

DYNAMIC CAPABILITIES THEORY: PINNING DOWN A SHIFTING CONCEPT

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ABSTRACT

The theory of dynamic capabilities (DC) has been an important topic for research in the field of strategic business studies over the last two decades or so. Despite this, there is still considerable debate among researchers about the basic concepts underpinning this theory that can be used to create the theoretical basis for empirical research in this area. Consequently, this paper aims to answer the following question: Is there a commonly agreed-upon empirically based definition of DC and what are the most influential conceptual definitions of DC that have affected previous empirical DC research over the period 1997 to 2015? Our study used a systematic review method to retrieve 53 empirical studies based on DC theory from relevant available data sources (Ebsco, ProQuest, Scopus and Wiley Online Library) from 1997 to 2015. Using formal concept analysis (FCA), those 53 studies were assessed along the dimension the source of the definition of DC which they used to build their theoretical foundation and then tested empirically based on their hypotheses and objectives. Our systematic review of the 53 selected studies presented in this research shows that no consensus has been reached about a commonly agreed-upon empirically based definition of DC. Instead, the studies under consideration can be considered as dividing into two schools. Our paper concludes that there is still a wide disparity among scholars and researchers in their definitions of DC. Finally, the present paper concludes that the Teece and colleagues' theoretical school can be considered the most influential school in shaping the theoretical foundations of the empirical studies reviewed and analysed in our research.

Keywords: Dynamic Capabilities, Dynamic Capabilities Definition, Systematic Review, Formal Concept Analysis.

INTRODUCTION

Dynamic capabilities (DC) theory emerged as both an extension to and a reaction against the inability of the resource-based view (RBV) to interpret the development and redevelopment of resources and capabilities to address rapidly changing environments. DC may be considered as a source of competitive advantage (Teece, Pisano & Shuen, 1997). DC theory goes beyond the idea that sustainable competitive advantage is based on a firm's acquisition of valuable, rare, inimitable and non-substitutable (VRIN) resources. Dynamic capabilities are responsible for enabling organizations to integrate, marshal and reconfigure their resources and capabilities to adapt to rapidly changing environments. Thus, DCs are processes that enable an organization to reconfigure its strategy and resources to achieve sustainable competitive advantages and superior performance in rapidly changing environments. Despite the wealth of studies discussing the idea of DC, to advance the theory further requires a collective effort on the part of researchers both to

illustrate concepts related to the theory and how to link them with empirical practices within organizations.

With that last statement in mind, the current paper aims to investigate two fundamental questions: first, whether there is a commonly agreed-upon empirically based definition of DC; and second, which are the most influential conceptual definitions that have affected previous empirical research in the field of DC over the period 1997 to 2015. The starting year was chosen because it saw the publication of Teece, Pisano & Shuen's paper (1997), which is considered a key reference in the field of business economics and has generated major debate among researchers in the business strategy field when presenting their conceptual definition of DC. The paper is structured as follows: the first section provides the introduction; the second section sets out the theoretical background and a literature review; the third section discusses the methodology used, while the fourth describes the data analysis; the fifth section presents the findings of our study and the sixth section presents conclusion and limitations of the study.

DCS: THEORETICAL BACKGROUND AND LITERATURE SURVEY

Dynamic capabilities (DC) theory appeared as an alternative approach to solve some of the weaknesses of RBV theory (Galvin, Rice & Liao, 2014). DC theory presents path-dependent processes that allow firms to adapt to rapidly changing environments by building, integrating and reconfiguring their resource and capabilities portfolio (Teece, Pisano & Shuen, 1997). However, until the 1980s there had been little interest in the subject of strategic management. Particularly in the 1980s, Porter's industry-based theory (Porter, 1979, 1980 and 1985) attracted the greatest attention (Barney & Ouchi, 1986). During that period, the RBV theory was the major subject of discussion. It viewed a firm as a portfolio of tangible and intangible resources and human resources and capabilities: the ability to combine resources in an innovative and efficient manner constituted "the firm's capabilities" (Wernerfelt, 1984, Grant, 1991; Helfat et al., 2007; Barney, 1991). In this view, competitive advantage is: "when a firm is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors" (Barney, 1991, p. 102) and sustainable competitive advantage is: "when a firm is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors and when these other firms are unable to duplicate the benefits of this strategy" (Barney, 1991, p. 102). These ideas emerged from VRIN resources (Barney, 1991; Tondolo & Bitencourt, 2014).

DC theory was derived from RBV theory and compensated for that theory's shortcomings when it came to explaining sustainable competitive advantage and superior performance in a dynamic environment. Teece, Pisano & Shuen (1997) defined DCs as "the firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments" (p. 516). DCs are thus "the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve and die" (Eisenhardt & Martin, 2000, p. 1107). Teece (2007) made a major contribution to DC theory by writing about the micro-foundations for each of the three following dimensions: sensing (identification and assessment of an opportunity), seizing (mobilization of resources to address an opportunity and to capture value) and transforming (continued renewal "reconfiguring the business firm's intangible and tangible assets"). Nevertheless, intense criticisms have been levelled against the theory, such as the nature of the term itself and difficulties in determining the merits of the outcomes of the theory (Zahra, Sapienza & Davidson, 2006), difficulty in understanding the nature of DCs and the absence of clear models to measure these capabilities and how they affect the performance of organizations (Zott, 2003). The theory has also been

criticized for being repetitive (Zollo & Winter, 2002) and ineffective in providing a complete answer regarding DCs and they operate (Schreyögg & Kliesch-Eberl, 2007). DC theory has also suffered from a lack of clarity about what constitutes its core concepts (Ambrosini & Bowman, 2009). Despite the intense growth of studies discussing the idea of DCs (Ambrosini & Bowman, 2009), the progress of the theory still requires further collective efforts from researchers to illustrate concepts related to the theory and how to link them to empirical practices within organizations (Wang & Ahmed, 2007).

RESEARCH METHODOLOGY

To achieve a systematic approach, the present research was designed in accordance with the series of steps suggested by Giudici (2009) and Newbert (2007) to build our own database in our systematic review of studies and research into dynamic capabilities at the empirical level. Our research procedure followed the steps described hereafter.

First, research and planning about databases: at this level, the authors suggested a protocol to carry out the search in databases with the stipulation that the articles selected for the search should fulfil the following requirements:

1. Have been published in scientific journals.
2. Have been published during the period 1997 to 2015 so as to cover appropriate articles in the field of dynamic capabilities at the empirical level.
3. Have been published in English.
4. Have complete texts available online for academicians and researchers at the author's universities.

Second, determining which databases to search: at this level, the present study specified the databases in the business field which could be used by the academicians and researchers on the author's universities websites. The databases shown in Table 1 below were selected.

Table 1	
SELECTED DATABASE TITLE	
No.	
1	Business Source Complete (Ebsco)
2	PQ Central (ProQuest)
3	Scopus
4	Wiley Online Library

Third, searching within databases.

Fourth, filtering the articles retrieved and determining precisely the sample size: At this stage, a thorough and deep read of the abstracts of all the 110 articles cited from the previous stage was conducted. The main aim was to exclude repeated and contradictory articles available in the four databases and also to exclude articles that do not have any relevance for the present study despite meeting the protocol requirements. As a result of this screening and filtering process, we determined that the total specific sample size was to be 53 articles. They were all retrieved from high-quality journals represented in the databases searched, as shown in Figure 1 and Table 2.

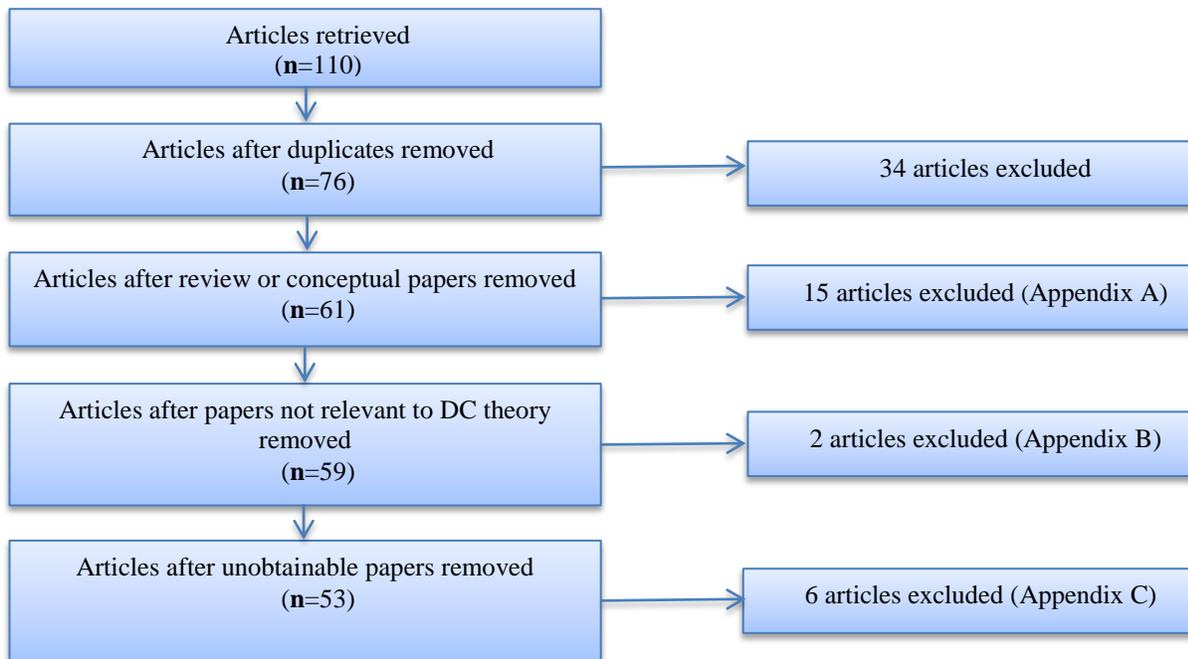


FIGURE 1
SEARCH STRATEGY FOR SYSTEMATIC REVIEW OF DYNAMIC CAPABILITIES
EMPIRICAL RESEARCH

Table 2
SELECTED JOURNALS AND NUMBER OF ARTICLES RETRIEVED

Journals	Abbreviation	No. of Articles Considered
African Journal of Business Management	AJBM	3
Baltic Journal of Management	BJM	1
British Journal of Management	BJM	2
Corporate Governance	CORG	2
Indian Journal of Science and Technology	IJST	1
Industrial Management & Data Systems	IMDS	1
International Small Business Journal	ISBJ	1
Information & Management	IM	1
Innovation: Management, Policy & Practice	IMPP	1
International Journal of Business Excellence	IJBE	1
International Journal of Electronic Business Management	IJEBM	1
International Journal of Manpower	IJM	1
International Journal of Productivity and Performance Management	IJPPM	1
International Journal of Retail & Distribution Management	IJRDM	1
International Marketing Review	IMR	1
International Small Business Journal	ISBJ	1
Journal of Product Innovation Management	JPIM	1
Journal of the Association for Information Systems	JAIS	1
Journal of Business Research	JBR	3
Journal of CENTRUM Cathedra	JCC	1
Journal of Convergence Information Technology	JCIT	1
Journal of East European Management Studies	JEEMS	1
Journal of Enterprising Communities: People and Places in the Global	JEC	1

Journals	Abbreviation	No. of Articles Considered
Economy		
Journal of International Business Studies	JIBS	1
Journal of International Entrepreneurship	JIE	1
Journal of Management & Organization	JMO	2
Journal of Management Information Systems	JMIS	1
Journal of Management Studies	JMS	1
Journal of Product Innovation Management	JPIM	1
Journal of Research in Interactive Marketing	JRIM	1
Journal of Small Business and Enterprise Development	JSBED	1
Journal of Small Business Management	JSBM	1
Journal of Strategy and Management	JSM	1
Journal of Systems and Information Technology	JSIT	1
Journal of the Academy of Marketing Science	JAMS	1
Knowledge and Process Management	KPM	2
Management and Production Engineering Review	MPER	1
Management Decision	MD	4
Management International Review	MIR	2
Supply Chain Management	SCM	1
Total Quality Management & Business Excellence	TQMBE	1
Total		53

DATA ANALYSIS

The sample selected for our study was 53 articles published during the target period. The study analysed all articles for the dimension the concept of DC to discover whether there was any agreement among researchers about the basic concepts of DC theory and its primary focus, see Table 3.

Author/s	Year	DC Definition on which the Article was Based	Primary focus
Sher & Lee	2004	Dynamic capabilities defined as “an organization’s ways of responding in a rapidly changing environment,” (in the article), p. 933.	Organizational methods
Jantunen et al.	2005	Dynamic capabilities defined as “the structures and processes that constitute firm’s ability to reconfigure its asset base to match the requirements of the changing environment...the firm’s ability to sense and seize opportunities,” (Teece, Pisano & Shuen, 1997; Eisenhardt and Martin, 2000; Winter, 2003; Teece, 2007), p. 225.	Entrepreneurial and organizational skills
Newbert	2005	Dynamic capabilities defined as “the antecedent organizational and strategic routines by which managers alter their resource base - acquire and shed resources- to generate new value-creating strategies,” (Eisenhardt and Martin, 2000), p. 57.	Organizational routines
Ayuso, Rodriguez & Ricart	2006	Dynamic capabilities defined as “the firm’s ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments,” (Teece, Pisano & Shuen, 1997), p. 953.	Organizational skills
Boccardelli & Magnusson	2006	Dynamic capabilities defined as “the explicit acquisition, transformation or re-combination of company resources,” (Teece, Pisano & Shuen, 1997; Eisenhardt and Martin, 2000), p. 170.	Organizational skills and routines

Author(s)	Year	Definition	Category
Menguc & Auh	2006	Dynamic capabilities defined as “the firm’s ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments,” (Teece, Pisano & Shuen, 1997), p. 64.	Organizational skills
Benner	2009	Dynamic capabilities defined as “a higher-order systematic organizational practice focused on improving underlying operating routines and capabilities,” (Zollo and Winter, 2002), p. 474.	Learning patterns
Bruni & Verona	2009	Dynamic capabilities defined as “the capacity of an organization to purposefully create, extend or modify its resource base,” (Helfat et al., 2007, p. 4). p. S102.	Organizational capacity
Bullón	2009	Dynamic capabilities defined as “the capacity of an organization to purposefully create, extend or modify its resources,” (Helfat et al., 2007), p. 100.	Organizational capacity
Chen, Lee & Lay	2009	Dynamic capabilities defined as “an important interface driving the creation, evolution and recombination of other resources and can assist in renewing organizational resources and improving competitive strength,” (Teece, Pisano & Shue, 1997), p. 1289.	Organizational skills
Fang & Zou	2009	Dynamic capabilities defined as “the ability to build, integrate and reconfigure internal and external competencies to address rapidly changing environments,” (Teece, Pisano & Shue, 1997), p. 742.	Organizational skills
Hsu & Chen	2009	Dynamic capabilities defined as “organizational routines and can also be used to either enhance existing or build new resource configurations in the pursuit of competitive advantages,” (Eisenhardt and Martin, 2000). p. 587.	Organizational routines
Laamanen & Wallin	2009	Dynamic capabilities defined as “the firm’s ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments,” (Teece, Pisano & Shue, 1997), p. 953.	Organizational skills
Barrales-Molina, Benitez-Amado & Perez-Arostegui	2010	Dynamic capabilities defined as “the firm’s abilities to integrate, construct and reconfigure the internal and external competences so as to react quickly to dynamic environments,” (Teece, Pisano & Shue, 1997), p. 1356.	Organizational skills
Bustinza, Molina & Arias-Aranda	2010	Dynamic capabilities defined as “those that bring about the changes in the processes applied by the firm,” (Zahra, Sapienza & Davidsson, 2006), p. 4067.	Organizational skills
Chirico & Nordqvist	2010	Dynamic capabilities defined as “Processes designed to acquire, exchange, transform and shed internal and external resources,” (in the article), p. 499.	Entrepreneurial resource management processes
Hou & Chien	2010	Dynamic capabilities defined as “the routines in a firm that guide and facilitate the development of the firm’s organizational capabilities by changing the underlying resource base in the firm,” (Eisenhardt and Martin, 2000), p. 97.	Organizational routines
Cui & Jiao	2011	Dynamic capabilities defined as “recreate internal and external resources in response to dynamic and rapidly shifting market environments in order to attain and sustain competitive advantage,” (Teece, Pisano & Shuen, 1997; Winter, 2003), p. 386.	Organizational skills
Evers	2011	Dynamic capabilities defined as “adapt, integrate and re-configure internal and external organizational skills, resources and functional competencies to develop competitive advantage and respond to changing environments,” (Pierce, Boerne & Teece, 2001), p. 519.	Organizational skills
Jiao, Alon & Cui	2011	Dynamic capabilities defined as “integrate, build and reconfigure internal and external resources and/or competencies to address their	Organizational and managerial

		changing environments,” (Teece, Pisano & Shuen, 1997), p. 133.	skills
Lee et al.	2011	Dynamic capabilities defined as “problem-solving patterns and procedures of organizational KA whose main upgrading gateway is learning and stable organizational governance,” (in the article), p. 4197.	Problem solving patterns and routines
Lim, Stratopoulos & Wirjanto	2011	Dynamic capabilities defined as “the firm’s ability to integrate, build and reconfigure IT with organizational and managerial processes in order to align with a rapidly changing competitive environment,” (in the article), p. 50.	Organizational skills
Liu & Hsu	2011	Dynamic capabilities defined as “a firm’s ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments the firm’s specific and distinctive processes relating to the transformation of resource reconfiguration to cope with environmental change,” (Teece, Pisano & Shuen, 1997; Eisenhardt & Martin, 2000), p. 1513.	Organizational skills and routines
Ludwig & Pemberton	2011	Dynamic capabilities defined as “a set of specific and identifiable processes or a pool of [controllable] resources that firms can integrate, reconfigure, renew and transfer”, p. 218.	Organizational skills and processes
Wang & Shi	2011	Dynamic capabilities defined as “firm’s ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments,” (Teece, Pisano & Shuen, 1997), p. 203.	Organizational skills
Adeniran & Johnston	2012	The Dynamic capabilities defined as “a firm’s capacity to sense, create, extend, modify, reconfigure, integrate and renew its ordinary or core capabilities to achieve and maintain competitive advantage in fast changing environments,” (Ambrosini & Bowman, 2009; Helfat et al., 2007; Wang & Ahmed, 2007; Winter, 2003), p. 4090.	Organizational capacity
Khalid & Larimo	2012	Unspecified definition for DCs, but the article has been influenced by previous research work such as Eisenhardt and Martin (2000) and Zahra, Sapienza & Davidsson (2006).	Organizational skills and routines
Kuuluvainen	2012	Dynamic capabilities defined as “the capacity to renew competencies so as to achieve congruence with the changing business environment” by “adapting, integrating and configuring internal and external organizational skills, resources and functional competencies,” (Teece, Pisano & Shuen, 1997), p. 384.	Organizational skills
Newey, Verreyne & Griffiths	2012	Dynamic capabilities defined as “to create, extend or modify, integrate, build, reconfigure and/or sense, seize and transform firm’s operating capabilities,” (Teece, Pisano & Shuen, 1997), p. 123.	Organizational and managerial skills
Rodenbach & Brettel	2012	Dynamic capabilities defined as “alter, expand and reconfigure a firm’s strategic assets,” (Eisenhardt and Martin, 2000; Teece, Pisano & Shuen, 1997), p. 611.	Organizational skills and routines
Wu & Hu	2012	Dynamic capabilities defined as “part of an on-going process wherein new knowledge is acquired from organizational members and integrated with existing knowledge for its further sharing and application in order to create value,” p. 981.	Organizational skills and processes
Yung & Lai	2012	Unspecified definition for DCs, but the article has been influenced by previous research work such as Teece, Pisano & Shuen (1997), Eisenhardt and Martin (2000), Zollo & Winter (2002) and Zott (2003).	Organizational skills, routines and learning patterns

Author(s)	Year	Dynamic capabilities definition	Organizational characteristics
Kokin et al.	2013	Dynamic capabilities defined as “an organizational trait,” (in the article), p. 67.	Organizational characteristics
Agarwal & Selen	2013	Dynamic capabilities defined as “the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve and die,” (Eisenhardt and Martin, 2000), p. 523.	Organizational routines
Caniato, Moretto & Caridi	2013	Dynamic capabilities defined as “a subset of the competences/capabilities which allow the firm to create new products and processes and respond to changing market circumstances,” p. 943.	Organizational skills
Frasquet, Dawson & Molla	2013	Dynamic capabilities defined as “the firm’s ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments... 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... the capacity of an organization to purposefully create, extend or modify its resource base,” (Teece, Pisano & Shuen, 1997; Zollo & Winter, 2002; Helfat et al., 2007), pp. 1511–1512.	Organizational skills, learning patterns and capacity
Grimaldi, Quinto & Rippa	2013	Dynamic capabilities defined as “the process of activating, copying, transferring, synthesizing, reconfiguring and redeploying different skills and resources,” (Eisenhardt and Martin, 2000), p. 201.	Organizational routines
Kindström, Kowalkowski & Sandberg	2013	Dynamic capabilities defined as “routines within the firm's managerial and organizational processes that aim to gain, release, integrate and reconfigure resources,” (Teece, Pisano & Shuen, 1997), p. 1064.	Organizational skills
Koskinen & Sahebi	2013	Dynamic capabilities defined as DCs’ “ability to integrate, build and reconfigure internal and external resources and competences in a rapidly changing business environment,” p. 63.	Organizational skills
Nedzinskas et al.	2013	Dynamic capabilities defined as “the capacity to sense and shape opportunities and threats, to seize opportunities and to maintain competitiveness through enhancing, combining, protecting and when necessary, reconfiguring the business enterprise’s intangible and tangible assets,” (Teece, 2007), p. 378.	Managerial skills
Singh, Oberoi & Ahuja	2013	Dynamic capabilities defined as “competencies that allow a firm to quickly reconfigure its organizational structure and routines in response to new opportunities,” (Fan et al., 2004), p. 1446.	Organizational skills
Cheng-Fei Tsai & Shih	2013	Dynamic capabilities defined as “firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments,” (Teece, Pisano & Shuen, 1997), p. 1018.	Organizational skills
Kim	2014	Dynamic capabilities defined as “ability to cope with the fast-changing market environment and properly change companies' sources according to the time and situation to satisfy customers' needs,” (Ambrosini and Bowman, 2009), p. 88.	Organizational skills
Cheng, Chen & Huang	2014	Dynamic capabilities defined as “to integrate or recombine important resources (such as new knowledge) that will support a firm’s performance in responding to customer needs quickly,” (Teece, Pisano & Shuen, 1997), p. 174.	Organizational skills

Author(s)	Year	Dynamic capabilities definition	DC Dimension
Gnizy, Baker & Grinstein	2014	Dynamic capabilities defined as “the capacity to sense and shape opportunities and threats, to seize opportunities and to maintain competitiveness through enhancing, combining, protecting and when necessary, reconfiguring the business enterprise’s intangible and tangible assets,” (Teece, 2007), p. 479.	Managerial skills
Ljungquist	2014	Dynamic capabilities defined as “the capacity of an organization to purposefully create, extend or modify its resource base,” (Helfat et al., 2007), p. 83.	Organizational capacity
Makkonen et al.	2014	Dynamic capabilities defined as “the organization's capacity to purposefully create, extend and modify the existing resource base, thus facilitate the change and renewal of current processes and promote innovation to achieve a better fit with the environment,” (Eisenhardt & Martin, 2000; Helfat et al., 2007; Winter, 2003; Zahra et al., 2006; Zollo & Winter, 2002), p. 2708.	Organizational capacity and routines
Piening & Salge	2015	Dynamic capabilities defined as “How firms create, implement and replicate new operating routines,” (in the article), p. 94.	Organizational processes
Choi & Moon	2015	Dynamic capabilities defined as “the ability of organizational convergence activities such as sensing of convergence demands, integrating of convergence resources, coordinating of organizational competences and assets in convergence environment,” (in the article), p. 3.	Organizational and managerial skills
Maijanen, Jantunen & Hujala	2015	Dynamic capabilities defined as “the capacity to sense and shape opportunities and threats, to seize opportunities and to maintain competitiveness through enhancing, combining, protecting and, when necessary, reconfiguring the business enterprise’s intangible and tangible assets,” (Teece, 2007), p. 5.	Managerial skills
Simon et al.	2015	Dynamic capabilities defined as “the ability and processes of the firm to configure its resources and thus allow the organization to adapt and evolve,” (in the article), p. 916.	Organizational skills and processes
Rice et al.	2015	Dynamic capabilities defined as “the ability to integrate, build and reconfigure the resource base over time, in order to respond to changing environments,” (Teece, Pisano & Shuen, 1997), p. 232.	Organizational skills
Wilhelm, Schlömer & Mourer	2015	Dynamic capabilities defined as “a meta-routine designed to improve a company’s operating routines,” (in the article), p. 328.	Meta-routine

Note: Based on our review of articles included in Table 3 according to the dimension of conceptual definition, the following primary focus of "dynamic capabilities" definitions can be identified: "Organizational Methods", "Entrepreneurial Skills", "Organizational Skills", "Organizational Routines", "Learning Patterns", "Organizational Capacity", "Entrepreneurial Resource Management Processes", "Problem Solving Patterns", "Managerial Skills", "Organizational Processes", "Organizational Characteristics" and "Meta-Routine". Our review did not elaborate on these key factors in detail, since they are beyond the scope of this study, which focuses only on the source of the definition of the dynamic capabilities

To analyse the articles listed above in the sample of the present study according to the specific dimensions of the definitions of DC they proposed or provided, we used formal concept analysis (FCA), which aims to achieve clarity of concepts by revealing observable, elementary properties of the subsumed objects and through which attributes can be modelled and predicted in a clear and concise manner (Wollbold, 2012). FCA is an applied part of lattice theory that helps in the formalization of concepts as basic units of human thinking and the analysis of data in a logical form (Ignatov, 2014). The following Figure 2 shows the lattice diagram for the 53 empirical studies of DC listed in our sample (1997-2015).

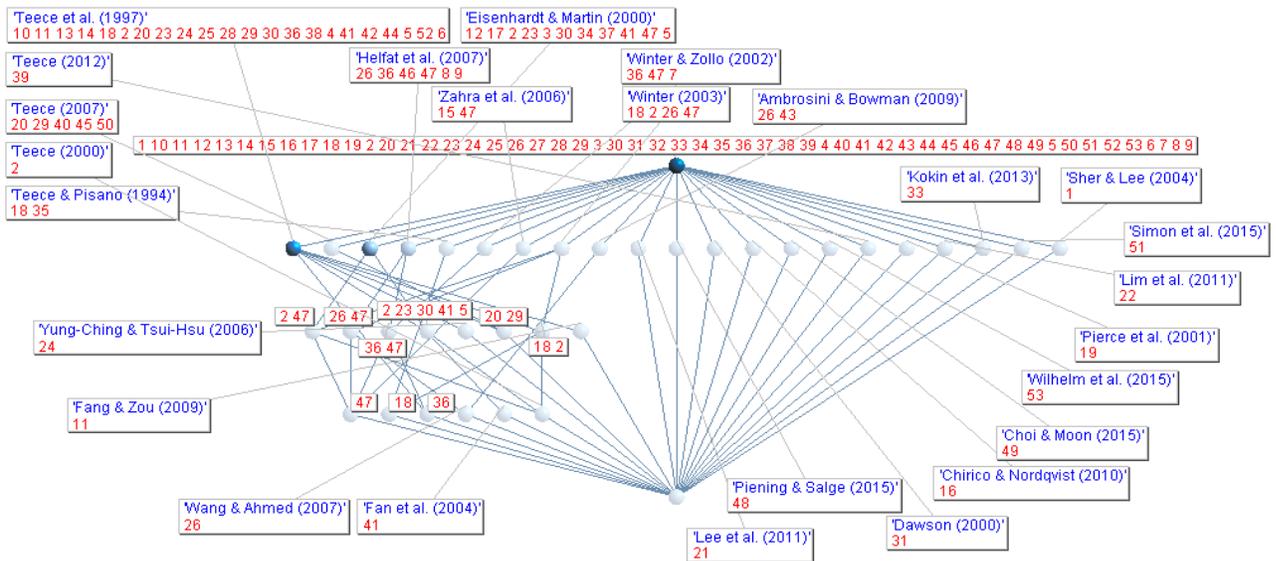


FIGURE 2
THE LATTICE DIAGRAM FOR THE 53 DC EMPIRICAL STUDIES LISTED IN OUR RESEARCH (1997–2015)

FINDINGS

From our review of the concepts and definitions of DC in the selected sample of articles in this study, it emerged that 22 of these listed articles (constituting 41.51%) relied upon a single specific definition presented by Teece, Pisano & Shuen (1997) either as the sole, unique source of the definition the article applied or in combination with other sources to build their theoretical foundations. This finding reflects the confidence these researchers place in a theoretical framework presented by Teece, Pisano & Shuen (1997) in formulating the empirical models described in those articles. Moreover, this finding could be considered an indication that a more effective theoretical framework has been achieved to direct the trend of empirical DC studies.

Table 4
THE MOST INFLUENTIAL CONCEPTUAL DEFINITIONS AFFECTING PREVIOUS EMPIRICAL RESEARCH IN DYNAMIC CAPABILITIES

Authors	Definition
Teece, Pisano & Shuen (1997, p. 516)	“The firm’s ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments”
Eisenhardt and Martin (2000, p. 1107)	“The organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve and die”

In contrast, 11 articles (constituting 20.75%) relied upon another specific definition (Eisenhardt & Martin, 2000) as the sole, unique source of the definition they applied or in combination with other sources. However, six further articles (constituting 11.32%) also relied upon another single specific definition created by Helfat et al. (2007), either as a sole, unique source or in combination with other sources. Of the total number of articles selected, 22.65% tended to rely upon compound definitions or adopted their own definitions to build their

theoretical frameworks and they then tested them empirically based on their hypotheses and objectives. Finally, two articles (3.77%) did not include any definition of DCs at all (that of Khalid & Larimo, 2012; Yung & Lai, 2012). The present study, therefore, suggests that the majority of previous research in DCs can be classified as focusing on one or other of two “schools”; the first school builds on the theoretical basis of Teece, Pisano & Shuen (1997), whereas the second school relies on the theoretical basis of Eisenhardt and Martin (2000) (Table 4).

CONCLUSION AND LIMITATIONS

We analysed all of the articles listed in our sample according to the dimensions of the definition with which they worked. From that analysis, the following conclusions can be drawn.

1. There exists a wide disparity among scholars and researchers in defining DC. Based on the 53 selected sample articles studied in this research, empirical DC studies have not been able to reach a consensus about a commonly agreed-upon empirically based definition of DC.
2. Researchers are divided into what can be considered two basic schools of thought when forming a theoretical framework for DC. The two schools are the following:
 - a. The first “school,” developed by Teece, Pisano & Shuen (1997), is numerically preponderant the more influential in providing the theoretical foundations for the sample articles mentioned in this present paper. This first school views DC as “the firm's ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments” (p. 516).
 - b. The second “school,” which was developed by Eisenhardt and Martin (2000), is the second in impact on the articles analysed in the sample of the present research as regards building the theoretical foundations of DC. This second school defines DC as “the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, spilt, evolve and die” (p. 1107).
3. Notwithstanding the preceding item no. (2), there are alternative definitions of DC used by researchers as revealed by our research.
4. There is no unified conceptual definition of the dynamic capabilities and the primary focus of its concept remains to a large extent theoretically undefined and need more attention in future research.

Despite the importance of the research results, which can be considered a guide for empirical research in DCs, there exist some limitations of the present study. These are as follows:

1. It relied solely on searching electronic databases available to learners and researchers at our own universities. There might be other important electronic databases available to the researchers whose articles we studied containing articles not used in this study.
2. The articles were published electronically.
3. They were published in English.
4. The present research was restricted to the period 1997 to 2015.

Due to the above limitations, it may be difficult to generalize the results of this study.

APPENDIX

Appendix A	
ARTICLES EXCLUDED BECAUSE OF THEIR TYPE AS A REVIEW OR CONCEPTUAL PAPER	
No.	Author/s and Year
1	Arifin (2015)
2	Arndt & Bach (2015)
3	Arndt & Jucevicius (2013)
4	Beske (2012)
5	Cavusgil, Seggie & Talay (2007)
6	Clifford Defee & Fugate (2010)
7	Eriksson (2013)
8	Eriksson (2014)
9	Fearon et al. (2013)
10	Helfat & Martin (2015)
11	Hou (2008)
12	Kim, Song & Triche (2015)
13	Markova (2012)
14	Vogel & Güttel (2013)
15	Zhensen & Guijie (2013)

Appendix B	
ARTICLES EXCLUDED BECAUSE THEY ARE NOT RELEVANT TO THE DC THEORY	
No.	Author/s and Year
1	Liu & Bi (2013)
2	Pugno (2015)

Appendix C	
ARTICLES EXCLUDED BECAUSE OF THE NEED FOR FURTHER AUTHORIZATION WHICH WAS NOT AVAILABLE TO THE AUTHORS OF THIS PAPER	
No.	Author/s and Year
1	Duh (2013)
2	Kaltenbrunner & Renzl (2014)
3	Lin, Wu & Lin (2008)
4	McGuinness & Morgan (2005)
5	Pedron & Caldeira (2011)
6	Susanti & Arief (2015)

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