

The Relationship between Dynamic Capabilities and Firm Performance

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Abstract. In recent decades, among researchers in the field of strategic management, the importance given to dynamic capabilities (DCs) has been growing specially in very dynamic contexts, due to the role they have revealed in the way organizations readjust all their resources and competences as a reaction, and constant re-adaptation, to an increasing volatile environment in which they operate, and how this impacts their Performance and sustainability as a business.

The aim of this paper is to characterize the relationship between DCs and firm Performance so it was necessary to check the state of the art of the research concerning these issues. A systematic literature review (SLR) of empirical studies exploring the current relationship between DCs and Performance was made for this purpose. A total of 44 research papers were included in this SLR mainly focused in the exploration of the relationships between DCs (interrelating with several other variables) and their impact on Competitive Advantage (CA) and firm Performance.

The SLR revealed, in general, that there is a strong empirical evidence to support the positive impact of DCs, both directly and indirectly, in firms Performance.

Keywords

Dynamic Capabilities; Competitive Advantage; Performance; Systematic Literature Review

1. Introduction

In an environment of increasing volatility, companies face increasing challenges, to which they have to react and (re)adapt, arising from a constantly changing reality. In addition to having to adapt to increasingly global and demanding markets, and an increasingly heterogeneous and also more demanding set of stakeholders, the company must look for a unique and inimitable combination of resources and outcomes in order to achieve a competitive advantage (CA) and ensure a superior Performance for the business. In this scenario, it is not surprising that researchers in the areas of business management and business strategy, as well as in the area of information technologies, have gained, in recent years, a greater awareness that Dynamic Capabilities (DCs) are extremely important due to the impact they can have

on the competitiveness of a company, being fundamental for its Performance and sustainability as a business.

Recently we have experienced the disruptions in the global supply chain that started after the World Health Organization declared the coronavirus disease outbreak to be global health emergency at the end of January 2020. Such a crisis affects the supply network at the source and destination, has extreme effects on global supply chain [Magableh GM. (2021)]. Afterwards, the quick reopening of economies and the lifting of pandemic-related restrictions led to a strong increase in aggregate demand, underpinned by pent-up demand and increased savings. Consumers and businesses started spending what they could not before due to the quarantines and the lockdowns imposed by governments to contain the pandemic. Unfortunately, aggregate supply failed to meet this increased aggregate demand due to the global value chain disruptions and world trade frictions caused by the pandemics. Gradually, the main factor behind rising inflation came to be the higher energy prices and transport costs, after the abrupt surge in global demand for energy, as the economies exited fast the recession of 2020. Especially after the Russian invasion of Ukraine and because of the ongoing war, energy prices and inflation increased further, giving rise to reasonable concerns about the anchoring of inflation expectations [Catiforis, Christos (2022)].

The aim of this paper is to characterize, as accurately as possible, the relationship between DCs and firm Performance. To achieve that it was necessary to check the state of the art of the research concerning the impact of DCs in firms Performance and its relationship with other mediator/moderator variables. Therefore, a systematic literature review (SLR) of empirical studies exploring the current relationship between DCs and Performance was made for this purpose. A total of 44 research papers were included in this SLR mainly focused in the exploration of the relationship between DCs (interrelating with other variables) and their impact on firm Performance. This research focuses on the effect caused by the interrelation between different variables (such as external environmental elements, several firm resources, specific skills, technologies, routines, management orientations, level of entrepreneurship, etc.) and DCs, and the way that effect impacts on firm Performance.

2. Research background

As stated by Porter (1990), only firms themselves can achieve and sustain a CA through recognizing the “uncomfortable truth” that innovation grows out of pressure and challenge and it takes leadership to create a dynamic and challenging environment. CA arises from the leadership that amplifies the adequate “forces” (internal and external) to promote innovation and upgrading [Porter ME (1990)]. Also, the most important agglomeration economies are dynamic rather than static efficiencies and revolve around the rate of learning and the capacity for innovation [Porter ME (1996)].

DCs are defined, in the literature, as the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. DCs thus reflect an organization's ability to achieve new and innovative forms of CA given path dependencies and market positions. The term 'Dynamic' refers to the capacity to renew competences so as to achieve congruence

with the changing business environment; certain innovative responses are required when time-to-market and timing are critical, the rate of technological change is very fast, and the nature of future competition and markets difficult to determine. The term 'Capabilities' emphasizes the key role of strategic management in appropriately adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment [David J. Teece, Gary Pisano, & Amy Shuen (1997)].

Firm resources include all assets, capabilities, organizational processes, attributes, information, knowledge, etc, controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness. Some studies suggest that firms obtain a CA by implementing strategies that exploit their internal strengths, through responding to environmental opportunities, while neutralizing external threats and avoiding internal weaknesses [Barney J. (1991)].

For analytical purposes, DCs can be disaggregated into the capacity to sense and shape opportunities and threats, to seize opportunities, and to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets. DCs include difficult-to-replicate enterprise capabilities required to adapt to changing customer and technological opportunities. They also embrace the enterprise's capacity to shape the ecosystem it occupies, develop new products and processes, and design and implement viable business models [Teece, David J. (2007)].

Intuitively, and according to [Baia (2020)], CA and Performance are strongly related and therefore very often used as synonyms, although conceptually distinct. CA is conceptualized as the implementation of a unique value-creating strategy, dependent on the efficient exploitation of resources and capabilities and their combinations, which facilitate cost reduction, exploitation of market opportunities, and/or neutralization of competitive threats [Barney J. (1991)]. According to [Ma (2000)] we can argue that CA, since it helps a firm create value for its customers, it contributes directly to firm Performance through cost advantage and differentiation advantage. Also, CA, be it discrete or compound, resource-based or market-positioned-based, is expected to be positively related to firm Performance [Ma, Hao (2000)].

Performance can be defined as the final economic rent accrued by a firm, as a result of the implemented strategy and its realization, typically measured, in conventional (financial) terms, by indicators such as market share, sales growth, and profitability [Baia E, Ferreira JJ, Rodrigues R. (2020)]. There are also scholars, like Santos (2012), that conducted research using a multidimensional view of Performance where it is defined, besides the financial Performance, a 'Strategic Performance' construct that includes items like 'customer satisfaction', 'quality', 'innovation', 'employee satisfaction' and 'reputation'. This leads to a wider concept of firm Performance that implies to measure: 'Profitability', 'Market Value', 'Growth', 'Employee Satisfaction', 'Customer Satisfaction', 'Environmental Performance' and 'Social Performance' [Santos, Juliana Bonomi, and Luiz Artur Ledur Brito (2012)].

3. Systematic Literature Review

Since the objective of this paper is to characterize the relationship between DCs and firm Performance it was necessary to assess the state of the art with regard to research on the theme of the impact of DC on CA and Performance, then it seemed interesting to choose the systematic literature review (SLR) methodology according to the procedures from the paper 'Guidelines for performing systematic literature reviews in software engineering' [Kitchenham, B., & Charters, S. (2007)]. Figure 1 shows the steps of the SLR adapted to this particular case.

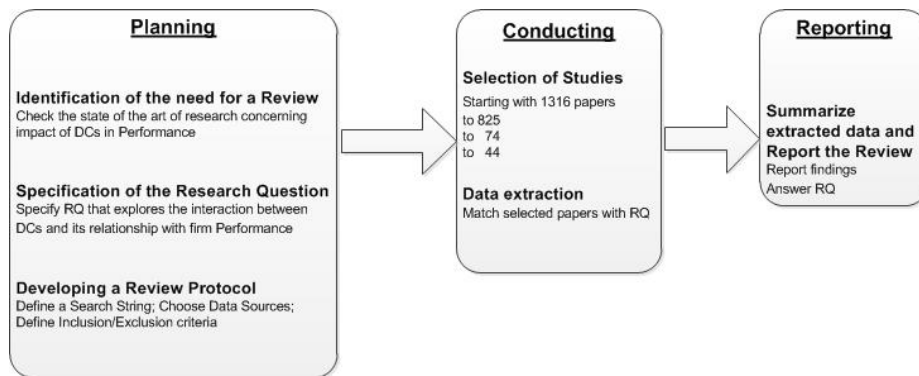


Figure 1: SLR adapted to this research

4. Planning the Review

4.1 Research Motivation

The most recent events, such as the covid-19 pandemic, the invasion of Ukraine and the energy crisis, and their side effects on the economy represent very demanding challenges for companies and, therefore, to understand the mechanisms through which organizations can adapt more quickly to new circumstances, ensuring the Performance expected by its stakeholders, seems to be fundamental.

This is an environment of constant turmoil where the role of DCs, the way they interrelate with each other and with all other corporate resources as well as with external factors, seems to be fundamental. The better we understand how DCs work and how they impact business Performance and sustainability, the better.

4.2 Research Question

This SLR aimed to answer the following research question (RQ): **How can we characterize the relationship between DCs and firm Performance?**

4.3 Review protocol

This review protocol includes: searching for papers concerning DC and (Performance or CA); using Boolean AND/OR for linking the key terms like 'dynamic capabilities', 'performance', 'competitive advantage'. The following search string was then defined

to search for the appropriate literature: ‘dynamic capabilities’ AND (‘performance’ OR ‘competitive advantage’). The search procedure involved the use of the digital online library EBSCO.

In this SLR, the following inclusion criteria were applied: studies exploring the impact of DCs in CA and firm Performance; studies with empirical assessment and English written papers, peer reviewed and with full text available in the assessed virtual library.

Regarding the exclusion criteria, studies that failed to provide any empirical evidence, as well as other studies that merely provided assumptions or opinions or descriptive frameworks without any empirical evidence were all omitted (which means that other SLRs were not considered either). Thesis were also excluded as well as some studies that provided empirical evidence from a very particular sector or economy, without global relevance. Some papers that didn’t focus on both DC and Performance weren’t included either.

5. Conducting the Review

5.1 Selection of Studies

Using the defined search string in the virtual library EBSCO a total of 1316 papers were retrieved from the search process. After excluding the duplicates, there were left 825. After reading abstracts and applying the exclusion criteria, remained 74 papers. After reading full text, and apply the exclusion criteria to these 74 papers, a total of 44 were accepted for evaluation.

5.2 Extraction Analysis

Most of the papers, 42, used the methodology ‘Survey’. In 2 were used the ‘Case study’ methodology. More than half of the included papers have less than 4 years that were published, and only 13 papers have more than 6 years.

In 21 papers it was collected data from companies across Europe; 8 papers collected data from Chinese firms. Then there is a variety of companies from different countries, used for data samples, like Australia, Chile, Emirates, Jordan, India, Indonesia, Iran, Mexico, Pakistan, USA, South Korea or Taiwan which enriches the research. Also, 3 papers use data from international companies that operate worldwide.

There are also samples from a very wide range of activity sectors such as industry, manufacturing, services, automotive, chemicals, electronics, high-tech. Also, most of the papers selected a sample with a very diverse range of various activity sectors.

6. Reporting the Review (Answer RQ)

6.1 Tested DCs and Variables

‘DCs (in general)’ were identified and tested in 18 of the 44 selected papers. ‘Exploitation & Exploration’, ‘Information Technologies-enabled DCs’ and ‘Supply Chain Agility’ were studied by 4 papers each. All the other identified DCs were tested by 1 or 2 papers.

Concerning the Variables, 'Environmental dynamism' was tested in 6 papers. 'Marketing capabilities', 'Flexible Information Technologies infrastructure' and 'Supply Chain Agility' were studied in 4 papers each. And closing this top 5, 'Innovation capability' was tested by 3 papers. All the rest of the Variables were studied in 1 or 2 papers.

'Supply Chain Agility' was studied both as a DC and as Variable. In total it was tested in 8 papers. This means that, after 'DCs (in general)', it was the most tested by the selected papers, followed by 'Environmental dynamism'.

6.2 Research Models Typologies

The Research Models represent the type of connection between DCs-Variables-Performance that the researchers wish to test. In other words, they summarize the hypothesis being tested in each paper. These models are also named, depending on the paper, 'Conceptual model' or 'Theoretical framework' but, in the end, it means the same. Also, in some papers this model is not represented graphically but, by analyzing the hypothesis being tested, the model could be easily deduced.

After studying all the Research Models of the 44 papers it was possible to create 6 main different types ('A', 'B', 'C', 'D', 'E' & 'F') and group the papers by each type.

6.3 Analysis of the results

The SLR revealed, in general, that there is a strong empirical evidence to support the positive impact of DCs, both directly and indirectly, in firms Performance. The majority of the papers identified, and tested, diverse DCs that, by interrelating with each other and/or with other identified "mediating" and "moderating" Variables, were mostly perceived as having a real positive impact in the achievement of a superior business Performance. This is in line with other recent researches like [Cyfert, Szymon, et al. (2021)] where it is suggested that "the individual activities in the process of developing DCs are interconnected, and through mutual interactions and couplings, they positively affect the economic effectiveness of an enterprise".

We could verify that there are cases where the same Variables were tested as DCs in one paper and as a Variable in other paper, for example 'Supply Chain Agility'. In any case the key issue was the result of the interrelation between them and how that impacted on the Performance. As already mentioned, that impact was mostly perceived as positive, directly and/or indirectly. Also, when testing external Variables, there were evidences that, the more dynamic the environment, the stronger is the correlation between DCs and Performance.

Some of the papers that analyzed Variables from external origin, highlighted the importance of the relationship between the organization's DCs, how they emerge, how they interact with the external environment and how that can impact on Performance. This is aligned with previous research that stated that organizations operating in a highly or moderately dynamic context will require different patterns of micro-foundations of DCs considering that employee adaptability and proactivity are likely to play out differently in their contribution to sustainability DCs in different contexts, and identified individual differences and organizational practices which enable these behaviors [Strauss, Karoline, et al. (2017)].

6.4 Discussion

Previous research found evidence that, given the context, it is necessary to analyze the dynamic process through which organizational assets and structures are developed in order to identify micro-foundations for the establishment of dynamic strategies [Teece, David J. (2007)]. This leads to emphasize the role of the external environment in the process of developing DCs. This process must be, somehow, customized to the reality, internal and external, of each organization. That will result in a set of DCs coherent with its global context but also ready to meet its own targets. Then, the mutual influence between those DCs, all intangible and tangible resources, and the external context of the organization, should be positively reflected in its Performance.

Figure 2 illustrates the issues that have been evidenced so far in the relationship between DCs and Performance. It resumes the results analysis and the discussion point that derived from the SLR combined with results from previous researches and known literature.

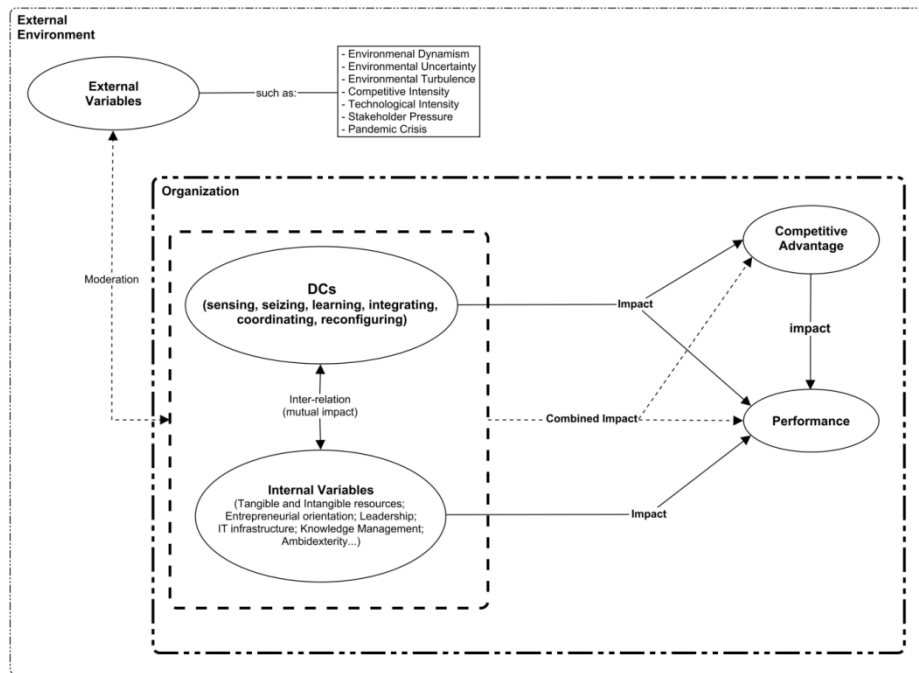


Figure 2: The Relationship between DCs, Variables and Performance

7. Conclusion

7.1 Contributions

DCs are considered as the company's ability to make the necessary changes, in a volatile environment, and productively use existing resources to create new and unique configurations of routines and resources [Giniuniene, Jurgita, and Jurksiene.

(2015)]. Although the concept of DCs is broad enough, the main definitions of the current concept point to the various organizational processes such as sensing, seizing, learning, integrating, coordinating and reconfiguring. Theoretically, these capabilities interrelating with each other, with all the existing resources and other capabilities, and with the organization's external environment, can lead to achieve a sustained CA and a superior Performance.

Generally, the empirical evidence, that came across the several analyzed papers, end up being compatible with the argument, among the various researchers, that DCs really impact in increasing the company's Performance and the achievement of a sustained CA. The value and rareness of a firm's resource–capability combination contributes to its CA and that advantage, in turn, contributes to an increasing Performance and mediates the relationship between those 'value added' combinations, enhanced by DCs, and firm's Performance.

By studying the combined effect of the interrelation between DCs and different resources, it enriches the understanding of the role and importance of the resource and capability combinations for organizational success since certain DCs are more important than others considering the specific context of each firm. It is also highlighted that, in some cases, having certain DCs or the DCs (only by themselves), may not mean a positive impact on Performance.

As already stated in previous research, "DCs are used to achieve a CA but over time what is dynamic today becomes a market practice and converts into ordinary and static organizational capabilities" [Bari, Nadeem, et al. (2022)]. As also theorized by Teece (2019), "Capabilities are diverse; ordinary capabilities for operations, administration, and governance can often be bought, or 'rented', and they diffuse relatively quickly; DCs are harder to develop and they must be built as they cannot be bought, while strong DCs enable the effective selection and deployment of ordinary capabilities" [Teece, David J. (2019)].

DCs have to be built through a process of investment in discovery, knowledge generation, and learning. So, each organization must cultivate and seek for the assertive set of DCs having in consideration its own internal and external context, obviously aligned with its own goals. Moreover this may influence the way in which managers can make strategic decisions to promote the right resource/capability combination, considering their specific contexts, in order to enhance CA and improve their own business Performance.

7.2 Limitations

In this SLR, "only" 44 articles were analyzed, which, in some way, is always a limitation despite the fact that they meet the inclusion/exclusion criteria. The hypotheses tested are those that the respective researchers, from their perspective, defined as the most assertive, taking into account the DCs and variables they intended to study. On the other hand, we were also conditioned to these same DCs and variables that were defined by the researchers of each paper. We will always have to hypothesize that many other DCs and Variables could have been identified and studied, perhaps even more relevant in terms of impact on firms' Performance.

7.3 Future work

In a recovery scenario, post Covid-19 pandemic, where imbalances in supply chains caused severe increases in prices, the armed conflict in Ukraine, still with no end in sight, further aggravated this problem, causing major problems in energy and food supply, and further escalation of inflation across the globe [van Meijl, Hans, et al. (2022)]. The current social, political and, particularly, economic context has created an extremely turbulent environment around all economic agents and, in particular, for companies.

Once DCs may be considered as the company's ability to undertake volatile environment's changes and productively use existing resources for creating new configurations of routines and resources [Giniuniene, Jurgita, and Jurksiene. (2015)], as they also embrace the enterprise's capacity to shape the ecosystem it occupies [Teece, David J. (2007)], it seems to me pertinent that more studies emerge to understand, in this current turbulent context, what are the most relevant DCs, and which other variables they interrelate with, and how this is reflected in the Performance of today's organizations.

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