspects of the routines, Feldman and Pentland (2003) suggest the changes might go beyond the already known actions of continuous improvement or any improvement resulted from ad hoc groups solutions used in organizations. At this point, routines as a source of flexibility and change would be the basis for a process that leads to innovation and adaptation.

2.2 Dynamic capabilities

Global interdependent and interconnected economies, embedded in rapid technological change environments, are a source of great uncertainty to firms in their efforts to create and sustain competitive advantages (Teece, Peteraf, & Leih, 2016). These accelerated technological innovation passes through virtually all fields of science in deep symbiosis with each other (Segars, 2018), leveraging important market changes and may even leading to their complete extinction. O'Reilly III and Tushman (2016) have indicated in their survey that less than one in one thousand American companies will reach forty years of existence given the changes brought about by technological evolution and the need for adaptation. The model of the five forces (Porter, 1980) and the resource-based view (Penrose, 1959; Wernerfelt, 1984; Barney, 1991) remain important for the firm strategy but do not address the environmental dynamism characterized by rapid technological changes (Teece et al, 1997). In an effort to fulfil this void, more and more academic publications dealing with the dynamic capabilities construct have been published around the world.

Following evolutionary theory (Nelson & Winter, 1982), Helfat and Winter (2011) argument indicates that, while resources and ordinary capabilities are enablers for the firm to operate at the current moment, the DCs are enablers for the firm to change the way they currently operate in an attempt to meet environmental demands.

Teece et al. (1997) argue that industries may have a large amount of valuable technological assets without possessing capabilities that prove to be effective in generating competitive advantage. Therefore, in addition to these valuable resources, firms need to demonstrate speed and flexibility in innovation coupled with a management capability that effectively guides the coordination and redirection of internal and external competencies. To this ability to find new ways of obtaining and sustaining competitive advantage, the authors refer to as dynamic capabilities (Teece et al., 1997).

Eisenhardt and Martin (2000) criticize the tautology initially associated with obtaining sustainable competitive advantage as a direct consequence of the dynamic capabilities. The authors define those capabilities as firm processes and specific strategies that create value for companies within dynamic markets by manipulating resources into new value creation strategies. They are strategic and operational routines through which firms reach new configurations of resources as markets emerge, collide, divide, evolve, and disappear (Eisenhardt & Martin, 2000).

In an effort to answer the tautological question initially associated with the construct, Helfat et al. (2007) introduce the concept of evolutionary fitness. According to the authors, in order to sustain competitive advantages, it is necessary a market demand on the value offered and the presence of barriers to the competitors for positioning viable alternatives. Technical fitness, in turn, represents the original definition of the construct indicating the ability to reconfigure internal resources effectively.

For an analytical understanding of the DC concept, Teece (2007) suggests three important aspects of these capabilities. The first refers to the firm's ability to perceive and model opportunities and threats - sense. The second aspect deals with the capture and use of these opportunities - seize. Finally, to sustain the competitive advantage and superior performance, the firm needs to improve, protect and, when required, reconfigure its tangible and intangible assets - reconfigure.

Despite broad academic discussion, the DC construct still does not demonstrate robustness as to its definition and applicability (Arend & Bromiley, 2009). In a bibliometric study of the construct between 1994 and 2011, Vogel and Güttel (2013) argue that DC view lacks a

consensus in their conceptualization. For the authors, this poses a barrier for comparisons between empirical studies attempted to support actual advances in the construct understanding. Different methodologies used in publications on the subject make it difficult to follow up on their evolution. Moreover, they indicate that qualitative studies reflect the idiosyncrasies of authors and reviewers involved collaborating for a lack of single and consensual direction on the subject (Vogel & Güttel, 2013).

In any case, how firms modify, sustain and develop competitive advantages and capture value remain as fundamental aspects to be explored. Ambrosini and Bowman (2009) argue that while many fields address important aspects associated with organizational changes such as cognition and innovation, none of them, except for the perspective of dynamic capabilities, have a specific focus on identifying how firms can modify their valuable resources over time and persistently. Hence, the growing attention on the theme.

2.3 Dynamic capabilities as organizational routines

Are organizational routines sources of inertia or leveraging adaptation and change? Even with no common understanding, DC as organizational routines for resource adaptation are relevant in the academic literature. As an example, work of *ad hoc* groups set up to solve problems, leads to change but are not considered DC (Helfat, Finkelstein, Mitchell, Peteraf, Singh, & Teece, 2007; Winter, 2003). Different than *ad hoc* initiatives, dynamic capabilities means the execution of precise and repetitive activities in order to intentionally achieve changes in the company's resources and other capabilities (Ambrosini & Bowman, 2009; Helfat & Winter, 2011).

Eisenhardt and Martin (2000) argument reinforces this understanding further suggesting that DCs are more homogeneous and interchangeable than general understanding on the topic. Nonetheless, in markets with high speed of change, the same authors recognize DCs as simple, fragile and strongly experimental processes with unpredictable results (Eisenhardt & Martin, 2000). In the same path, another group emphasizes the tacit elements of the DC, not characterizing them as processes or routines themselves, which are in general explicit and easily coded. They suggest DC as capabilities reinforcing processes and routines whose functions are coordination, integration, learning and reconfiguration (O'Reilly & Tushman, 2011; Teece et al., 1997).

Routines could be identified as all regular and predictable behaviour patterns of firms (Nelson & Winter, 1982) representing phenomena developed within specific trajectories (Vergne &

Durand, 2011). Their use as a source of adaptation and change may imply ambiguity in the characterization of DC by reinforcing its vague nature especially when it refers to their practical relevance (Arend & Bromiley, 2009). In this respect, Teece (2012) argues that managers' entrepreneurial behaviour should also be included as a component of the DC since entrepreneurial intent and creativity are necessary elements for assessing and determining organizational changes. This ambiguity is also reflected in literature where some authors argue that DC are based on processes and routines (Eisenhardt & Martin, 2000; Winter, 2003; Teece, 2007), while others indicate that firms with DC are fluid and with less routinization (Wohlgemuth & Wenzel, 2016).

Such apparent dichotomy indicates that it is still unclear how this dual perspectives between routines and entrepreneurship for DC can be settled. Mahringer and Renzl (2018) suggest that routinization and entrepreneurship initiatives are not mutually exclusive. Successfully implemented entrepreneurial initiatives might turn into processes and routines becoming repetitive and therefore be standardized. Organizational ambidexterity (Duncan, 1976; O'Reilly & Tushman, 2011) offers a way to cool this tension down by indicating a double, continuous and simultaneous focus of the organization on exploring new opportunities for value creation and exploiting current activities to effectively capture this value created. In this context, the duality between adaptability and alignment (Birkinshaw & Gibson, 2004) or flexibility and efficiency (Eisenhardt, Furr, & Bingham, 2010) is treated with both rigid operational routines and with routines based on the microfoundations of the DC (Teece, 2007). On a different perspective, other authors argue that organizational memory as routines tends to overemphasize exploitation and are not fully applicable to exploration purposes (Lee, Kim, & Joshi, 2017).

The debate over the basic nature of dynamic capabilities concerns whether it is defined in terms of *latent action*, such as an ability, capacity, or enabling device, or in terms of *constituent elements*, as in a process, routine, or pattern (Di Stefano, Peteraf, & Verona, 2014, p.313).

It looks like routines as a constitutive element of dynamic capabilities is still an open topic and requires further debate in the academy.

3. Methodological procedures

Perform literature reviews has several purposes, including providing a theoretical basis for ongoing research and answering practical questions through understanding what already exists about the subject of interest. In this sense, by providing evidences for informing practices in any discipline, this method is a key research objective for the academic

community (Tranfield, Denver, & Smart, 2003). The purpose of this method to the research objectives of this specific study is linked to the searching patterns of performance clusters and organizational functions that make use of routines from the perspective of dynamic capabilities.

Okoli and Schabram (2010) suggest that a detailed methodological procedure is important for any type of literature review. Specifically for a systematic literature review (SLR), the authors recommend to follow a list of nine steps for a good SLR: purpose; protocol and training; literature search; practical filter; quality assessment; data extraction; synthesis of studies and writing. Although we did not strictly followed all specifics in each step suggested, we used this procedure as a guideline for our research.

Considering their recognized extensive coverage, we chose both SCOPUS and WEB OF SCIENCE (WoS) databases as sources for the search. Search on WoS was based on the following Boolean expression applied to the TOPIC field of the search machine: ("dynamic capability" OR "dynamic capabilities") AND routines). As a practical filter, we selected only articles from management and business areas published since 2014 from the set of documents retrieved. An initial set of 124 documents emerged from this procedure. In the case of SCOPUS, we used the same search strategy: TITLE-ABS-KEY = (("dynamic capability" OR "dynamic capabilities") AND routines). From this point, 177 documents showed up. Practical filtering procedures including selection of business, management and accounting area, journals as type of source, and articles as type of documents, resulted in 105 documents. Update criteria for articles published since 2014 reduced this number to 52 documents.

After consolidation of the combined list of both databases, we defined our quality assessment based on JCR (> 1.4) or CiteScore indexes (> 1.4). In addition, we further investigated all remained TITLES and ABSTRACTS to make sure both “dynamic capability” and “routines” expressions were present. We finally obtained forty-four articles to dig into.

4. Results findings and analysis

For the specific period of this study, there were no relevant variation in the number of papers published per year deserving any specific point to be highlighted. Figure 1 shows the quantity of articles selected by year for reference:



Figure 1. Number of selected articles per year

Among the documents, eighteen presented a qualitative research nature, seventeen used a quantitative method of analysis and nine articles opted for a theoretical study on the subject. It is important to notice the number of quantitative studies - mostly surveys - almost matching the number of qualitative studies and surpassed by far the theoretical ones. With more than two decades of discussions, this result may indicate a saturation level and the need for more empirical quantitative confirmations related to the study of DC as organizational routines. Nevertheless, the number of theoretical articles on the subject was also still significant showing a persistent need for theoretical construction using routines and dynamic capacities applied in a specific context. Five out of nine theoretical articles were classified in the clusters by area of practice confirming the theoretical construction for these specific groups. Other three theoretical articles refer to the construction of conceptual scales or frameworks for research. Development of measurement scales to deal with DC and routines is desirable as the results might uncover the causal ambiguity of organizations heterogeneity specially associated with higher-order capabilities (Verreynne et al., 2016).

Among the eighteen qualitative researches, eight were multiple case studies, seven single case studies and only one literature review. Although dynamic capabilities are context embedded and ultimately rely on management skills and attributes (Helfat & Martin, 2015), single-case studies might not unleash proper understanding of firms heterogeneity on sustained competitive advantage. In that sense, multiple-case studies seems more appropriate. As per the articles selected with multiple-case studies, it was noticed a prevalence choice for a non-strategic group sample in order to collect inter-related information on different businesses or sectors.

Analysis of each document selected displayed twelve clusters relating dynamic capacities as routines for the specified period. They are:

- 1- Internationalization
- 2- Entrepreneurship
- 3- Supply chain
- 4- Scale/framework
- 5- Learning/knowledge
- 6- Product development
- 7- External networks
- 8- Environment
- 9- Startups
- 10- Project management
- 11- Tecnology
- 12- Publishing

Rare mentions were found of specific routines on specific functional areas as we initially expected. Literature at this point seems far from point out and develop specific actual routines linked to DC. New product development and project management approached this point without showing which specific routines are involved.

Clustering the subjects of interest for the research on DC as organizational routines revealed some highlights. First, international organizations dealing with different institutional environments seems to attract scholars searching for dynamic capabilities development as organizational routines on different countries. More than 13% of the articles retrieved were looking at these organizations. Second, the entrepreneurial orientation along with management willingness to change and leadership under high or low dynamic environment were also subject of interest during the specified period. Although no specific actual routine has been mentioned, entrepreneurship appeared as an important cluster with also more than 13% of documents retrieved.

Supply chain is also a hot topic when it comes to dynamic environments. It is where organization execution is predominantly concentrated. Linking routines of this important area to DC development was also found as an important point to scholars.

Albeit the other clusters listed had no relevant participation on the set of articles obtained, in general, they focused the attention on a specific group with important insights included.

Results and references are highlighted in table 1 – please note that 5 documents retrieved could not be included in any specific cluster due to their general approach to the theme.

Authors	Cluster	Function
Matysiak, Rugman, & Bausch (2018) Riviere, Suder, & Bass (2018) Fainshmidt, Nair, & Mallon (2017) Williamson (2016) Lee et al. (2016) Lee et al. (2015)	Internationalization	- - - - - -
Zacca & Dayan (2018) Lee (2018) Macpherson, Herbane, & Jones (2015) Koryak et al. (2015) Wilhelm, Schlömer, & Maurer (2015) Gajendran et al. (2014)	Entrepreneurship	- - - Purchasing - -
Prange, Bruyaka, & Marmenout (2018) Brusset & Teller (2017) Brusset (2016) Beske, Land, & Seuring (2014) McAdam, Hazlett, & Galbraith (2014)	Supply Chain	Supply Chain Supply Chain Supply Chain Supply Chain Supply Chain
Verreynne et al. (2016) Wollersheim & Heimeriks (2016) Volberda & Emre (2015)	Scale Framework	- - -
Gonzalez & Melo (2017)	Learning / Knowledge	-
Saul & Gebauer (2018) Barrales, Montes, & Gutierrez (2015) Koufteros et al. (2014) Kok & Ligthart (2014)	Product development	Product development Product development Product development Product development
Alinaghian & Razmdoost (2018) Mitrega et al. (2017) Henisz (2016) Forkmann (2016)	External networks	- -
Perez-Valls, Cespedes-Lorente, & Moreno-Garcia (2016) Kabongo & Boiral (2017) Essid & Berland (2018)	Environment	-
Hora et at. (2018) Ehrenhard et al. (2017) Carrick (2016)	Startups	- - -
Davies & Brady (2016)	Project management	Project management
McAdam, Bititci, & Galbraith (2017) Zardini, Rossignoli, & Ricciardi (2016)	Tecnology	- Information technology
Mezger (2014)	Publishing	-

Table 1. Dynamic capabilities as routines. Authors, clusters and organizational functions

5 Final Remarks

Scholar interest on organizational routines applicability from dynamic capabilities perspective was demonstrated through the extraction of the articles according to the objective of the study. Twelve clusters were identified as areas of interest for organizational routines from the

perspective of dynamic capabilities with internationalization, entrepreneurship and supply chain standing out as the most interesting ones.

It is important to highlight a virtual absence of the articles indicating specific organizational functions with routines through the lens of dynamic capacities. Even those studies that had the included functions as indicated in table 1, did not make any direct and specific mention to such functions. Its inclusion was more of a result of the cluster or area of interest. In any case, supply chain, project management and product development functions deserved special mention.

For Wohlgemuth and Wenzel (2016), organizations with indication of dynamic capabilities present specific routines well defined at the strategic level but present a less ostensible characteristic at the operational level. Research and development, new product development and alliances management are typical areas where routines could be setting the stage for dynamic capabilities manifestation (Eisenhardt & Martin, 2000). Winter (2003) proposed DC as embedded on higher-order type of routines – routines transforming lower-level routines. On the other hand, Teece et al. (2016) argue that while routines and processes are vital components of DCs, strong capabilities is never entirely supported by routines or rules. One of the reasons is that routines tend to be relatively slow to be changed.

Following this debate and as per the findings of this study, this specific theme has still a way to achieve clear understanding for both scholars and practitioners. Having in mind several limitations of this current research, the results showed that **actual routines** structuring organizational dynamic capabilities are not the focus of the current academic research. Thus, a gap based on empirical confirmations applied to actual organizational routines as an evidence of dynamic capability remains to be addressed.

For future investigation, it would be important to explore the specific clusters found searching for evidences of actual explicit routines in each one of them and why these routines could be considered (or not) a dynamic capability element. These future research attempts related to this subject should also investigate in greater depth the applicability of these routines in specific operational functions.

This study has an important limitation that might stimulate other research projects. Since the debate of routines as a component element of the dynamic capabilities dates back to the seminal articles of the DC construct, the four-year period, despite pointing to updated trends, might be extended in search for more consistent set of data related to the topic.

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