

## **Dynamic Capabilities View within the Field of Strategic Management Field: A Bibliometric Analysis**

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### **ABSTRACT**

The dynamic capabilities view has been established as one of the most influential theoretical perspectives in contemporary strategic management, raising the need to use bibliometric tools. The work aims to identify the intellectual structure of dynamic capabilities view within the scientific field of strategic management by analyzing 823 research articles published on the Web of Science Core Collection. The results obtained from the analysis of 13,144 cited references have provided important conclusions to one of the most vibrant debates of this study approach, the confrontation between two of the seminal contributions of the dynamic capabilities literature. In addition to shedding light on the ongoing debate in the literature, this paper has achieved some research findings. First, it improves the comprehensive theoretical justification of the need to implement bibliometric techniques in the study field. It lets the researcher could better understand the foundations of the analyses performed. Furthermore, the author and co-citation analysis served to build the respective network and to group the most-cited references into four clusters. These results have been of great use in understanding the current intellectual structure and how to propose the relevant research currents in this field of study. Finally, the conclusions obtained are subject to certain limitations. On the one hand, this research is based on a sample of documents published on the Web of Science Core Collection database. On the other hand, emphasis must be

placed on those limitations more closely associated with utilizing bibliometric techniques, which allows us to propose interesting lines of future research.

**Keywords:** Dynamic capabilities, Strategic management, Bibliometric, Citation analysis, Author citation and co-citation analysis (ACA)

## INTRODUCTION

The dynamic capabilities approach has turned out to be a highly ambitious field of study where numerous researchers from different branches of knowledge have found significant contributions and applications - both theoretical or conceptual and of an empirical nature. In comparison, the approach's early steps are associated with the seminal article entitled *Dynamic Capabilities and Strategic Management* by Teece et al. (1997). Many works, some of which even contradicted the initial approach of these authors, subsequently started to appear. The dynamic capabilities view has been established as one of the most influential theoretical perspectives in contemporary strategic management, which many authors have recently corroborated (see Barreto, 2010; Cepeda & Vera, 2007; Di Stefano et al., 2014; Schilke et al., 2018; Waleczek et al., 2019). The main framework covering this field of research rests on the search for sustainable competitive advantages by firms belonging to turbulent and dynamic business environments. The realization of such benefits is linked to the existence and implementation of the firm's different dynamic capabilities.

Due to the rapid and substantial appearance of studies that did not fully share the postulates of Teece et al. (1997), the dynamic capabilities view has been relatively disconnected during the last few years. Wang and Ahmed (2007) stated a serious terminology gap in the concept of dynamic capability, which may (even) seem confusing and inconsistent. Similarly, Barreto (2010) highlighted the absence of a central theory to unify the different scientific contributions and support its empirical developments. Kay et al. (2018) have also recently described the dynamic capabilities framework as being poorly characterized, stressing the existence of inconsistencies, confusions, and even contradictions in this field of study (Salvato, 2003).

Numerous efforts have recently been made to overcome the lack of consensus concerning critical aspects, such as the nature or definition of dynamic capabilities, and their specific role along with that of their component factor, through searching for theoretical agreement and the reconciliation of the various perspectives adopted within the literature on dynamic capabilities. Examples of this trend can be found in the publication of works like those authored by Albort-Morant et al. (2018), Di Stefano et

al. (2010), Kurtmollaiev (2020), Peteraf et al. (2013), Schilke et al. (2018), or Vogel and Güttel (2013).

In the light of the preceding, it seems clear that an unquestionable need currently exists to carry out a suitable state-of-the-art when novel researchers enter a hitherto unknown field of study. The academic literature provides plenty of studies to identify the essential items that describe the state-of-the-art in a research question or field. Nevertheless, most of these works tend to be carried out using purely qualitative and subjective techniques, which is why their considerations suffer from a lack of scientific rigor due to the highly subjective nature of researchers (Tranfield et al., 2003; Vogel & Güttel, 2013). In turn, the rapid growth of literature in research has made it easier to study the processing of information at an early research stage and analyze it with bibliometric tools to gain more objective and accurate insights.

The bibliometric technique can be described as a quantitative method (White & McCain, 1998) which allows us to enrich scientific evaluation with an objective measure (Garfield, 1979). It is also handy for information organization purposes in a specific thematic field (Albort-Morant & Ribeiro-Soriano, 2016). Therefore, the use of these tools within a context like the one we are dealing with arguably generates particular interest because it: (a) minimizes the researcher's subjective component; (b) simplifies the processing of large information volumes; and (c) provides us with an exhaustive, objective overview of the field under study.

Our paper seeks to identify the most critical research lines on dynamic capabilities within the scientific field of firm Strategic Management by examining a wide range of research papers published on the Web of Science database during the period comprised between 1995 and 2020. In other words, this study attempts to visualize and analyze the intellectual structure of the subdiscipline above (White & Griffith, 1981), the dynamic capabilities view. It tries to highlight which contributions have most strongly impacted the development of the knowledge base, from the firms' strategic management point of view, as well as the primary relationship and linkages between the most influential researchers and theorems.

A bibliometric study was performed to achieve the above aim based on the implementation of various types of analyses. More precisely, we carried out a descriptive analysis of the 823 documents obtained, together with examining the 13,144 cited references employing two tools: author citation and co-citation analysis (ACA); and social network analysis (SNA).

Accordingly, we believe that this paper can be useful in two main respects. First, it makes an innovative and significantly beneficial methodological contribution. The methodology is opposed to the most conventional literature review formats usually found in the field of social sciences, which had hardly been used so far. Second, it

extends the context of study of other studies as the starting point is 1995, when the first published paper appeared, and the period of analysis ended in 2020. Considering the above, and given the nature of our study, this analysis may offer essential guidance and be of great use to researchers wishing to start examining dynamic capabilities.

The structure of this article is divided into five distinct sections to achieve the proposed aims. First, the theoretical framework of dynamic capabilities is examined following the introductory section, deepening the most important ideas involved in the vision and the most important literature developments. Subsequently, the third section explains the methodology utilized during our research work, emphasizing the procedure applied, which is based on a bibliometric analysis divided into a primarily initial descriptive study, later complemented with a reference analysis. The next and fourth sections will supply the most important outcomes through various tables and graphs, which help us clarify the fundamental postulates. Moreover last but not least, the final section summarises the most important conclusions drawn from the analysis performed and the main limitations faced.

### **THEORETICAL FRAMEWORK**

Apart from presenting the theoretical basis related to the research topic under examination, i.e., the dynamic capabilities view, this section reviews bibliometric analyses' historical and conceptual foundations. We explain where this concept comes from and specify when it began to be used, checking whether it has been previously mentioned in our study field.

Concerning the dynamic capabilities view, as suggested above, despite having been approached from different knowledge areas, its origins lie in the field of firm strategic management (Teece *et al.*, 1997). This study context constantly incorporates new economic applications and models which try to explain business reality. Among the most frequently posed questions that stand out are why some firms are more profitable than others and how they achieve certain competitive advantages. It is worth highlighting two of the most deeply rooted theories in the scientific community, which sought to provide a sound explanation for the existence of differences between companies in terms of increased performance and competitive advantages.

Firstly, we can refer to the classical theory based on industrial economics, where the competitive forces model developed by Porter (1981) stands out. Porter's contribution mainly focuses on knowing the degree of attractiveness achieved by each industry which would depend on five fundamental competitive forces that jointly define the chances of obtaining better results and the resulting competitive advantages. Nonetheless, numerous authors later argued that the differences in profitability between

firms that compete within the same industrial sector might eventually exceed those existing between firms competing in different sectors (Hansen & Wernerfelt, 1989; McGahan & Porter, 1997; Rumelt, 1991). This traditional theory lost some of its credibility as a result.

The focus of attention subsequently began to move away from the so-called “industry effect” and towards the “firm effect,” according to which disparity in business results has to do with internal aspects specific to each firm — hence the origin of the Resource-Based View, promoted, amongst others, by Barney (1991). In this case, the search for competitive advantages involves identifying and assessing each firm’s resources and capabilities. According to this approach, it is the Valuable, Rare, Inimitable, and Non-substitutable (VRIN) resources owned by the firm (Barney, 1991) that allow it to obtain Ricardian economic rents (Eisenhardt & Martin, 2000; Teece et al., 1997). Note that the main ideas about the resource-based view were initially provided by Penrose (1959). However, Wernerfelt (1984) deserves all the credit for defining the resource-based view or theory, later popularized by Barney (1991).

In any case, the rapidly changing and highly dynamic business environment prevailing in the early 1990s and the increased level of competition permanently encouraged firms to adapt, renovate, and reshape their resources and capabilities. And it led to questioning the main proposals of the resource-based view, which viewed the firm’s resources as static, ignoring the impact of market dynamics (Eisenhardt & Martin, 2000). It is then that the dynamic capabilities view arose to tackle those constraints (especially the static nature of resources) identified in the most important theories, guaranteeing the existence of sustainable competitive advantages in dynamic contexts (Teece et al., 1997). The dynamic capabilities view considers the evolutionary nature of the firm’s resources and capabilities, thus reviving the previous firm-resource-based approach and its explanatory capacity with regard to the achievement of lasting competitive advantages by firms that operate in dynamic environments (Eisenhardt & Martin, 2000; Helfat, 1997; Teece et al., 1997; Wang & Ahmed, 2007).

Deepening the analysis of that approach, although it is true that the paper by Teece et al. (1997) — the roots of which can be found in previous research works like the one authored by Teece and Pisano (1994) — has been considered one of the most influential and pioneering studies within the framework of dynamic capabilities. It needs to be specially mentioned that the paper studied by Eisenhardt and Martin (2000) is one of the fundamental and seminal works in that context. Ironically enough, significant discrepancies exist between these two works, which is why scholars such as Peteraf et al. (2013) claim that the publication by Eisenhardt and Martin marks the beginning of disagreement and disconnection between the various contributions to the dynamic capabilities view.

Concerning the essential aspects of the dynamic capabilities approach, it is worth highlighting the definition of dynamic capabilities as “the key role of strategic management when it comes to integrating, building and reshaping internal and external competences, as a way to deal with fast-changing environments “according to Teece et al. (1997, pp. 516). Meanwhile, Eisenhardt and Martin (2000, p1107) define dynamic capabilities as those organizational processes or routines that use business resources and assets to adapt or respond to their environmental conditions or even to generate market changes. In our case, we proposed that dynamic capabilities can be defined as a company’s ability to adapt to turbulent changes in the environment by seizing opportunities and reconfiguring the organization’s resources. Despite the bifurcation generated by the lack of consensus, in the last decades, the literature dedicated to dynamic capabilities has made considerable efforts to reach a theoretical consensus as well as to reconcile the conflicting theoretical perspectives. Examples can be found in the works authored by Helfat and Peteraf (2003); Di Stefano et al. (2010); Peteraf et al. (2013); Vogel and Güttel (2013); Albort-Morant et al. (2018), and Kurtmollaiev (2020).

This first analysis of the theoretical framework revealed a certain degree of confusion and lack of clarity concerning the essential aspects within the field of dynamic capabilities from the strategic management point of view. Hence, we decided to conduct a bibliometric study, which could allow us to identify the most relevant contributions and possible connections between the most prominent articles, or express them differently, to investigate the knowledge structure underlying this study research context.

## **METHODOLOGY**

The bibliometrics discipline currently helps us examine academic literature and describe the publication patterns within a particular scientific field. Bibliometrics has to do with the mathematical and statistical analysis of the patterns that characterize the publication and utilization of documents (Diodato, 1994). Despite focusing mainly on the management problems faced by libraries and documentation centers, including the count of articles and publications, bibliometrics also gives us the chance to carry out more detailed studies about the behavior of a specific discipline (Callon et al., 1993). Several scholars from different research areas have used bibliometric and text mining techniques to explore trends as well as research topics by analyzing published articles (e.g., Wang et al., 2020).

The first requirement to undertake a bibliometric analysis is the availability of abundant information referring to the research issue at hand. Scholars usually resort to a bibliographic database that hosts numerous records with information items such as

author, the title of the paper, or the date of publication, amongst others. In our case, the primary databases used were those developed by Philadelphia's Institute of Scientific Information (ISI), the Social Science Citation Index (SSCI), and the Science Citation Index Expanded (SCIE), the leading electronic databases of academic literature (Huang et al., 2021) and available in the Web of Science (WOS)<sup>1</sup>.

Although we could have used other databases, e.g., Scopus, we chose the Web of Science for its recognition as a prestigious database of the bibliographic references contained in scientific journal articles which provides access to over 60 million records worldwide. It is possible to find current and retrospective data dating back to 1900, thanks to the search potential and the examination of cited references that allow browsing the literature in all possible directions access to all disciplines and periods. The journals indexed in WOS are also associated with an impact factor in the *Journal Citation Report* (JCR).

Once you have chosen the source of information, the first step is to identify a literature body that represents the research. Thus, a total of 823 documents were retrieved for analysis. The search strategy included all documents published in the period 1990 - 2020, which had the combination of “dynamic capabilit\*” and “strategic management”. The next step consisted of collecting all the bibliographic information about them (title, author, keywords, references cited) in plain text format (.txt), which was subsequently analyzed using the computer application Bibexcel. This program, developed by Professor Olle Persson at the Information Science Institute of the University of Umeå (Sweden), allows for bibliographic data processing (Persson et al., 2009). It deserves to be highlighted that data processing and normalization tasks had to be carried out during this initial bibliographic information treatment stage. The software Bibexcel was used too.

Following the descriptive analysis of the 823 source documents, which allowed us to classify them according to such indicators as the year of publication, most productive authors, journals with the highest publications index, or most cited articles, we examined the cited references. This procedure enables us to obtain interesting connections between authors, journals, and countries. These connections have proved to help understand the knowledge structure and potential key research directions in the field of study.

Finally, other software programs typically used in SNA served to represent and interpret the intellectual structure of the study field we were interested in, including UCINET®, Pajek®, and VOSviewer®, which can mean large numbers of data that help to visualize and represent these social networks. More specifically, below can be found

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<sup>1</sup> Formerly known as Web of Knowledge and owned by the Institute of Scientific Information. It was subsequently acquired by Reuters.

the maps generated in VOSviewer 1.5.7, free software based on the neural network technique for segmentation developed by Nees Jan van Eck and Ludo Waltman and mainly utilized to analyze bibliometric networks (Van Eck & Waltman, 2010).

After obtaining the connections of the bibliometric analyzing method, we read the most cited articles to understand and deepen the reasons for the relationships obtained and attempt to provide significant conclusions inferred from the most relevant findings.

## **RESULTS AND DISCUSSION**

This section offers the results of the bibliometric analysis of dynamic capabilities and strategic management. Eight hundred twenty-six publications indexed on the Web of Science database between 1994 and 2020 were analyzed. After showing the descriptive analysis and the citation analysis carried out, we will examine the references cited in the 861 source documents —13,144 references in all— finishing with some graphics and maps that explain the intellectual structure of our research field.

### **Descriptive analysis and citation analysis**

The volume of documents analyzed amounts to 823 articles and reviews, the number of references cited being 13,144. Firstly, we focus on the productivity analysis of authors, journals, and countries. Secondly, we highlight the most relevant papers in relation to the amount of cited received to date.

The author who has published the most works in this field of study is David Teece, with a total of 17 documents in our sample. According to the productivity of management journals, those with the highest number of publications can be shown in Table 1. The most productive journals in this area include mainly those focused on strategic management due to this is the field of our research. Concretely, we have included only journals with more than 15 works in our field of research.



**Table 1** *Top Journals That Are More Productive*

	Published works
Strategic Management Journal	46
Journal of Business Research	26
Management Decision	20
Industrial Marketing Management	19
British Journal of Management	19
Industrial And Corporate Change	17
Strategic Entrepreneurship Journal	17
Journal of Management	15
Journal of Management Studies	15
International Journal of Technology Management	15

The number of papers published by the most influential countries in the total of papers that have analyzed dynamic capabilities in the field of strategic management describes the impact of the most productive countries in this area of research (see table 2). Notably, 70% of the publications in the sample were produced by the top-6 producing countries, with the USA playing the most significant role.

**Table 2** *Top-6 Productive Countries*

Country	Published work
USA	226
England	120
Spain	65
China	59
Australia	54
Germany	54

A ranking of the total documents examined according to the number of citations received on the Web of Science can be found in Table 3. The paper written by Teece et al. (1997) occupies the first position, with a total of 9,568 citations received.

**Table 3** *Top-10 Most Frequently Cited Papers*

Author	Year	Title	Times Cited
Teece, Pisano, & Shuen	1997	Dynamic capabilities and strategic management	11,489
Eisenhardt & Martin	2000	Dynamic capabilities: What are they?	5,828
Teece	2007	Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance	3,820
Amit & Zott	2001	Value creation in e-business	1,841
Helfat & Peteraf	2003	The dynamic resource-based view: Capability lifecycles	1,648
Subramaniam & Youndt	2005	The influence of intellectual capital on the types of innovative capabilities	1,527
Melville, Kraemer, & Gurbaxani	2004	Review: Information technology and organizational performance: An integrative model of IT business value	1,287
Knight & Cavusgil	2004	Innovation, organizational capabilities, and the born-global firm	1,218
Wade & Hulland	2004	Review: The resource-based view and information systems research: Review, extension, and suggestions for future research	1,095
Makadok	2001	Toward a synthesis of the resource-based and dynamic-capability views of rent creation	1,033

Next, Table 4 shows the co-occurrence of those keywords which appear the most often in studies corresponding to our research focus. This aspect deserves special attention since it can tell us where the research under analysis is heading and what other related research topics can be analyzed together with dynamic capabilities. More precisely, 11 keywords turn out to be present in more than 100 documents, amongst them “resource-based view,” “competitive advantage”, and “performance,” the eight most outstanding co-occurrence relationships being identified as well.

**Table 4** *Co-occurrence of Most Frequently Used Keywords*

<b>Times appearing together</b>	<b>Keyword 1 and n° of papers in which it appears</b>	<b>Keyword 2 and n° of papers in which it appears</b>
<b>306</b>	Dynamic capabilities\$580	Strategic management\$530
<b>215</b>	Resource-based view\$327	Strategic management\$530
<b>207</b>	Resource-based view\$327	Dynamic capabilities\$580
<b>180</b>	Competitive advantage\$312	Strategic management\$530
<b>165</b>	Resource-based view\$327	Competitive advantage\$312
<b>152</b>	Dynamic capabilities\$580	Performance\$229
<b>150</b>	Competitive advantage\$312	Dynamic capabilities\$580
<b>148</b>	Strategic management\$530	Performance\$229

*Note.* The \$ symbol indicates the number of times that each keyword appears separately in the papers under analysis.

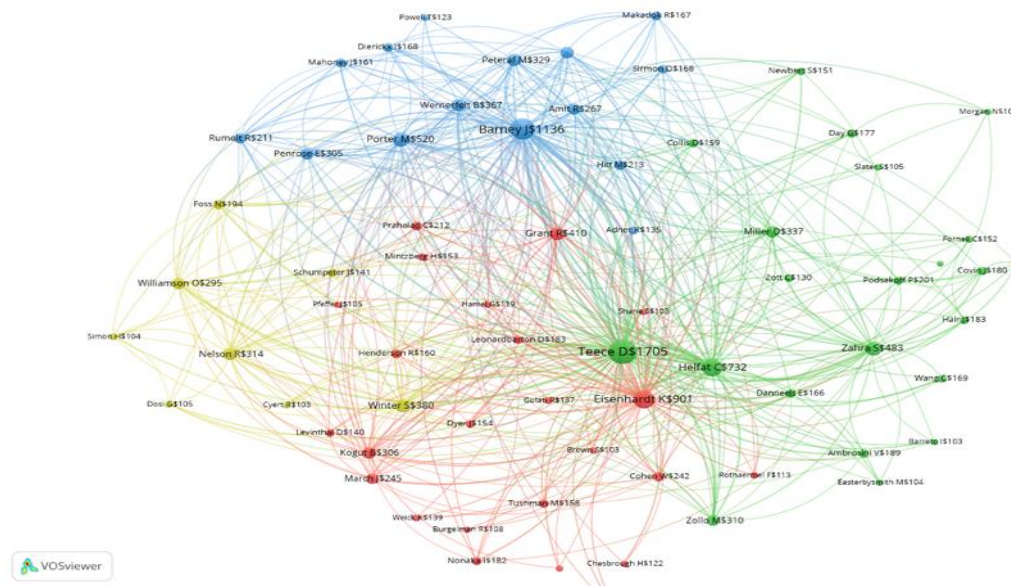
### **Analysis of the cited references**

This section, focused on studying the 13,144 citations of references, offers both ACA and SNA. After an initial classification of the references, which allowed us to define them according to their frequency distribution, we examined the most frequently cited references at a general level. The ACA<sup>2</sup> followed with a selection of the co-occurrences identified on the list of scientific journals, ultimately seeking to characterize the intellectual structure of a specific discipline from the co-cited authors as substitutes for the concepts that they represent (White & Griffith, 1981; White & McCain, 1998).

In this case, David Teece leads the ranking with 1,705 citations, with Jay Barney—cited 1,136 times—in second place, after whom come Kathleen Eisenhardt (901), Constance Helfat (732), and Michael Porter (520). The most often cited journals this is the top five: *Harvard Business Review* (1102); *Academy of Management Review* (546); *Strategic Management* (298); *Academy of Management Journal* (295); and *MIS Quarterly* (287).

Following author citation and co-citation analysis (ACA), these cited references can be grouped into four knowledge clusters related to the field of dynamic competency research, as shown in Figure 1. Based on these findings, the first cluster centered on the study of dynamic capabilities. A competency perspective is formed by Teece, Helfat, Danneels, Zott, and Makadok et al. By analyzing these authors' research directions and publications, we can deduce that they all share a similar understanding of the field, the dynamic capability view. Currently, these documents are the primary reference sources for relevant publications in this field.

<sup>2</sup> At this stage we have to reduce the amount of information we work with, and continue with publications that reach at least 40 citations.



**Figure 1** Intellectual Structure or Knowledge Base of Research on Dynamic Capabilities and Strategic Management: Visualization Obtained Using Vosviewer

Dynamic capabilities have gradually developed following publications by Eisenhardt and Martin (2000) and Teece et al. (1997). However, as highlighted by Peteraf et al. (2013), the two published studies each represent, in essence, different and somewhat exclusive approaches to framing dynamic capabilities, but each has an internally consistent logic. Therefore, it is interesting to point out that the second group of our analysis includes the work of Eisenhardt, and Tushman, amongst others. It is noteworthy that this second group of authors presents a differentiated basis despite its close ties to the initial group.

Despite the effort by Di Stefano et al. (2014), who tried to offer a solution to this bifurcation, that limitation seems to be acknowledged: “we offer this sketch in the hope that others might find our efforts thought-provoking enough to merit further development” (Di Stefano et al., 2014, pp. 318). Thus, this graphic map can prove that these two research perspectives continue to appear separately.

Concerning the two other groups, we can highlight less noticeable aspects. The third one includes the authors who are best known for their contributions to the literature considered background to the theory of dynamic capabilities. Indeed, in this group, we can distinguish those studies oriented towards the Resource-Based View or the contributions of Porter, e.g., Barney, Penrose, or Wernerfelt.

Finally, in the fourth and last of the clusters identified, it was possible to highlight the undeniable connection of those authors who have stood out for their publications in

areas such as innovation or IT. Among the work analyzed in this last group, it is worth noting the resonance of authors such as Schumpeter, Nelson, or Foss, whose research into dynamic capabilities and strategic management is intimately linked to these common aspects.

### **CONCLUSIONS AND LIMITATIONS**

Our research work systematically analyzes 823 documents in the Web of Science Core Collection database around the dynamic capabilities view within the strategic management context and their 13,144 cited references. This bibliometric analysis comprises all the years available to the date, i.e., from the first article's publication date to the end of 2020. It also includes a comprehensive theoretical rationale for implementing such bibliometric techniques in the study field of art hand, first to overcome existing confusion and secondly to acquire clear and up-to-date knowledge about its knowledge structure. Afterward, before actually presenting our most important findings, we deemed it necessary to mention and explain the techniques used so that the reader can better understand the foundations of the analyses performed.

Currently, literature reviews are widely used in various fields (e.g., Erturk et al., 2019). Nevertheless, the bibliometrics results also made it possible to pursue our research's main goal: to incorporate new knowledge about the dynamic capabilities view within the strategic management area from the representation of its intellectual structure. Some ideas already presented in the scientific literature have been corroborated among the conclusions. One example is that there are still two different ways of understanding dynamic capabilities among the best-known authors specializing in this field. This is an interesting conclusion that future research should definitely consider.

This study likewise offers a general overview of the field at hand insofar as it carries out a descriptive and citation-based analysis of its most important authors, journals, articles, and topics. The literature review, together with examining the results obtained in the research studies published so far, thus supplies highly relevant information for those researchers who may eventually wish to start working in this field.

The conclusions derived from the interpretation of our findings are subject to certain limitations. On the one hand, this research is based on a sample of documents published on the Web of Science Core Collection database, which means that, despite probably being representative, our sample does not include all the research ever conducted.

On the other hand, emphasis must be placed on those limitations more closely associated with utilizing bibliometric techniques in author and co-author citation analyses. Most importantly, among the limitations faced in ACA is the impossibility of

distinguishing the context where a specific citation is made. While a citation sometimes seeks to position the paper in some field, it may also serve to criticize another perspective. ACA additionally tends to be biased and favor older, more established papers over novel contributions, this being a drawback that we cannot overcome without a rigorous content analysis or perhaps by inquiring experts on their perceptions.

The chosen data retrieval process may introduce some level of ‘noise’ into the data. However, the likelihood of such miscitations being shared by authors in the strategic management discipline is very low.

Finally, the time it takes for publications to emerge and build a citation history results in the underrepresentation of recent (albeit influential) authors. However, these problems are largely alleviated by the large amount of data involved (White, 1990). Nevertheless, as mentioned earlier, ACA has found widespread applicability, and it constitutes a valuable methodology to study how thinking evolves within a specific discipline.

To conclude, the study presented in this paper arguably provides a comprehensive overview of the research dedicated to the literature on dynamic capabilities within the strategic management field, highlighting the principal works and such relevant aspects as the intellectual structure and the research topics.

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