European Research on Management and Business Economics 24 (2018) 42–52

European Research
on Management and Business Economics

www.elsevier.es/ermbe

Assessing the origins, evolution and prospects of the literature on dynamic capabilities: A bibliometric analysis

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ARTICLE INFO

Article history:
Received 17 January 2017
Received in revised form 12 June 2017
Accepted 14 June 2017
Available online 18 July 2017

JEL classification:
M0
M1
M2

Keywords:
Dynamic capabilities
Bibliometric analysis
Web of Science

ABSTRACT

The purpose of this study is to serve as orientation and guidance to academics that are starting or currently developing their research within the field of dynamic capabilities, in order to enhance their knowledge about which are the key scientific journals, authors and articles shaping this topic. This paper presents a bibliometric analysis on dynamic capabilities, making use of the Web of Science database to perform it. This analysis comprises fundamental issues such as (i) the number of studies published per year, (ii) the countries with the highest rate of productivity, (iii) the most prolific and influential authors, (iv) assessment of studies citing dynamic capabilities, and (v) the most productive journals on dynamic capabilities and recent studies on this topic. Results reveal an exponential growth in the number of publications on dynamic capabilities for the 2000–2012 period. Although, since 2012 this growth has decelerated, the number of publications on this topic remains noteworthy. This study brings useful information for those academics and practitioners attempting to analyze and deepen within this particular field of research, at the same time that provides some insights concerning the future development and progress of the dynamic capabilities topic in the management, business and economics academic literature.

1. Introduction

Research on dynamic capabilities (DC) stands amongst the most prolific streams of research within the field of management for the last two decades. This might be explained by the high importance and awareness that the strategic management literature has devoted to this topic. Although the research domain of dynamic capabilities has become one of the most active in the strategic management field, several criticisms have aroused arguing the existence of some controversy and confusion around this concept. In fact, the authors are still looking for the nature of dynamic capabilities, its antecedents or drivers, its outcomes and the organizational and managerial processes and procedures underlying this concept (Cepeda & Vera, 2007; Teece, 2007) and there exists a lack of agreement concerning the conceptualization of this topic. However, this lack of agreement, been taken into account, should not prevent us from attempting to identify in this study the most relevant authors, journals and publications within the dynamic capabilities literature with the aim of building a reference framework for future researchers that might contribute to strengthen and unify this concept.

Despite the widespread diffusion and interest aroused by this topic, little attention has been paid until this moment to the pertinence of building a framework that brings the main currents and studies in the field of dynamic capabilities. In this line, several literature reviews have been made (Ambrosini & Bowman, 2009; Di Stefano, Peteraf, & Verona, 2010; Easterby-Smith, Lyles, & Peteraf, 2009). Nevertheless, few papers like the written by Vogel and Güttel (2013) entitled "*The dynamic capabilities view in strategic management: a bibliometric review*" could be highlighted as an attempt to develop a bibliometric review of this concept. However, these authors use different methods to measure and analyze the research outcomes, such as co-citation and bibliographic coupling, more aimed at detecting intertextual linkages existing between academic publications due to the referencing behaviour of scholars. In addition, these authors document co-citation analysis, while this technique might be also applied to additional bibliographic items (i.e., authors or academic journals). We aim to cover this gap, by

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http://dx.doi.org/10.1016/j.iedeen.2017.06.004

analyzing further these complementary sources of bibliographic information.

Hence, the main purpose of our study is to orient researchers and enable a wider understanding and grasp of the dynamic capabilities topic. This paper might serve as an introductory reference and preliminary approach for new researchers targeting to become familiar with the literature on dynamic capabilities. To this aim, the article intends to clarify the concept of dynamic capabilities and subsequently develops a bibliometric analysis of the existing research on dynamic capabilities, trying to elucidate which view better describes the evolution of this topic during a period of 24 years (1991–2015), helping this way to clarify the concept and applications of dynamic capabilities. The bibliometric analysis leads us to acknowledge who are the most influential authors, which are the most profuse journals, which countries hold the highest rate of productivity, what has been the number of studies on dynamic capabilities per year, the studies citing dynamic capabilities, or the recent advances on this topic.

The paper proceeds as follows. The next section presents the theoretical background, where we intend to shed some light toward the concept of dynamic capabilities, on the basis of prior related studies. The third section comprises a description of the research methodology. The forth section presents the results of the bibliometric analysis. Finally, the fifth section brings together the discussion, and directions for future research.

2. Conceptual framework

Although multiple definitions can be found in the literature (Table 1 gathers the most widely recognized of them), dynamic capabilities can be defined as the capacity that enables a firm to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments. This is the sense in which Teece, Pisano, and Shuen (1997) introduced the term of dynamic capabilities in the article entitled "*Dynamic capabilities and strategic management*". This paper is considered the most influential study on dynamic capabilities, together with a recently developed new framework of dynamic capabilities (Teece, 2007, 2014). This term is still used in our days, although, over the years, many are the authors who have attempted to redefine and expand the concept of dynamic capabilities, adjusting it to the particular context of the moment. Authors such as Eisenhardt and Martin (2000), Zollo and Winter (2002), Helfat and Peteraf (2003), Zott (2003), Winter (2003), Zahra, Sapienza, and Davidsson (2006), Teece (2007), Helfat et al. (2009) or Cepeda and Vera (2007), among others, have contributed with their particular view and understanding of dynamic capabilities. However, they have failed to provide a concise and comprehensive definition of dynamic capabilities and its conceptualization has not reached consensus yet (Protogerou, Caloghirou, & Lioukas, 2012). Consequently, this has produced some misunderstandings. More recently, Peteraf, Di Stefano, and Verona (2013) point out that the origin of such confusion appeared very soon, between the publication of what they called "seminal papers" – Teece et al. (1997) and Eisenhardt and Martin (2000) –. What is certain is that, although the concept is born and develops linked to strategic management, the literature shows how researchers have paid great attention to its relationship with an increasingly broad variety of aspects, which jointly with its possible applications to different areas, has critically affected the definition of dynamic capabilities.

In this line, we can find definitions such as the one provided by Eisenhardt and Martin (2000) that presents dynamic capabilities as specific and identifiable processes that especially comprise the development of products, strategic decision-making, and management of alliances. Subsequently, Zahra et al. (2006) define dynamic capabilities as the firm's ability to reconfigure organizational resources and routines in the form that imagined and considered to be appropriate whereby the main decisions. Whereas, in their later study, Helfat et al. (2009, p. 4) define them as "the ability to perform a task in least minimally acceptable manner".

In an effort to understand the nature of dynamic capabilities, Zollo and Winter (2002) and Winter (2003) distinguish between two types of routines: the first deals with the firm's operational activity – "operational routines" – and the latter involves the modification of operating routines – "dynamic capabilities" –. Dynamic and operational capabilities differ in their purposes and intended outcomes (Helfat & Winter, 2011). Operational capabilities comprise the firm's operational functioning, being also labeled

Table 1
Definitions of dynamic capabilities.

Author	Definition
Teece and Pisano (1994, p. 537)	Timely responsiveness and rapid and flexible product innovation, along with the management capability to effectively coordinate and redeploy internal and external competences.
Teece et al. (1997, p. 516)	The firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments.
Eisenhardt and Martin (2000, p. 1006)	The firm's processes that use resources-specifically the processes to integrate, reconfigure, gain, and release resources-to match and even create market change; dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve and die.
Teece (2000, p. 36)	The ability to sense and then seize opportunities quickly and proficiently.
Griffith and Harvey (2001, p. 597)	Dynamic Capabilities is a combination of resources that are difficult-to-imitate, including effective coordination of inter-organizational relationships, on a global basis that can provide a firm competitive advantage.
Zollo and Winter (2002, p. 340)	A dynamic capability is a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness.
Lee, Lee, and Rho (2002, p. 734)	Dynamic capabilities are conceived as a source of sustainable advantage in Schumpeterian regimes of rapid change.
Adner and Helfat (2003, p. 1012)	The capabilities with which managers build, integrate, and reconfigure organizational resources and competences.
Helfat and Peteraf (2003, p. 999)	Dynamic capabilities do not directly affect output for the firm in which they reside, but indirectly contribute to the output of the firm through an impact in operational capabilities
Winter (2003, p. 991)	Those (capabilities) that operate to extend, modify, or create ordinary capabilities.
Zahra et al. (2006, p. 918)	The abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropiate by its principal decision-maker(s).
Helfat et al. (2009, p. 4)	The ability to perform a task in least minimally acceptable manner.
Teece (2007, p. 1319)	Dynamic capabilities can be disaggregated in the capacity (a) to sense and shape opportunities and threats, (b) to seize opportunities, and (c) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the business enterprise's intangible and tangible assets.
Pavlou and El Sawy (2011, p. 239)	Dynamic capabilities have been proposed as a means for addressing turbulent environments by helping managers extend, modify, and reconfigure existing operational capabilities into new nes that better match the environment.
Helfat and Martin (2015, p. 1)	The capabilities with wich managers create, extend, and modify the ways in which firms make a living-helps to explain the relationship between the quality of managerial decisions, strategic change, and organizational performance.

"how we earn a living now" capabilities (Cepeda & Vera, 2007). In contrast, Helfat and Peteraf (2003, p. 999) argue that "dynamic capabilities do not directly affect output for the firm in which they reside, but indirectly contribute to the output of the firm through an impact in operational capabilities". Teece (2007) recognizes in turn that operational capabilities help an organization's technical fitness by ensuring its day-to-day operational efficiency, whereas dynamic capabilities help to sustain a firm's evolutionary fitness, thereby creating long-run competitive success. Besides, Pavlou and El Sawy (2011) propose that dynamic capabilities might help managers to extend, modify, and reconfigure existing operational capabilities in turbulent environments.

Certainly, most studies framed within the dynamic capabilities view (DCV) highlight the strong connection between this set of higher order resources and capabilities, namely dynamic capabilities, and the attainment and renewal of competitive advantages (Vivas-López, 2005). For instance, authors like Camisón and Forés (2010) and Leal-Rodríguez and Roldán (2013) label dynamic capabilities to refer to the set of organizational competencies that allows firms to generate value and to leverage competitive advantages through strategic management processes, while Martelo-Landroguez, Barroso-Castro, and Cepeda-Carrión (2011) propose that organizations are able to increase customer value by identifying and effectively fostering adequate combinations of dynamic capabilities. Furthermore, dynamic capabilities may grant firms the necessary doses of flexibility that might enable them to adjust to uncertain and changing scenarios and to develop product, process and managerial innovations (Singh, Singh-Oberoi, & Singh-Ahuja, 2013). Similarly, Chaharbaghi, Adcroft, and Willis (2005) argue that a strategical combination of organizational transformability and dynamic capabilities are vital in explaining the organizations' survival and renewal.

In spite of the possible discrepancies, from the initial contributions (Eisenhardt & Martin, 2000; Teece et al., 1997; Zollo & Winter, 2002) it already appears a fairly sharp agreement on the core elements that define dynamic capabilities: (i) level of environmental change, (ii) organizational processes or routines, (iii) resources configuration, (iv) managers' decision making, and (v) learning mechanisms (Fukuzawa, 2015). As we have said before, Table 1 presents several definitions of dynamic capabilities employed in key studies.

3. Method

Bibliometric analysis is a discipline that consists on the application of statistical methods to evaluate developments and knowledge enhancement regarding a specific subject and the assessment of the scientific quality and influence of the distinct works and sources (Bouyssou & Marchant, 2011; Daim, Rueda, Martin, & Gerdsri, 2006). With regard to the traditional literature review, this type of analysis is an innovative methodology (De Bakker, Groenewegen, & Den Hond, 2005).

This analysis provides useful information for those academics and practitioners attempting to analyze and deepen within this particular field of research (Duque-Oliva, Cervera Taulet, & Rodríguez Romero, 2006), as bibliometric analysis determines an array of significant indicators for measuring the bibliographic material. By virtue of the bibliometric analysis, researchers might access and expand their knowledge with regard to key indicators such as the number of publications, the most prolific authors, the countries where this field of research is more popular or the journals that devote more attention to publishing issues referred to this particular topic. Other indicators to be used for measuring a researcher's influence are the total number of publications, number of citations, citations/papers ratio (Hirsch, 2005) or the *h-index*[1] (Merigó, Mas-Tur, Roig-Tierno, & Ribeiro-Soriano, 2015). According to Podsakoff, MacKenzie, Podsakoff, and Bachrach (2008) the number of studies measures the productivity and the number of citations constitutes a good proxy as for the researcher's influence.

The first step of bibliometric analysis involves identifying those databases that would be more useful for the study (Albort-Morant & Ribeiro-Soriano, 2015). This study relies on the use of the Thomson Reuters Web of Science (WOS) database, formerly ISI Web of Knowledge, which is an online scientific information assistant that includes scientific documents and research paper across all disciplines. This database permits researchers to access to research papers and other documents from scientific journals and books in all fields of science (Albort-Morant & Ribeiro-Soriano, 2015). The journals indexed in the WOS have associated an impact factor in the *Journal Citation Report* (JCR).

This analysis was carried out in January 2016, through the access to the WOS database. This study analyzes scientific research for the period 1991–2015. The total amount of research studies analyzed on this paper comprises the areas of business, management and economics in the WOS.

To measure the existing publications, Cadavid-Higuita, Awad, Cardona, and Jaime (2012) define three types of indicators: quantity, quality and structural. The first indicator measures productivity in terms of the number of publications, while the second indicator measures the impact of a publication in relation to the number of citations. Besides, structural indicators measure the connections existing between the different works and authors. While other related studies such as the one developed by Vogel and Güttel (2013) have focused on structural indicators, this paper covers the two first types of indicators in order to measure what are the publications that entail greater recognition within the field of dynamic capabilities and serve as guidance for further research.

4. Results

This section presents the findings of the bibliometric analysis of the scientific research on dynamic capabilities. This study focuses on documents published between 1991 and 2015 within the management, economics and business categories. The starting year, 1991, was chosen because it is when the first study dealing with dynamic capabilities was published, accordingly with the Web of Science. This paper is entitled "New technology adoption in an innovative marketplace: Micro- and macro-level decision making models" and was published in the International Journal of Forecasting by Bridges, Coughlan, and Kalish (1991).

This topic comprehends 3852 studies published in the Web of Science until the end of 2015, which includes 2808 articles, 793 proceedings papers, 265 reviews, 64 editorial material, 14 book reviews, 11 book chapters and 2 corrections.

This study uses the following bibliometric indicators:

- Number of dynamic capabilities research documents published between 1991 and 2015.
- Countries with the highest rate of productivity.
- Authors with the highest citation rate.
- Journals with more studies on dynamic capabilities.
- The most cited studies on dynamic capabilities.
- Recent most cited articles on dynamic capabilities (2012–2015).

[1] The h-index is an academic author-level metric that intends to measure the levels of productivity and citation impact of a scholar's publications. The index is based on the set of the author's most cited papers and the number of citations received in other publications.

Table 2
Annual number of studies in dynamic capabilities.

R	Year	Number of publications
1	1991	2
2	1992	6
3	1993	12
4	1994	9
5	1995	11
6	1996	19
7	1997	25
8	1998	29
9	1999	15
10	2000	47
11	2001	57
12	2002	60
13	2003	78
14	2004	101
15	2005	129
16	2006	179
17	2007	260
18	2008	308
19	2009	308
20	2010	354
21	2011	390
22	2012	397
23	2013	395
24	2014	353
25	2015	307

4.1. Year of publication

The topic of dynamic capabilities appears in academic research in 1991. Table 2 and Fig. 1 present the number of publications per year on dynamic capabilities since 1991. During the first year there were only two published studies within the Web of Science. During the following twenty-four years, the annual volume of studies has been continually increasing. Since 2004 this expansion became more significant with an annual increase until the record of 397 studies published in 2012. The escalation in publications from 2004 can be explained by two factors: the increase of research paper submissions to conferences and scientific journals, and the development of internet, enabling access to information sources and new trends of research (Merigó et al., 2015). However, from 2012 to 2015, the number of publications has experienced a slight decrease, which may suggest that although the number of publications is still considerable, the topic might be entering a maturity phase.

4.2. Countries with the highest rate of productivity

Table 3 shows the twenty countries with the highest rate of productivity on dynamic capabilities. Such rate of productivity is measured through different indicators: i.e., the number of research articles published (TP), the total number of citations received by the published articles (TC), average citations per article published (C/P), and finally, the h-index, used to measure the quality of research output on the basis of the number of citations received.

Table 3
Top 20 countries with the highest rate of productivity.

Rank	Country	TP	TC	C/P	h-Index
1	USA	1277	77,806	60.93	123
2	England	499	11,059	22.16	52
3	China	420	1461	3.48	19
4	Spain	261	2789	10.69	23
5	Germany	213	3041	14.28	25
6	Canada	205	6186	30.18	41
7	Australia	192	1820	9.48	21
8	Italy	180	3028	16.82	28
9	Taiwan	170	1298	7.64	18
10	Netherlands	165	3569	21.63	34
11	Finland	128	1338	10.45	19
12	France	128	5991	46.80	33
13	Sweden	112	6177	55.15	20
14	Denmark	86	2670	31.05	24
15	Switzerland	71	1773	24.97	18
16	South Korea	60	1370	22.83	14
17	Norway	54	1078	19.96	18
18	Singapore	53	1188	22.42	18
19	Japan	44	2144	48.73	12
20	Turkey	44	367	8.34	9

The United States stands as the leading country in the ranking of countries with most studies published on dynamic capabilities. It is also the first qualified in the rankings of countries with most citations, highest average citations per article, and highest h-index. Between 1991 and 2015, scholars from the USA produced 1277 documents with 77,806 citations, 60.93 citations per article, and h-index of 123. This seems reasonable, given the dimensions of the United States and that North American authors have traditionally had greater access to scientific journals and databases than authors from other countries.

England and China occupy the second and third positions with 499 and 420 studies respectively. Nevertheless, despite accounting 420 publications, China has a low C/P of 3.48 points, whereas some countries placed behind hold a superior C/P index, such as the case of Spain that holds a 10.69 C/P index with up to 261 publications. This leads us to point out that despite the quantity of Chinese publications on this topic is certainly significant, perhaps they are of minor academic worth, which might explain its lower rate of citations per publication.

The country with the highest h-index is the USA, followed by England and Canada. In the case of productivity rating (C/P), the USA

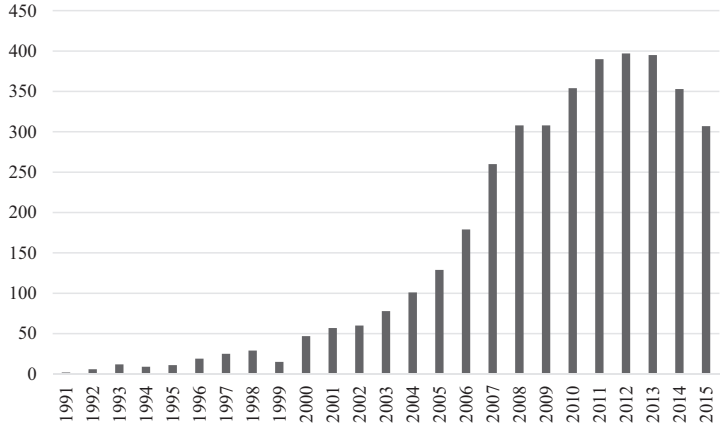

Fig. 1. Number of studies on dynamic capabilities published between 1991 and 2015.

Table 4
Top 10 countries in productivity per year.

Year	USA	England	China	Spain	Germany	Canada	Australia	Italy	Taiwan	Netherlands
1991	2	0	0	0	0	0	0	0	0	0
1992	6	0	0	0	0	0	0	0	0	0
1993	6	1	0	1	0	1	0	1	0	0
1994	4	2	0	0	0	1	0	2	0	1
1995	5	0	0	0	1	0	0	0	0	1
1996	13	4	0	0	1	1	0	1	0	0
1997	15	4	0	0	1	0	1	2	0	0
1998	13	1	0	0	1	2	0	2	1	1
1999	7	0	0	0	0	1	1	2	0	0
2000	28	8	0	0	2	3	1	1	2	1
2001	35	9	0	0	0	2	1	3	1	6
2002	33	8	1	0	0	4	1	0	0	3
2003	30	10	3	2	3	3	4	3	1	4
2004	49	13	8	3	0	7	5	1	3	6
2005	54	20	13	2	3	10	5	6	1	4
2006	68	18	22	8	13	12	6	6	7	4
2007	75	35	48	12	15	14	11	8	7	9
2008	87	44	60	14	19	8	11	8	14	16
2009	118	44	50	12	10	17	10	14	6	14
2010	111	42	42	33	17	23	13	18	29	15
2011	112	38	27	42	20	22	20	16	21	11
2012	125	49	35	38	27	26	27	20	23	23
2013	94	54	31	40	28	16	28	28	20	15
2014	92	49	41	31	20	25	18	13	17	19
2015	91	46	39	23	32	7	29	25	17	12

is followed Sweden and Japan as the countries with more citations per article. The case of Japan is interesting, as it is a country with a high rate of citations per article published, despite having only 44 studies. This could be reflecting the high quality of Japanese studies or the existence and maintenance of a powerful research network.

Then, Table 4 shows the evolution of the number of studies published within each of the ten most productive countries since 1991. During the nineties, most articles appearing in journals indexed in the Thomson Reuters Web of Science were published in the USA. Since 2000 it can be observed a significant proliferation in the number of publications. It is expected that the number of publications on dynamic capabilities will continue globally growing during the next years, but at a more moderate pace than during the 2005–2015 period.

4.3. Authors with highest citation rate

Many authors from a wide range of origins have carried out research on dynamic capabilities and published their findings in scientific journals indexed in the Thomson Reuters Web of Science. In this section, we show the most impactful authors on the field of dynamic capabilities. Table 5 analyzes the number of articles published (TP), the total number of citations received by the published articles (TC), average citations per article published (C/P), and the h-index. This ranking also points out the country where the authors develop their research activity.

The most prolific author on the topic is David J. Teece with up to seventeen scientific articles. Besides, the author with greatest number of citations and more citations per article published is Teece with 7130 citations. Over the years, Teece performed studies that have significantly contributed to new theories development. It should be remarked that most of these researchers work in the USA and England. Nonetheless, a remarkably important number of authors work in, China and several European countries.

4.4. Most productive journals

The Thomson Reuters Journal Citations Report (JCR) indexes scientific journals of different research areas. Hence, it reveals the distinct journals that have published research studies on dynamic capabilities. Concretely, in this case, we have limited our study to the journals belonging to the business, management and economics areas.

Identifying what are the journals that have been traditionally publishing research studies on dynamic capabilities becomes a critical issue in order to decide which journals to read when developing a review of the literature. In this vein, Table 6 presents the top 20 journals with the highest productivity on dynamic capabilities research. Three journals are noteworthy: “Strategic Management Journal” with 160 articles, “Organization Science” with 100 articles, and “International Journal of Technology Management” with 88 articles.

Table 6 also shows the 2015 JCR impact factor associated to each journal. The impact factor is normally used to know the relative importance of a journal within a particular research field. Thus, academic journals with higher impact factor tend to be considered more impactful. In this study, the journal with the highest impact factor is “Journal of Management” with a score of 6.051 points. This journal is followed by, “Journal of Management Studies” with 4.260 points. Finally, in third place we find “Journal of Operations Management” that has an impact factor of 4.000 points.

4.5. The 50 most cited studies

Finally, in the Web of Science we can observe a major proportion of contributions on dynamic capabilities with a high influence on business research. Table 7 presents a list with the 50 most cited studies about this topic. The most cited article has received almost 5164 citations. This specific study, entitled “Dynamic capabilities and strategic management”, was developed by the authors Teece, Pisano and Shuen and was published in 1997. The second article in the ranking is the work “Knowledge of the firm, combinative capabilities, and the replication technology”, published by Kogut and Zander (1992), which receives 3336 citations in total. Subsequently, in the third place, the authors Eisenhardt and Martin (2000) published the article “Dynamic capabilities: What are they?” which holds 2529 citations. An important proportion of the most cited articles in this field involve theoretical works aimed at the conceptualization and development of dynamic capabilities. Plenty of these works were carried out by eminent academic authorities in the field of dynamic capabilities, for instance: David J. Teece,

Table 5
Most important authors in the literature on dynamic capabilities.

Rank	Authors	Country	TP	TC	c/P	h-Index
1	Teece DJ	USA	17	7130	419.41	13
2	Foss NJ	Norway	14	620	44.29	9
3	Hitt MA	USA	14	1875	133.93	13
4	Volberda HW	Netherlands	14	904	64.57	9
5	Winter SG	USA	14	2686	191.86	11
6	Helfat CE	USA	13	1821	140.08	9
7	Zahra SA	USA	13	2495	191.92	8
8	Li Y	China	12	75	6.25	5
9	Jacobides MG	England	11	625	56.82	9
10	Tushman ML	England	11	1816	165.09	10
11	Verona G	Italy	11	292	26.55	7
12	Wright M	England	11	650	59.09	8
13	Camison C	Spain	10	118	11.8	7
14	George G	England	10	2162	216.2	9
15	Grover V	USA	10	800	80	8
16	Mahoney JT	USA	10	527	52.7	7
17	Zollo M	Italy	10	1875	187.5	8
18	Bowman C	England	9	513	57	9
19	Eisenhardt KM	USA	9	3065	340.56	8
20	Lewin AY	USA	9	425	47.22	8

Kathleen M. Eisenhardt, Jeffrey A. Martin, Maurizio Zollo, Sidney G. Winter, Shaker A. Zahra, among many others. Moreover, accordingly with Eriksson (2014), the majority of empirical studies were published after 2005, indicating that this concept still capture the academics' interest and that the study of this topic is quite recent.

4.6. The 55 most cited studies between 2012 and 2015

To be able to know the tendencies on the field of dynamic capabilities we carried out an analysis of the articles published in the Web of Science during the last four years (2012–2015). To this aim, we have chosen the articles that have been cited at least once. Table 8 shows the article's title, the name of the author, the date of publication and the type of study. Peteraf et al. (2013) suggest that dynamic capabilities have been conceptualized in two currents of investigation, evolutionary and ecological. One school belongs to Teece and its companions and the other one to Eisenhardt and Martin. Teece's school centers on the role played by entrepreneurs and managerial teams, while Eisenhardt and Martin's school brings a more ecological vision faced to empirical studies (Arndt & Norbert, 2015). This disagreement implies some consequences as for the evaluation of dynamic capabilities.

Among the latter most relevant publication in the Web of Science we can highlight "The determinants of green product development performance: Green dynamic capabilities, green transformational leadership, and green creativity", from the authors Chen and Chang (2013) that identifies more with Eisenhardt and Martin's ecological school. In this article the authors study the influence of dynamic capabilities in the performance of green product development.

We also find articles more linked with the evolutionary school of dynamic capabilities, such as "Dynamic Capabilities: routines versus entrepreneurial action", by Teece (2012), "Supplying large firms: The role of entrepreneurial and dynamic capabilities in small businesses", from the authors Woldesenbet, Ram, and Jones (2012), or "Technology change and dynamic entrepreneurial capabilities", from the authors Lanza and Passarelli (2014). These articles focus on introducing the concept of dynamic entrepreneurial capabilities, and in trying to understand how entrepreneurship and dynamic capabilities can drive firm performance. Besides, we also identify articles more focused on senior management teams, for instance, "Executive decision making: Linking dynamic managerial capabilities to the resource portfolio and strategic outcomes", by Beck and Wiersema (2013), which contributes to the understanding of the dynamic management capabilities through the development of a model that integrates dynamic management capabilities with organizational strategy and performance.

Table 6
Journals with greater number of studies on dynamic capabilities.

Rank	Number of publications	Journals	Impact factor 2015
1	160	Strategic Management Journal	3.341
2	100	Organization Science	3.360
3	88	International Journal of Technology Management	0.625
4	82	Industrial Marketing Management	1.930
5	75	Research Policy	3.470
6	70	Journal of Management Studies	4.260
7	66	Journal of Business Research	2.129
8	60	Technovation	2.243
9	59	Management Decision	1.429
10	58	Industrial and Corporate Change	1.327
11	53	International Journal of Operations Production Management	2.252
12	53	Journal of Product Innovation Management	2.086
13	47	Journal of World Business	2.811
14	39	IEEE Transactions on Engineering Management	1.454
15	39	Journal of International Business Studies	3.620
16	38	Technology Analysis Strategic Management	0.845
17	37	Journal of Management	6.051
18	37	Long Range Planning	2.936
19	37	R&D Management	1.190
20	36	British Journal of Management	2.188

Table 7
The most cited studies on dynamic capabilities.

Rank	TC	Authors	Title	Type of study
1	5164	Teece et al. (1997)	Dynamic capabilities and strategic management	Conceptual
2	3336	Kogut and Zander (1992)	Knowledge of the firm, combinate capabilities, and the replication technology	Conceptual
3	2529	Eisenhardt and Martin (2000)	Dynamic capabilities: what are they?	Conceptual
4	1787	Levinthal and March (1993)	The Myopia of Learning	Conceptual
5	1702	Zahra and George (2000)	Absorptive capacity: a review, reconceptualization, and extension	Conceptual
6	1456	Grant (1996)	Prospering in dynamically-competitive environments: organizational capability as knowledge integration	Conceptual
7	1285	Zollo and Winter (2002)	Deliberate learning and the evolution of dynamic capabilities	Empirical/quantitative
8	976	Gulati, Nohria, and Zaheer (2000)	Strategic networks	Conceptual
9	972	Teece (2007)	Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance	Conceptual
10	941	Dyer and Nobeoka (2000)	Creating and managing a high-performance knowledge-sharing network: the Toyota case	Empirical/qualitative
11	898	Gereffi, Humphrey, and Sturgeon (2005)	The governance of global value chains	Conceptual
12	891	Kogut and Zander (1996)	What firms do? Coordination, identity, and learning	Conceptual
13	774	Benner and Tushman (2003)	Exploitation, exploration, and process management: the productivity dilemma revisited	Conceptual
14	756	Gulati (1995)	Social structure and alliance formation patterns: a longitudinal analysis	Conceptual
15	708	Gulati (1999)	Network location and learning: the influence of network resources and firm capabilities on alliance formation	Empirical/quantitative
16	703	Amit and Zott (2001)	Value creation in e-business	Empirical/qualitative
17	700	Winter (2003)	Understanding dynamic capabilities	Conceptual
18	699	Orlikowski (2002)	Knowing in practice: enacting a collective capability in distributed organizing	Empirical/quantitative
19	677	Baum, Calabrese, and Silverman (2000)	Do not go it alone: alliance network composition and startups' performance in Canadian biotechnology	Empirical/quantitative
20	667	Helfat and Peteraf (2003)	The dynamic resource-based view: capability lifecycles	Conceptual
21	655	Maskell and Malmberg (1999)	Localised learning and industrial competitiveness	Conceptual
22	622	Ancona and Caldwell (1992)	Demography and design-predictors of new product tem performance	Empirical/quantitative
23	612	Gold and Arvind Malhotra (2001)	Knowledge management: an organizational capabilities perspective	Empirical/quantitative
24	591	Melville, Kraemer, and Gurbaxani (2004)	Review: information technology and organizational performance: an integrative model of IT business value	Conceptual
25	534	Subramaniam and Youndt (2005)	The influence of intellectual capital on the types of innovative capabilities	Empirical/quantitative
26	523	Sambamurthy, Bharadwaj, and Grover (2003)	Shaping agility through digital options: reconceptualizing the role of information technology in contemporary firms	Conceptual
27	499	Carlile (2004)	Transferring, translating, and transforming: an integrative framework for managing knowledge across boundaries	Conceptual
28	497	Tripsas and Gavetti (2000)	Capabilities, cognition, and inertia: evidence from digital imaging	Empirical/qualitative
29	486	Makadok (2001)	Toward a synthesis of the resource-based anddynamic-capability views of rent creation	Conceptual
30	472	Sirmon, Hitt, and Ireland (2007)	Managing firm resources in dynamic environments to create value: looking inside the black box	Conceptual
31	470	Wright, Dunford, and Snell (2001)	Human resources and the resource based view of the firm	Empirical/quantitative
32	458	Wade and Hulland (2004)	Review: the resource-based view and information systems research: review, extension, and suggestions for future research	Conceptual
33	445	Danneels (2002)	The dynamics of product innovation and firm competences	Empirical/qualitative
34	421	Williamson (1999)	Strategy research: governance and competence perspectives	Conceptual
35	392	Knight and Cavusgil (2004)	Innovation, organizational capabilities, and the born-global firm	Empirical/quantitative
36	379	Brusoni, Prencipe, and Pavitt (2001)	Knowledge specialization, organizational coupling, and the boundaries of the firm: why do firms know more than they make?	Conceptual
37	378	DeCarolis and Deeds (1999)	The impact of stocks and flows of organizational knowledge on firm performance: an empirical investigation of the biotechnology industry	Empirical/qualitative
38	372	Lorenzoni and Lipparini (1999)	The leveraging of interfirm relationships as a distinctive organizational capability: a longitudinal study	Empirical/quantitative
39	367	Aragón-Correa and Sharma (2003)	A contingent resource-based view of proactive corporate environmental strategy	Conceptual
40	350	Teece (2010)	Business Models, Business Strategy and Innovation	Conceptual
41	341	Jansen, Van Den Bosch, and Volberda (2005)	Managing potential and realized absorptive capacity: how do organizational antecedent's matter?	Empirical/quantitative
42	329	Rai, Patnayakuni, and Seth (2006)	Firm performance impacts of digitally enabled supply chain integration capabilities	Empirical/quantitative
43	326	Zahra et al. (2006)	Entrepreneurship and dynamic capabilities: a review, model and research agenda	Conceptual
44	321	Newbert (2007)	Empirical research on the resource-based view of the firm: an assessment and suggestions for future research	Empirical/quantitative
45	319	Lavie (2006)	The competitive advantage of interconnected firms: an extension of the resource-based view	Conceptual
46	319	Helfat (1997)	Know-how and asset complementarity and dynamiccapability accumulation: the case of R&D	Empirical/quantitative
47	315	Hitt, Bierman, Shimizu, and Kochhar (2001)	Guest editors' introduction to the special issue – Strategic entrepreneurship: entrepreneurial strategies for wealth creation	Empirical/qualitative
48	308	Raisch and Birkinshaw (2008)	Organizational ambidexterity: antecedents, outcomes, and moderators	Conceptual
49	294	Collis and Montgomery (1995)	Competing on resources-Strategy in the 1990s	Empirical/qualitative
50	292	Smith and Tushman (2005)	Managing strategic contradictions: a top management model for managing innovation streams	Conceptual

Table 8
The most cited studies on dynamic capabilities between 2012 and 2015.

Rank	Author	Article	Type of study
1	Pentland et al. (2012)	Dynamics of organizational routines: a generative model	Empirical
2	Petit (2012)	Project portfolios in dynamic environments: organizing for uncertainty	Qualitative case study
3	Teece (2012)	Dynamic Capabilities: routines versus entrepreneurial action	Conceptual
4	Jacobides and Winter (2012)	Capabilities: structure, agency, and evolution	Conceptual
5	Camisón and Monfort-Mir (2012)	Measuring innovation in tourism from the Schumpeterian and the dynamic-capabilities perspectives	Conceptual
6	Vogel and Güttel (2013)	The dynamic capability view in strategic management: a bibliometric review	Bibliometric methods
7	Kindström, Kowalkowski, and Sandberg (2013)	Enabling service innovation: a dynamic capabilities approach	Qualitative case study
8	Beske (2012)	Dynamic capabilities and sustainable supply chain management	Conceptual
9	Teece (2014)	A dynamic capabilities-based entrepreneurial theory of the multinational enterprise	Conceptual
10	Hsu and Wang (2012)	Clarifying the effect of intellectual capital on performance: the mediating role of dynamic capability	Empirical
11	Kor and Mesko (2013)	Dynamic managerial capabilities: configuration and orchestration of top executives' capabilities and the firm's dominant logic	Conceptual
12	Argote and Ren (2012)	Transactive memory systems: a microfoundation of dynamic capabilities	Conceptual
13	Biedenbach and Müller (2012)	Absorptive, innovative and adaptive capabilities and their impact on project and project portfolio performance	Qualitative–quantitative
14	Schilke (2014)	On the contingent value of dynamic capabilities for competitive advantage: the nonlinear moderating effect of environmental dynamism	Empirical
15	Protogerou et al. (2012)	Dynamic capabilities and their indirect impact on firm performance	Empirical
16	Chen (2012)	The synergistic effects of IT-enabled resources on organizational capabilities and firm performance	Empirical
17	Nieves and Haller (2014)	Building dynamic capabilities through knowledge resources	Empirical
18	Woldesenbet et al. (2012)	Supplying large firms: the role of entrepreneurial and dynamic capabilities in small businesses	Empirical
19	Lin and Wu (2014)	Exploring the role of dynamic capabilities in firm performance under the resource-based view framework	Empirical
20	Eggers and Kaplan (2013)	Cognition and capabilities: a multi-level perspective	Conceptual
21	Jiao, Alon, Koo, and Cui (2013)	When should organizational change be implemented? The moderating effect of environmental dynamism between dynamic capabilities and new venture performance	Empirical
22	Chakrabarty and Wang (2012)	The long-term sustenance of sustainability practices in MNCs: a dynamic capabilities perspective of the role of R&D and internationalization	Empirical
23	Rodenbach and Brettel (2012)	CEO experience as micro-level origin of dynamic capabilities	Empirical
24	Helfat and Peteraf (2015)	Managerial cognitive capabilities and the microfundations of dynamic capabilities	Conceptual
25	Li and Liu (2014)	Dynamic capabilities, environmental dynamism, and competitive advantage: evidence from China	Empirical
26	Zhan and Chen (2013)	Dynamic capability and IJV performance: the effect of exploitation and exploration capabilities	Empirical
27	Wilden, Gudergan, Nielsen, and Lings (2013)	Dynamic capabilities and performance: strategy, structure and environment	Empirical
28	Jantunen, Ellonen, and Johansson (2012)	Beyond appearances – Do dynamic capabilities of innovative firms actually differ?	Qualitative case
29	Ripollés and Blesa (2012)	International new ventures as "small multinationals": the importance of marketing capabilities	Empirical
30	Makkonen, Pohjola, Olkkonen, and Koponen (2014)	Dynamic capabilities and firm performance in a financial crisis	Qualitative case study–quantitative
31	Chen and Chang (2013)	The determinants of green product development performance: green dynamic capabilities, green transformational leadership, and green creativity	Empirical
32	Chien and Tsai (2012)	Dynamic capability, knowledge, learning, and firm performance	Empirical
33	Ramírez, Österman, and Grönquist (2013)	Scenarios and early warnings as dynamic capabilities to frame managerial attention	Qualitative case
34	Denford (2013)	Building knowledge: developing a knowledge-based dynamic capabilities typology	Conceptual
35	Corner and Wu (2012)	Dynamic capability emergence in the venture creation process	Conceptual
36	Newey et al. (2012)	The relationship between dynamic and operating capabilities as a stage-gate process: insights from radical innovation	Conceptual
37	Daniel, Ward, and Franken (2014)	A dynamic capabilities perspective of IS project portfolio management	Conceptual
38	Eriksson (2014)	Processes, antecedents and outcomes of dynamic capabilities	Empirical
39	Galvin, Rice, and Liao (2014)	Applying a Darwinian model to the dynamic capabilities view: insights and issues	Empirical
40	Agarwal and Selen (2013)	The incremental and cumulative effects of dynamic capability building on service innovation in collaborative service organizations	Empirical
41	Yung and Lai (2012)	Dynamic capabilities in new product development: the case of Asus in motherboard production	Empirical
42	Koryak et al. (2015)	Entrepreneurial leadership, capabilities and firm growth	Conceptual
43	Villar, Alegre, and Pla-Barber (2014)	Exploring the role of knowledge management practices on exports: a dynamic capabilities view	Empirical
44	Beck and Wiersema (2013)	Executive decision making: linking dynamic managerial capabilities to the resource portfolio and strategic outcomes	Conceptual
45	Stadler, Helfat, and Verona (2013)	The impact of dynamic capabilities on resource access and development	Empirical
46	Wang et al. (2013)	Examining the role of information technology in cultivating firms' dynamic marketing capabilities	Empirical
47	Wilden and Gudergan (2015)	The impact of dynamic capabilities on operational marketing and technological capabilities: investigating the role of environmental turbulence	Empirical
48	Di Stefano, Peteraf, and Verona (2014)	The organizational drivetrain: a road to integration of dynamic capabilities research	Conceptual
49	Teece (2014)	The foundations of enterprise performance: dynamic and ordinary capabilities in AN (Economi) theory of firms	Conceptual
50	Lanza and Passarelli (2014)	Technology change and dynamic entrepreneurial capabilities	Conceptual
51	Arend (2014)	Entrepreneurship and dynamic capabilities: how firm age and size affect the 'capability enhancement-SME performance' relationship	Empirical
52	Eriksson (2013)	Methodological issues in dynamic capabilities research – a critical review	Empirical
53	Wang, Jaw, and Tsai (2012)	Building dynamic strategic capabilities: a human capital perspective	Empirical
54	Arndt and Norbert (2015)	Evolutionary and ecological conceptualization of dynamic capabilities: identifying elements of the Teece and Eisenhardt schools	Conceptual
55	Piening and Salge (2015)	Understanding the antecedents, contingencies, and performance implications of process innovation: a dynamic capabilities perspective	Empirical

In recent years, there have appeared several works that focus on marketing and technological capabilities such as "The impact of dynamic capabilities on operational marketing and technological capabilities: investigating the role of environmental turbulence", by Wilden and Gudergan (2014), "International new ventures as "small multinationals": The importance of marketing capabilities", by Ripollés and Blesa (2012), or "Examining the role of information technology in cultivating firms' dynamic marketing capabilities", by Wang, Hu, and Hu (2013). This latter work focuses on two key organizational capabilities – marketing and technological – that drive the actions through which the company can face and adapt to a changing environment, being able hence to enhance its performance.

5. Discussion and further research

Our analysis provides a general overview of the existing scientific research on the field of dynamic capabilities between 1991 and 2015 in terms of publications retrieved from the Web of Science (WOS) database. This paper might serve as a guide for future researchers who intend to develop studies on dynamic capabilities, and need to acknowledge which academic journals, authors and articles should be addressed to attain a proper theoretical framework within this particular field of study.

The exhaustive bibliometric analysis of 3852 documents gathered from the WOS database shows that 2808 are articles. The most popular scientific article on dynamic capabilities is "Dynamic capabilities and strategic management", developed by Teece et al. (1997). The country responsible for most research on dynamic capabilities is the USA (1277 published documents), which may owe to the high proportion of journals based in the USA. The journals holding most widely published research on this topic is the "Strategic Management Journal" (160 documents), followed by the journals "Organization Science" (100 documents) and "International Journal of Technology Management" (88 documents). The most prolific dynamic capabilities author is David J. Teece with 17 documents. The results of the bibliometric analysis reveal a continued growth in the number of documents related to dynamic capabilities. In the latter year 2015 we can find 307 publications that present empirical works aiming to develop new theories and novel approaches. Although there are less works than on the previous year, it is still a remarkable figure.

This study highlights the three most cited studies within this topic, which can be considered as seminal works that should be addressed by every research work in this field. These works are the following: in first place, "Dynamic capabilities and strategic management", from the authors Teece et al. (1997), with 5164 citations; Secondly, the study entitled "Knowledge of the firm, combinative capabilities, and the replication technology" (Kogut & Zander, 1992), with 3336 citations. And, in third place, "Dynamic capabilities: What are they?" from Eisenhardt and Martin (2000), with 2529 citations.

On the other hand, this paper presents the studies with most citations within the 2012–2015 period. Among the theoretical studies published in this period we can highlight a study to provide new knowledge on the background, contingencies and consequences of performance differences between companies in the successful process innovation, based on the approach of dynamic capabilities (Piening & Salge, 2015), or a study by Eriksson (2014) that focuses on three areas: the processes, antecedents and outcomes of dynamic capabilities. Nevertheless, there remains a tendency to contextualize the concepts of dynamic and organizational capabilities. In addition, several articles explain the evolution of dynamic and organizational routines (Newey, Verreynne, & Griffiths, 2012; Pentland, Feldman, Becker, & Liu, 2012).

This study has some limitations. The first limitation is that many publications on dynamic capabilities might appear in non-indexed journals, which are unavailable in the WOS database. Frequently, the citation index or the number of publications measures quantitative figures, despite the actual quality of the document. The mere fact that an author is important or relevant persuades other authors to cite that author without reading the article or developing a decisive and significant view of its content (Albort-Morant & Ribeiro-Soriano, 2015). Another limitation can be that the results give a picture of the current situation, however these results may change over time, especially for the recent publications of the last two-three years that still have to grow considerably. And finally, this study is developed within a specific field – business, management and economics –. Consequently, researchers should be cautious while generalizing their conclusions.

Implications for further research are clear. In the case of empirical works, since first studies were published, there can be observed a trend characterized by exploring the role played by dynamic capabilities in the enhancement of business performance. However, recent works focus on more current issues such as technology; marketing; the environment; the role adopted by entrepreneurs, internationalization issues or the management of multinationals (Arend, 2014; Chen & Chang, 2013; Hsu & Wang, 2012; Teece, 2014). Other articles discuss the complementarities existing between dynamic capabilities and supply chain management (Beske, 2012; Koryak et al., 2015). Therefore, further research conducted on the field of dynamic capabilities should be less focused on the attempt to link DC with performance and advance toward the assessment of the impact exerted by DC on the above mentioned managerial issues.

Besides, we observe a noteworthy evolution of the published articles in this field of research. Initially, the articles focused on explaining theoretical models aimed at enabling the enhancement of the literature on this topic. The majority of empirical studies were published after 2005 (Eriksson, 2014). For this reason, it can be observed that this topic still arises high doses of presence and interest among researchers. The results show that despite the literature is quite fragmented and shows a lack of consensus in certain issues, research developments are continually proliferating and expanding the number of approaches and understanding of dynamic capabilities.

Further research should include articles that do not constrain their scope to the WOS, relying hence on the use of other online databases, as for example Scopus or Google Scholar. These databases might contain studies published in journals that are not indexed within the ISI Web of Science. In addition, subsequent bibliometric studies could compare the results from other databases with those presented in this research or perform a meta-analysis, which might enable the classification of the most cited articles or the latest articles in different categories.

References

Adner, R., & Helfat, C. E. (2003). Corporate effects and dynamic managerial capabilities. *Strategic Management Journal*, *24*(10), 1011–1025.

Agarwal, R., & Selen, W. (2013). The incremental and cumulative effects of dynamic capability building on service innovation in collaborative service organizations. *Journal of Management & Organization*, *19*(5), 521–543.

Albort-Morant, G., & Ribeiro-Soriano, D. (2015). A bibliometric analysis of international impact of business incubators. *Journal of Business Research*, *69*(5), 1775–1779.

Ambrosini, V., & Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management? *International Journal of Management Reviews*, *11*(1), 29–49.

Amit, R., & Zott, C. (2001). Value creation in e-business. *Strategic Management Journal*, *22*(6–7), 493–520.

Ancona, D. G., & Caldwell, D. F. (1992). Bridging the boundary: External activity and performance in organizational teams. *Administrative Science Quarterly*, 634–665.

Aragón-Correa, J. A., & Sharma, S. (2003). A contingent resource-based view of proactive corporate environmental strategy. *Academy of Management Review*, *28*(1), 71–88.

Arend, R. J. (2014). Entrepreneurship and dynamic capabilities: How firm age and size affect the 'capability enhancement – SME performance' relationship. *Small Business Economics*, *42*(1), 33–57.

Argote, L., & Ren, Y. (2012). Transactive memory systems: A microfoundation of dynamic capabilities. *Journal of Management Studies*, *49*(8), 1375–1382.

Arndt, F., & Norbert, B. (2015). Evolutionary and ecological conceptualisation of dynamic capabilities: Identifying elements of the Teece and Eisenhardt schools. *Journal of Management & Organisation*, *21*(5), 701–704.

Baum, J. A., Calabrese, T., & Silverman, B. S. (2000). Don't go it alone: Alliance network composition and startups' performance in Canadian biotechnology. *Strategic Management Journal*, 267–294.

Beck, J. B., & Wiersema, M. F. (2013). Executive decision making: Linking dynamic managerial capabilities to the resource portfolio and strategic outcomes. *Journal of Leadership & Organizational Studies*, *20*(4), 408–419.

Benner, M. J., & Tushman, M. L. (2003). Exploitation, exploration, and process management: The productivity dilemma revisited. *Academy of Management Review*, *28*(2), 238–256.

Beske, P. (2012). Dynamic capabilities and sustainable supply chain management. *International Journal of Physical Distribution & Logistics Management*, *42*(4), 372–387.

Biedenbach, T., & Müller, R. (2012). Absorptive, innovative and adaptive capabilities and their impact on project and project portfolio performance. *International Journal of Project Management*, *30*(5), 621–635.

Bouyssou, D., & Marchant, T. (2011). Ranking scientists and departments in a consistent manner. *Journal of the American Society for Information Science and Technology*, *62*(9), 1761–1769.

Bridges, E., Coughlan, A. T., & Kalish, S. (1991). New technology adoption in an innovative marketplace: Micro- and macro-level decision making models. *International Journal of Forecasting*, *7*(3), 257–270.

Brusoni, S., Prencipe, A., & Pavitt, K. (2001). Knowledge specialization, organizational coupling, and the boundaries of the firm: Why do firms know more than they make? *Administrative Science Quarterly*, *46*(4), 597–621.

Cadavid-Higuita, L., Awad, G., Cardona, F., & Jaime, C. (2012). A bibliometric analysis of a modeled field for disseminating innovation. *Estudios Gerenciales*, *28*(SPE), 213–236.

Camisón, C., & Forés, B. (2010). Knowledge absorptive capacity: New insights for its conceptualization and measurement. *Journal of Business Research*, *63*(7), 707–715.

Camisón, C., & Monfort-Mir, V. M. (2012). Measuring innovation in tourism from the Schumpeterian and the dynamic-capabilities perspectives. *Tourism Management*, *33*(4), 776–789.

Carlile, P. R. (2004). Transferring, translating, and transforming: An integrative framework for managing knowledge across boundaries. *Organization Science*, *15*(5), 555–568.

Cepeda, G., & Vera, D. (2007). Dynamic capabilities and operational capabilities: A knowledge management perspective. *Journal of Business Research*, *60*(5), 426–437.

Chaharbaghi, K., Adcroft, A., & Willis, R. (2005). Organisations, transformability and the dynamics of strategy. *Management Decision*, *43*(1), 6–12.

Chakrabarty, S., & Wang, L. (2012). The long-term sustenance of sustainability practices in MNCs: A dynamic capabilities perspective of the role of R&D and internationalization. *Journal of Business Ethics*, 1–13.

Chen, J. L. (2012). The synergistic effects of IT-enabled resources on organizational capabilities and firm performance. *Information & Management*, *49*(3), 142–150.

Chen, Y. S., & Chang, C. H. (2013). The determinants of green product development performance: Green dynamic capabilities, green transformational leadership, and green creativity. *Journal of Business Ethics*, *116*(1), 107–119.

Chien, S. Y., & Tsai, C. H. (2012). Dynamic capability, knowledge, learning, and firm performance. *Journal of Organizational Change Management*, *25*(3), 434–444.

Collis, D. J., & Montgomery, C. A. (1995). *Competing on resources: Strategy in the 1990s*.

Corner, P. D., & Wu, S. (2012). Dynamic capability emergence in the venture creation process. *International Small Business Journal*, *30*(2), 138–160.

Daim, T. U., Rueda, G., Martin, H., & Gerdsri, P. (2006). Forecasting emerging technologies: Use of bibliometrics and patent analysis. *Technological Forecasting and Social Change*, *73*, 981–1012.

Daniel, E. M., Ward, J. M., & Franken, A. (2014). A dynamic capabilities perspective of IS project portfolio management. *The Journal of Strategic Information Systems*, *23*(2), 95–111.

Danneels, E. (2002). The dynamics of product innovation and firm competences. *Strategic Management Journal*, *23*(12), 1095–1121.

De Bakker, F. G., Groenewegen, P., & Den Hond, F. (2005). A bibliometric analysis of 30 years of research and theory on corporate social responsibility and corporate social performance. *Business & Society*, *44*(3), 283–317.

DeCarolis, D. M., & Deeds, D. L. (1999). The impact of stocks and flows of organizational knowledge on firm performance: An empirical investigation of the biotechnology industry. *Strategic Management Journal*, 953–968.

Denford, J. S. (2013). Building knowledge: Developing a knowledge-based dynamic capabilities typology. *Journal of Knowledge Management*, *17*(2), 175–194.

Di Stefano, G., Peteraf, M., & Verona, G. (2010). Dynamic capabilities deconstructed: A bibliographic investigation into the origins, development, and future directions of the research domain. *Industrial and Corporate Change*, *25*(3), 1–18.

Di Stefano, G., Peteraf, M., & Verona, G. (2014). The organizational drivetrain: A road to integration of dynamic capabilities research. *The Academy of Management Perspectives*, *28*(4), 307–327.

Duque-Oliva, E. J., Cervera Taulet, A., & Rodríguez Romero, C. (2006). A bibliometric analysis of models measuring the concept of perceived quality in providing internet service. *Innovar*, *16*(28), 223–243.

Dyer, J. H., & Nobeoka, K. (2000). Creating and managing a high-performance knowledge-sharing network: The Toyota case. *Strategic Management Journal*, 345–367.

Easterby-Smith, M., Lyles, M. A., & Peteraf, M. A. (2009). Dynamic capabilities: Current debates and future directions. *British Journal of Management*, *20*(1), 1–8.

Eggers, J. P., & Kaplan, S. (2013). Cognition and capabilities: A multi-level perspective. *Academy of Management Annals*, *7*(1), 295–340.

Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, *21*(10–11), 1105–1121.

Eriksson, T. (2013). Methodological issues in dynamic capabilities research – A critical review. *Baltic Journal of Management*, *8*(3), 306–327.

Eriksson, T. (2014). Processes, antecedents and outcomes of dynamic capabilities. *Scandinavian Journal of Management*, *30*(1), 65–82.

Fukuzawa, M. (2015). Dynamic capability as fashion. *Annals of Business Administrative Science*, *14*(2), 83–96.

Galvin, P., Rice, J., & Liao, T. S. (2014). Applying a Darwinian model to the dynamic capabilities view: Insights and issues. *Journal of Management & Organization*, *20*(2), 250–263.

Gereffi, G., Humphrey, J., & Sturgeon, T. (2005). The governance of global value chains. *Review of International Political Economy*, *12*(1), 78–104.

Gold, A. H., & Arvind Malhotra, A. H. S. (2001). Knowledge management: An organizational capabilities perspective. *Journal of Management Information Systems*, *18*(1), 185–214.

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, *17*(S2), 109–122.

Griffith, D. A., & Harvey, M. G. (2001). A resource perspective of global dynamic capabilities. *Journal of International Business Studies*, *32*(3), 597–606.

Gulati, R. (1995). Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Academy of Management Journal*, *38*(1), 85–112.

Gulati, R. (1999). Network location and learning: The influence of network resources and firm capabilities on alliance formation. *Strategic Management Journal*, *20*(5), 397–420.

Gulati, R., Nohria, N., & Zaheer, A. (2000). Strategic networks. *Strategic Management Journal*, 203–215.

Helfat, C. E. (1997). Know-how and asset complementarity and dynamic capability accumulation: The case of R&D. *Strategic Management Journal*, 339–360.

Helfat, C. E., & Martin, J. A. (2015). Dynamic managerial capabilities: Review and assessment of managerial impact on strategic change. *Journal of Management*, *41*(5), 1281–1312.

Helfat, C. E., & Peteraf, M. A. (2003). The dynamic resource-based view: Capability lifecycles. *Strategic Management Journal*, *24*(10), 997–1010.

Helfat, C. E., & Peteraf, M. A. (2015). Managerial cognitive capabilities and the microfoundations of dynamic capabilities. *Strategic Management Journal*, *36*(6), 831–850.

Helfat, C. E., & Winter, S. G. (2011). Untangling dynamic and operational capabilities: Strategy for the (N) ever-changing world. *Strategic Management Journal*, *32*(11), 1243–1250.

Helfat, C. E., Finkelstein, S., Mitchell, W., Peteraf, M., Singh, H., Teece, D., & Winter, S. G. (2009). *Dynamic capabilities: Understanding strategic change in organizations*. John Wiley & Sons.

Hirsch, J. E. (2005). An index to quantify an individual's scientific research output. *Proceedings of the National Academy of Sciences of the United States of America*, *102*(46), 16569–16572.

Hitt, M. A., Bierman, L., Shimizu, K., & Kochhar, R. (2001). Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective. *Academy of Management Journal*, *44*(1), 13–28.

Hsu, L. C., & Wang, C. H. (2012). Clarifying the effect of intellectual capital on performance: The mediating role of dynamic capability. *British Journal of Management*, *23*(2), 179–205.

Jacobides, M. G., & Winter, S. G. (2012). Capabilities: Structure, agency, and evolution. *Organization Science*, *23*(5), 1365–1381.

Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2005). Managing potential and realized absorptive capacity: How do organizational antecedents matter? *Academy of Management Journal*, *48*(6), 999–1015.

Jantunen, A., Ellonen, H. K., & Johansson, A. (2012). Beyond appearances – Do dynamic capabilities of innovative firms actually differ? *European Management Journal*, *30*(2), 141–155.

Jiao, H., Alon, I., Koo, C. K., & Cui, Y. (2013). When should organizational change be implemented? The moderating effect of environmental dynamism between dynamic capabilities and new venture performance. *Journal of Engineering and Technology Management*, *30*(2), 188–205.

Kindström, D., Kowalkowski, C., & Sandberg, E. (2013). Enabling service innovation: A dynamic capabilities approach. *Journal of Business Research*, *66*(8), 1063–1073.

Knight, G. A., & Cavusgil, S. T. (2004). Innovation, organizational capabilities, and the born-global firm. *Journal of International Business Studies*, 124–141.

Kogut, B., & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organisation Science*, *3*(3), 383–397.

Kogut, B., & Zander, U. (1996). What firms do? Coordination, identity, and learning. *Organization Science*, *7*(5), 502–518.

Kor, Y. Y., & Mesko, A. (2013). Dynamic managerial capabilities: Configuration and orchestration of top executives' capabilities and the firm's dominant logic. *Strategic Management Journal*, *34*(2), 233–244.

Koryak, O., Mole, K. F., Lockett, A., Hayton, J. C., Ucbasaran, D., & Hodgkinson, G. P. (2015). Entrepreneurial leadership, capabilities and firm growth. *International Small Business Journal*, *33*(1), 89–105.
Lanza, A., & Passarelli, M. (2014). Technology change and dynamic entrepreneurial capabilities. *Journal of Small Business Management*, *52*(3), 427–450.
Lavie, D. (2006). The competitive advantage of interconnected firms: An extension of the resource-based view. *Academy of Management Review*, *31*(3), 638–658.
Leal-Rodríguez, A. L., & Roldán, J. L. (2013). The moderating role of relational learning on the PACAP–RACAP link. A study in the Spanish automotive components manufacturing sector. *Revista Europea de Dirección y Economía de la Empresa*, *22*(4), 218–224.
Lee, J., Lee, K., & Rho, S. (2002). An evolutionary perspective on strategic group emergence: A genetic algorithm-based model. *Strategic Management Journal*, *23*(8), 727–746.
Levinthal, D. A., & March, J. G. (1993). The myopia of learning. *Strategic Management Journal*, *14*(S2), 95–112.
Li, D. Y., & Liu, J. (2014). Dynamic capabilities, environmental dynamism, and competitive advantage: Evidence from China. *Journal of Business Research*, *67*(1), 2793–2799.
Lin, Y., & Wu, L. Y. (2014). Exploring the role of dynamic capabilities in firm performance under the resource-based view framework. *Journal of Business Research*, *67*(3), 407–413.
Lorenzoni, G., & Lipparini, A. (1999). The leveraging of interfirm relationships as a distinctive organizational capability: A longitudinal study. *Strategic Management Journal*, 317–338.
Makadok, R. (2001). Toward a synthesis of the resource-based and dynamic-capability views of rent creation. *Strategic Management Journal*, *22*(5), 387–401.
Makkonen, H., Pohjola, M., Olkkonen, R., & Koponen, A. (2014). Dynamic capabilities and firm performance in a financial crisis. *Journal of Business Research*, *67*(1), 2707–2719.
Martelo-Landroguez, S., Barroso-Castro, C., & Cepeda-Carrión, G. (2011). Creating dynamic capabilities to increase customer value. *Management Decision*, *49*(7), 1141–1159.
Maskell, P., & Malmberg, A. (1999). Localised learning and industrial competitiveness. *Cambridge Journal of Economics*, *23*(2), 167–185.
Melville, N., Kraemer, K., & Gurbaxani, V. (2004). Information technology and organizational performance: An integrative model of IT business value. *MIS Quarterly*, *28*(2), 283–322.
Merigó, J. M., Mas-Tur, A., Roig-Tierno, N., & Ribeiro-Soriano, D. (2015). A bibliometric overview of the Journal of Business Research between 1973 and 2014. *Journal of Business Research*, *68*(12), 2645–2653.
Newbert, S. L. (2007). Empirical research on the resource-based view of the firm: An assessment and suggestions for future research. *Strategic Management Journal*, *28*(2), 121–146.
Newey, L. R., Verreynne, M. L., & Griffiths, A. (2012). The relationship between dynamic and operating capabilities as a stage-gate process: Insights from radical innovation. *Journal of Management & Organisation*, *18*(01), 123–140.
Nieves, J., & Haller, S. (2014). Building dynamic capabilities through knowledge resources. *Tourism Management*, *40*, 224–232.
Orlikowski, W. J. (2002). Knowing in practice: Enacting a collective capability in distributed organizing. *Organization Science*, *13*(3), 249–273.
Pavlou, P. A., & El Sawy, O. A. (2011). Understanding the elusive black box of dynamic capabilities. *Decision Sciences*, *42*(1), 239–273.
Pentland, B. T., Feldman, M. S., Becker, M. C., & Liu, P. (2012). Dynamics of organisational routines: A generative model. *Journal of Management Studies*, *49*(8), 1484–1508.
Peteraf, M., Di Stefano, G., & Verona, G. (2013). The elephant in the room of dynamic capabilities: Bringing two diverging conversations together. *Strategic Management Journal*, *34*(12), 1389–1410.
Petit, Y. (2012). Project portfolios in dynamic environments: Organizing for uncertainty. *International Journal of Project Management*, *30*(5), 539–553.
Piening, E. P., & Salge, T. O. (2015). Understanding the antecedents, contingencies, and performance implications of process innovation: A dynamic capabilities perspective. *Journal of Product Innovation Management*, *32*(1), 80–97.
Podsakoff, P. M., MacKenzie, S. B., Podsakoff, N. P., & Bachrach, D. G. (2008). Scholarly influence in the field of management: A bibliometric analysis of the determinants of university and author impact in the management literature in the past quarter century. *Journal of Management*, *34*(4), 641–720.
Protogerou, A., Caloghirou, Y., & Lioukas, S. (2012). Dynamic capabilities and their indirect impact on firm performance. *Industrial and Corporate Change*, *21*(3), 615–647.
Rai, A., Patnayakuni, R., & Seth, N. (2006). Firm performance impacts of digitally enabled supply chain integration capabilities. *MIS Quarterly*, 225–246.
Raisch, S., & Birkinshaw, J. (2008). Organizational ambidexterity: Antecedents, outcomes, and moderators. *Journal of Management*, *34*(3), 375–409.
Ramírez, R., Österman, R., & Grönquist, D. (2013). Scenarios and early warnings as dynamic capabilities to frame managerial attention. *Technological Forecasting and Social Change*, *80*(4), 825–838.
Ripollés, M., & Blesa, A. (2012). International new ventures as "small multinationals": The importance of marketing capabilities. *Journal of World Business*, *47*(2), 277–287.
Rodenbach, M., & Brettel, M. (2012). CEO experience as micro-level origin of dynamic capabilities. *Management Decision*, *50*(4), 611–634.
Sambamurthy, V., Bharadwaj, A., & Grover, V. (2003). Shaping agility through digital options: Reconceptualizing the role of information technology in contemporary firms. *MIS Quarterly*, 237–263.
Schilke, O. (2014). On the contingent value of dynamic capabilities for competitive advantage: The nonlinear moderating effect of environmental dynamism. *Strategic Management Journal*, *35*(2), 179–203.
Singh, D., Singh-Oberoi, J., & Singh-Ahuja, I. (2013). An empirical investigation of dynamic capabilities in managing strategic flexibility in manufacturing organisations. *Management Decision*, *51*(7), 1442–1461.
Sirmon, D. G., Hitt, M. A., & Ireland, R. D. (2007). Managing firm resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review*, *32*(1), 273–292.
Smith, W. K., & Tushman, M. L. (2005). Managing strategic contradictions: A top management model for managing innovation streams. *Organization Science*, *16*(5), 522–536.
Stadler, C., Helfat, C. E., & Verona, G. (2013). The impact of dynamic capabilities on resource access and development. *Organization Science*, *24*(6), 1782–1804.
Subramaniam, M., & Youndt, M. A. (2005). The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal*, *48*(3), 450–463.
Teece, D. J. (2000). Strategies for managing knowledge assets: The role of firm structure and industrial context. *Long Range Planning*, *33*(1), 35–54.
Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, *28*(13), 1319–1350.
Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning*, *43*(2), 172–194.
Teece, D. J. (2012). Dynamic capabilities: Routines versus entrepreneurial action. *Journal of Management Studies*, *49*(8), 1395–1401.
Teece, D. J. (2014). A dynamic capabilities-based entrepreneurial theory of the multinational enterprise. *Journal of International Business Studies*, *45*(1), 8–37.
Teece, D., & Pisano, G. (1994). The dynamic capabilities of firms: An introduction. *Industrial and Corporate Change*, *3*(3), 537–556.
Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(7), 509–533.
Tripsas, M., & Gavetti, G. (2000). Capabilities, cognition, and inertia: Evidence from digital imaging. *Strategic Management Journal*, 1147–1161.
Villar, C., Alegre, J., & Pla-Barber, J. (2014). Exploring the role of knowledge management practices on exports: A dynamic capabilities view. *International Business Review*, *23*(1), 38–44.
Vivas-López, S. (2005). Competitive advantage and strategy formulation: The key role of dynamic capabilities. *Management Decision*, *43*(5), 661–669.
Vogel, R., & Güttel, W. H. (2013). The dynamic capability view in strategic management: A bibliometric review. *International Journal of Management Reviews*, *15*(4), 426–446.
Wade, M., & Hulland, J. (2004). The resource-based view and information systems research: Review, extension, and suggestions for future research. *MIS Quarterly*, *28*(1), 107–142.
Wang, C. Y. P., Jaw, B. S., & Tsai, C. H. C. (2012). Building dynamic strategic capabilities: A human capital perspective. *The International Journal of Human Resource Management*, *23*(6), 1129–1157.
Wang, E. T., Hu, H. F., & Hu, P. J. H. (2013). Examining the role of information technology in cultivating firms' dynamic marketing capabilities. *Information & Management*, *50*(6), 336–343.
Wilden, R., & Gudergan, S. P. (2014). The impact of dynamic capabilities on operational marketing and technological capabilities: Investigating the role of environmental turbulence. *Journal of the Academy of Marketing Science*, *43*(2), 181–199.
Wilden, R., & Gudergan, S. P. (2015). The impact of dynamic capabilities on operational marketing and technological capabilities: Investigating the role of environmental turbulence. *Academy of Marketing Science. Journal*, *43*(2), 181.
Wilden, R., Gudergan, S. P., Nielsen, B. B., & Lings, I. (2013). Dynamic capabilities and performance: Strategy, structure and environment. *Long Range Planning*, *46*(1), 72–96.
Williamson, O. E. (1999). Strategy research: Governance and competence perspectives. *Strategic Management Journal*, 1087–1108.
Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic Management Journal*, *24*(10), 991–995.
Woldesenbet, K., Ram, M., & Jones, T. (2012). Supplying large firms: The role of entrepreneurial and dynamic capabilities in small businesses. *International Small Business Journal*, *30*(5), 493–512.
Wright, P. M., Dunford, B. B., & Snell, S. A. (2001). Human resources and the resource based view of the firm. *Journal of Management*, *27*(6), 701–721.
Yung, I. S., & Lai, M. H. (2012). Dynamic capabilities in new product development: The case of Asus in motherboard production. *Total Quality Management & Business Excellence*, *23*(9–10), 1125–1134.
Zahra, S. A., & George, G. (2000). Absorptive capacity: A review and reconceptualization. *Academy of Management Proceedings*, *2000*(1), K1–K6. Academy of Management.
Zahra, S. A., Sapienza, H. J., & Davidsson, P. (2006). Entrepreneurship and dynamic capabilities: A review, model and research agenda. *Journal of Management Studies*, *43*(4), 917–955.
Zhan, W., & Chen, R. (2013). Dynamic capability and IJV performance: The effect of exploitation and exploration capabilities. *Asia Pacific Journal of Management*, 1–32.
Zollo, M., & Winter, S. G. (2002). Deliberate learning and the evolution of dynamic capabilities. *Organisation Science*, *13*(3), 339–351.
Zott, C. (2003). Dynamic capabilities and the emergence of intraindustry differential firm performance: Insights from a simulation study. *Strategic Management Journal*, *24*(2), 97–125.