



SCHOOL OF
ECONOMICS AND
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Dynamic Capabilities and Competitive Advantage

A Systematic Review of Conceptual Research 1997-2020

By

Hendrik Behrendsen

Alexander Tombach

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Supervisor: Ola Mattisson
Examiner: Anna Thomasson

Abstract

Dynamic capabilities enable firms to systematically modify their resource base and build competitive advantage. As dynamic capabilities literature is diverging in definition and scope, this research work analyzes conceptual literature on dynamic capabilities regarding commonalities, differences, and development over time. Therefore, a total of 56 publications in eleven highly ranked journals between 1997 and 2020 are reviewed according to five parameters: (1) definition of resources, (2) definition, characteristics, and positioning of dynamic capabilities, (3) role of the manager, (4) role of the external environment, and (5) replicability, transferability, and competitive advantage. Different scholarly contributions are clustered to better understand the research field and its development. The results document that scholarly contributions in dynamic capability research diverge with regard to the five investigated parameters. Two scholarly interpretations of resources, a diverse set of dynamic capability definitions, evidence that top management assumes a crucial role as an asset orchestrator, and a co-evolutionary relationship between a firm and its external environment are identified. Whether and how dynamic capabilities contribute to achieving and potentially sustaining competitive advantage is contingent on factors in the internal and external firm environment. Following a critical discussion of the research findings, a novel synthesization of the investigated scholarly conceptualizations is developed to offer a harmonization of the field by accounting for contingencies and complementarities.

Keywords:

Strategic management, dynamic capabilities, competitive advantage, resources, organizational change

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Abbreviations

Fig.	Figure
i.a.	inter alia
n.d.	no date
Tab.	Table

1 Introduction

1.1 Background

How firms achieve and sustain competitive advantage has been addressed by various schools of thought in strategic management literature over the course of the last 50 years (Bracker, 1980; Barney, 1991; Teece, Pisano & Shuen, 1997; Fainshmidt et al., 2019). The practice of strategic management emerged in firms after the formulation of detailed, long-term corporate plans had become increasingly difficult in volatile environments (Grant, 2016). Strategies are inherently less deliberate and predetermined than planning, as they also foster learning and emerge and evolve over time (Ahlstrand, Lampel & Mintzberg, 1998). Porter (1996) defines strategy as a firm's action to determine a desired position, make compromises, and establish fit between its activities. Strategy formulations have been concerned with the definition of long-term objectives (Chandler, 1962), and the analysis of a firm's external (Porter, 1980; Porter, 1985) and internal environment (Wernerfelt, 1984; Barney 1991, Fainshmidt et al., 2019).

A firm's external environment has become more complex in recent decades due to the increase of globalization, fewer entry barriers and more unpredictable competition (McGrath, 2013). This complexity is also driven by the rapid progress of digitalization and technology (Brynjolfsson & McAfee, 2014). As a consequence, today's external firm environment is dynamic and often unpredictable, so that firms have to adapt rapidly (Day & Schoemaker, 2016). In times of unpredictability, instability and high pace of change, some firms are more successful than others in building competitive advantage (Helfat & Winter, 2011). IBM for instance underwent a radical transformation between the early 1990s and 2000, increasing its market capitalization from \$30 billion to \$173 billion and manifesting competitive advantage as the leading software company (Harreld, O'Reilly & Tushman, 2007). On the contrary, Nokia failed to sustain its competitive advantage as a leader in the mobile phone market in the 1990s, being overruled by companies like Apple and Samsung with their innovations and novel business models (Laamanen, Lamberg & Vaara, 2016).

In an innovation-based world of competition, firms must realize that external change may disclose opportunities and threats, and potentially requires firms to adapt and modify the way they earn a living at the moment (Teece, Pisano & Shuen, 1997; Winter, 2003). While some firms successfully build and even sustain competitive advantage by modifying their competencies and adapting to change, other firms fail to do so (Teece, Pisano & Shuen, 1997). This observation has sparked an increasing scholarly interest in comprehending how firms adapt internally to address changes in the external firm environment. Since its emergence in the 1990s, the Dynamic Capabilities View has become a much-noticed and discussed research stream in the field of strategic management addressing this subject (Barreto, 2010). The Dynamic Capabilities View pursues a dynamic, processual perspective on firms and builds on the notion of evolutionary economics (Lavie, 2006). It is a scholarly stream that tries to explain how firms achieve and sustain competitive advantage by adapting and transforming resources and capabilities (Teece, Pisano, & Shuen, 1997).

1.2 Research Gap

The vast output of dynamic capabilities research has led to the emergence of differential conceptualizations (di Stefano, Peteraf & Verona, 2010). While the Dynamic Capabilities View has advanced the understanding how firms achieve and sustain competitive advantage, scholarly contributions to dynamic capabilities are various in their definitions, forms, and perspectives (Wang & Ahmed, 2007). Lacking a universal agreement on the characteristics, core elements, and terminology of dynamic capabilities (Peteraf, di Stefano & Verona, 2013), empirical research on dynamic capabilities continues to be rather scarce (Zahra, Sapienza & Davidsson, 2006; Ambrosini & Bowman, 2009; Schilke, 2014b). A holistic examination of the similarities, differences and the overall development of the varying conceptual literature was not identified in recent years. In consequence, the identification of conceptual groups and their development within dynamic capabilities research deserves further attention, as it could provide valuable implications for consolidating and specifying the Dynamic Capabilities View and a foundation for future empirical research.

1.3 Research Purpose

The purpose of this systematic literature review is (1) to critically assess and benchmark differential scholarly contributions to the dynamic capabilities literature, (2) identify potential conceptual groups and their development, and (3) synthesize them into an overarching interpretation of how firms achieve and potentially sustain competitive advantage from the Dynamic Capabilities View. The varying terminology used by scholars to describe internal firm activities, the characteristics and definitions of internal firm processes, the role of the manager, the role of the environment, and the foundations of achieving and potentially sustaining competitive advantage are critically discussed.

1.4 Research Questions

Three research questions have been formulated according to the research purpose:

Research Question 1 (RQ1):

How can the varying scholarly conceptualizations of dynamic capabilities be clustered into groups to illustrate consensus and differences in dynamic capabilities research?

Research Question 2 (RQ2):

How does the Dynamic Capabilities View evolve in the literature since its emergence?

Research Question 3 (RQ3):

How can the varying scholarly conceptualizations of dynamic capabilities be synthesized to explain how firms achieve and sustain competitive advantage?

1.5 Outline

To address the formulated research questions, the research work is composed of the following sections: The subsequent chapter begins with a detailed theoretical derivation of dynamic capabilities (Chapter 2). Conceptual differences between the Dynamic Capabilities View and other schools of thought within the field of strategic management are described. The objective is to understand the conceptual foundations of the Dynamic Capabilities View. The derivation

attempts to decode the motivation and aspiration of the Dynamic Capabilities View and provides guidance for assessing and comparing the conceptual literature in the literature review. In Chapter 3, the methodology of the literature review is described by illustrating the research design, data collection method, data analysis method, and validity and reliability. Chapter 4 comprises the results of our literature review. Detailed research findings on the development, substantial commonalities and differences of dynamic capabilities literature are provided. Conceptual groups within the defined substantial parameters are identified, and their development is illustrated. In Chapter 5, the results of the literature review are discussed and appraised. The authors argue for and against identified streams, propose how conceptual tension fields may be solved, and define key findings that contribute to the conceptualization of how firms achieve and sustain competitive advantage. Subsequently, these key findings are synthesized into an overarching interpretation how firms achieve and potentially sustain competitive advantage from the Dynamic Capabilities View. This overarching interpretation contributes to explaining the scope and characteristics of dynamic capabilities, where and when they apply, and if they can be regarded as sources of differential firm performances and competitive advantage. Chapter 6 comprises a conclusion of the research, emphasizes theoretical and practical implications and provides an outlook for further studies.

2 Theoretical Derivation

2.1 Chapter Introduction

The genesis of dynamic capabilities in strategic management and the influences of other strategic schools of thought on the concept are summarized. First, the Design School, the Planning School, the Positioning School and the Resource-Based View are introduced. Second, the Dynamic Capabilities View is positioned in the field of strategic management.

2.2 Strategic Management over Time

The field of strategic management emerged in the 1960s, and since the 1980s, it has evolved significantly and branched out into various schools of thought (Ahlstrand, Lampel & Mintzberg, 1998). Ahlstrand, Lampel and Mintzberg (1998) identify three prescriptive schools that were particularly influential in both academia and practice - the Design School, the Planning School, and the Positioning School. Additionally to the three prescriptive schools, the Resource-Based View has been a seminal school of thought focusing on internal firm activities (Grant, 1996; Barney, Wright & Ketchen, 2001). In recent decades, the Dynamic Capabilities View has become a popular, relevant and concurrent school of thought within the field of strategic management (Barreto, 2010; di Stefano, Peteraf & Verona, 2014). The term dynamic capabilities was formulated in the 1990s, and has been further developed by scholarship ever since. The Dynamic Capabilities View evolved, since the previously dominant schools of thought within the field did not provide a sufficient answer to the essential question of strategic management, how firms achieve and sustain competitive advantage (Pisano, Teece & Shuen, 1997). Generally, this is one of the most important questions in the research of strategic management and has been debated for decades (Porter, 1980; Barney, 1991; Pisano, Teece & Shuen, 1997; Schilke, 2014b).

A company holds a competitive advantage over other firms, when it applies a value-enhancing strategy “not simultaneously being implemented by any current or potential competitors”

(Barney, 1991, p.102). Different scholarly streams within the field of strategic management provide theoretical concepts attempting to explain the foundations of competitive advantage (Selznick, 1957; Penrose, 1959; Ansoff, 1965; Porter, 1979). Yet, the question of how competitive advantage emerges is fiercely debated (Pisano, Teece & Shuen, 1997). Consequently, the examination of previous strategic schools of thought, influential to the Dynamic Capabilities View, is essential to understand its theoretical derivations. Subsequently, the characteristics and critiques of the prescriptive schools and the Resource-Based View and how they influenced the concept of dynamic capabilities are summarized and developments are elaborated.

2.2.1 Design School

The Design School was the first and arguably most influential school of thought in strategic management (Ahlstrand, Lampel & Mintzberg, 1998). Inspired by Selznick (1957), scholars of the Design School introduced the notion of *fit* between a firm and its external environment, which is commonly referred to as strategic fit (Hamel & Prahalad, 1989). Strategic fit addresses the consistency of a firm's strategy by appraising both internal factors, such as strengths and weaknesses of the firm, and external factors, with particular focus on the industry environment (Andrews, 1971). The Design School defines strategy formulation as a deliberate process, in which external and internal factors are carefully appraised (Andrews, 1971). It assumes that the formulation and implementation of strategy happen sequentially (Ahlstrand, Lampel & Mintzberg, 1998). However, the Design School's segregated treatment of strategy formulation and strategy implementation has been criticized for its inflexibility and inability to adapt to change (Mintzberg, 1990).

2.2.2 Planning School

Almost parallel to the Design School, a second strategic school of thought emerged - the Planning School (Ansoff, 1965). The Planning School, often referred to as strategic planning in literature, is associated with a calculative and quantitative approach of long-term strategic planning (Ahlstrand, Lampel & Mintzberg, 1998). Similarly to the Design School, the Planning School has been criticized for its inflexibility (Makridakis, 1990), and for ignoring aspects of emergent strategy and learning (Mintzberg, 1994). Ahlstrand, Lampel & Mintzberg (1998) question the usability of strategy planning, as it assumes a stable and predictable firm

environment. It is argued that the Planning School loses its validity in turbulent firm environments and therefore its significance in strategic management (Mintzberg, 1994). Strategic planning and its formal, systematic approach poses a contradicting view to literature that describes strategy formation as a continuous process (Grant, 2003).

2.2.3 Positioning School

Based on Industrial Economics, a third prescriptive school - the Positioning School - emerged in the beginning of the 1980s and rapidly enhanced and popularized the field of strategic management (Ahlstrand, Lampel & Mintzberg, 1998). The school provided a novel focus on the content of strategies (Ahlstrand, Lampel & Mintzberg, 1998). From a Positioning School perspective, strategy formulation of a firm is about coping with competition and positioning the firm in its industry (Porter, 1979). Porter (1980) has identified five competitive forces that pose competitive pressure on the firm: industry rivalry, threat of new entrants, threat of substitute products or services, bargaining power of suppliers, and bargaining power of customers. The key to achieve and sustain competitive advantage is to position the firm in a less vulnerable position, characterized by lower levels of competitive pressure (Porter, 1980). Porter coins the term *strategic group* to describe firms that aspire similar positions and consequently pursue similar strategies, and introduces the notion of *generic strategies* to describe ways firms can achieve competitive advantage. He distinguishes between two primary types of competitive advantage - cost leadership advantage and differentiation advantage (Porter, 1985).

The Positioning School conclusively focuses on the external firm environment rather than on the firm itself, and describes strategy as a defensive action of the firm. Similarly to the Design School and the Planning School, the Positioning School assumes that strategy formulation is a deliberate and analytical process that is conducted prior to strategy implementation (Ahlstrand, Lampel & Mintzberg, 1998). Despite its significant popularity in the 1980s, the Positioning School has been subject to criticism. The school is considered to be static, as it does not consider evolution and change of competitive position over time (Oliva, Day & MacMillan, 1988). It also does not include aspects of learning and emergent strategy (Hamel, 1997; Ahlstrand, Lampel & Mintzberg, 1998). Scholars furthermore provided empirical evidence that industry does not affect a firm's rate of returns as significantly as assumed by the Positioning School (Rumelt, 1991; Powell, 1996).

2.2.4 Resource-Based View

Contrary to the Positioning School, the Resource-Based View is concerned with an internal analysis of the firm to theorize how firms achieve and sustain competitive advantage (Makhija, 2003). Based on the pioneer work of Penrose (1959), the Resource-Based View describes firms as bundles of resources. Penrose introduces the notion that an appropriate deployment of resources may lead to competitive advantage and growth. The Resource-Based View argues that firms gain competitive advantage through distinctive internal resources and capabilities (Wernerfelt, 1984; Barney 1991; Grant, 1991). Resources are assets which are controlled or semipermanently tied to the firm (Wernerfelt, 1984). They are all attributes, assets, processes or knowledge which may be used to implement strategies that increase effectiveness and efficiency (Daft, 1983). Hence, the examination of resources shifts the focus away from end products and rather focuses on a firm's resource profile that may be used for the creation of products (Wernerfelt, 1984). On the one hand, Amit & Schoemaker's (1993) definition intertwines capabilities and resources, and describes capabilities as a firm's capacity to deploy its resources. On the other hand, Barney (1991) defines the term resources as all assets, capabilities, processes, attributes, and knowledge controlled by the firm. Barney (1991) derived four criteria - *The VRIN Criteria* - for resources to contribute to achieve and sustain competitive advantage. VRIN stands for Valuable, Rare, Imperfectly Imitable and Non-Substitutable (Barney, 1991). Hence, the Resource-Based View assumes resource heterogeneity and immobility among firms as well as ex post and ex ante limits to competition (Peteraf, 1993).

There has been a fierce debate in literature whether the Resource-Based View is static or dynamic in concept. According to Grant (1991), resources and capabilities provide a better foundation for strategy formulation in a changing firm environment than an externally focused strategy. However, Priem & Butler (2001) label this school of thought as static. They criticize that the Resource-Based View assumes an immobile product market and that its concept is flawed in a changing firm environment. As the value of resources is always benchmarked against those of the competition (Collis, 1991), the value of resources may consequently be in a constant state of flux in a dynamized external firm environment. Hence, as the environment changes, the value of a firm's resources would unpredictably fluctuate, making a resource-based analysis unfeasible (Priem & Butler, 2001). Eisenhardt & Martin (2000) criticize that the Resource-Based View describes a long-term competitive advantage in VRIN resources. They argue it "misses the strategic role of time" (p. 1118).

A different approach to capabilities has been the conceptual work of Prahalad & Hamel (1990), who coin the term core competencies and influenced the Dynamic Capabilities View (Teece, Pisano & Shuen, 1997). Prahalad & Hamel (1990) emphasize the importance of a firm's adaptability to changes in the external environment by introducing their pioneer concept of core competencies. They define core competencies as a firm's ability to harmonize and consolidate different technology streams, skills, and know-how. By effectively building, pooling or reconfiguring technologies, skills or know-how, firms can build innovative and valuable products based on core competence (Prahalad & Hamel, 1990). Core competencies are often not easily identifiable, as the common managerial focus lays on end products rather than on the competencies behind the product (Prahalad & Hamel, 1990). Prahalad & Hamel (1990) describe the building and exploitation of core competencies as essential to a firm's competitiveness and growth. Core competencies are the ultimate result of collective organizational learning (Prahalad & Hamel, 1990).

2.2.5 Dynamic Capabilities View

The Dynamic Capabilities View is inspired by the observation that market winners gain and sustain competitive advantage by successfully adapting to changes in the external environment (Teece & Pisano, 1994). From the Dynamic Capabilities View, all above-mentioned schools have only partially explained and addressed how firms achieve and sustain competitive advantage, particularly in changing environments. Despite their arguably large contributions to the field, these schools of thought provide rather static views of the firm. In contrast, the Dynamic Capabilities View challenges the view of firms as static entities and rather provides a dynamized view of the firm and accounts for changes in the firm's environment. Embedded in organizational processes, dynamic capabilities pursue the firm's intent to respond and adapt to environmental changes (Lavie, 2006). Hence, the Dynamic Capabilities View links the firm's strategic decisions to the external firm environment (Barreto, 2010). Analyzing the term dynamic capabilities, it can be segregated into the words dynamic and capabilities. The word dynamic is commonly referred to as the organizational process of altering, reconfiguring or renewing competences (Teece, Pisano & Shuen, 1997; Eisenhardt & Martin 2000, Agarwal & Helfat 2009). The word capability describes the way of appropriately conducting this organizational process of renewal (Teece, Pisano & Shuen, 1997; Eisenhardt & Martin, 2000; Zollo & Winter, 2002; Winter, 2003; Teece, 2007; Teece, Peteraf & Leih, 2016).

The Dynamic Capabilities View builds on the notion of the Resource-Based View to exploit existing resources and capabilities, but also emphasizes the importance of altering and renewing the resource base of the firm (Teece, Pisano & Shuen, 1997). Firms must reconfigure their organizational capabilities to sustain or achieve competitive advantage in a changing environment (Lavie, 2006). The Dynamic Capabilities View makes use of the conceptualizations of evolutionary economics (Lavie, 2006). Evolutionary economics, theorized by Nelson & Winter (1982) in their book *An Evolutionary Theory of Economic Change*, is concerned with modeling firm behavior and dynamics in conditions of change. Nelson & Winter (1982) argue that organizational change is embedded in repetitive patterns called *routines* (Ahlstrand, Lampel & Mintzberg, 1998). Routines are stable, repetitive processes that only improve incrementally through learning by repetition (Zollo & Winter, 2002; Winter, 2003; Helfat & Peteraf, 2009). Evolutionary analysis and models are differential from neoclassical economics conceptions, such as market equilibrium, as they are primarily concerned with processes of economic transformation and change (Dosi & Nelson, 1994). The Dynamic Capabilities View builds on the dynamic, processual notion of Evolutionary Economics (Teece, Pisano & Shuen, 1997).

While researchers mostly agree that dynamic capabilities allow a firm to modify its current way of living to address changes in the external environment (Teece, Pisano & Shuen, 1997; Eisenhardt and Martin, 2000; Zollo & Winter, 2002; Winter, 2003; Teece, 2007; Helfat & Peteraf, 2009; Helfat & Winter 2011), the vast research output has led to the emergence of differential conceptualizations of dynamic capabilities (di Stefano, Peteraf & Verona, 2010). Scholarly contributions to dynamic capabilities are various and cover different fields of research (Teece, 2014a). Literature is in disagreement with regards to what exactly characterizes dynamic capabilities, where they apply in firms, and if they are sources of competitive advantage. There is also remarkable heterogeneity in the application of terminology to describe internal firm activities.

In summary, this chapter introduced different influential schools of thought in strategic management to position the Dynamic Capabilities View within the field. The Dynamic Capabilities View can be characterized as an integrative research stream with the aspiration to sufficiently theorize how firms achieve and sustain competitive advantage. The integration of both internal and external factors is a fundamental aspect of the Dynamic Capabilities View (Teece, Pisano & Shuen, 1997; Eisenhardt & Martin, 2000). However, the Dynamic

Capabilities View is upon today diverging, complex and unconsolidated, requiring further research studies. Fig. 1 illustrates the emergence of the Dynamic Capabilities View and the four previous schools of thought with their respective emergence, focus and interpretation of sources of competitive advantage.

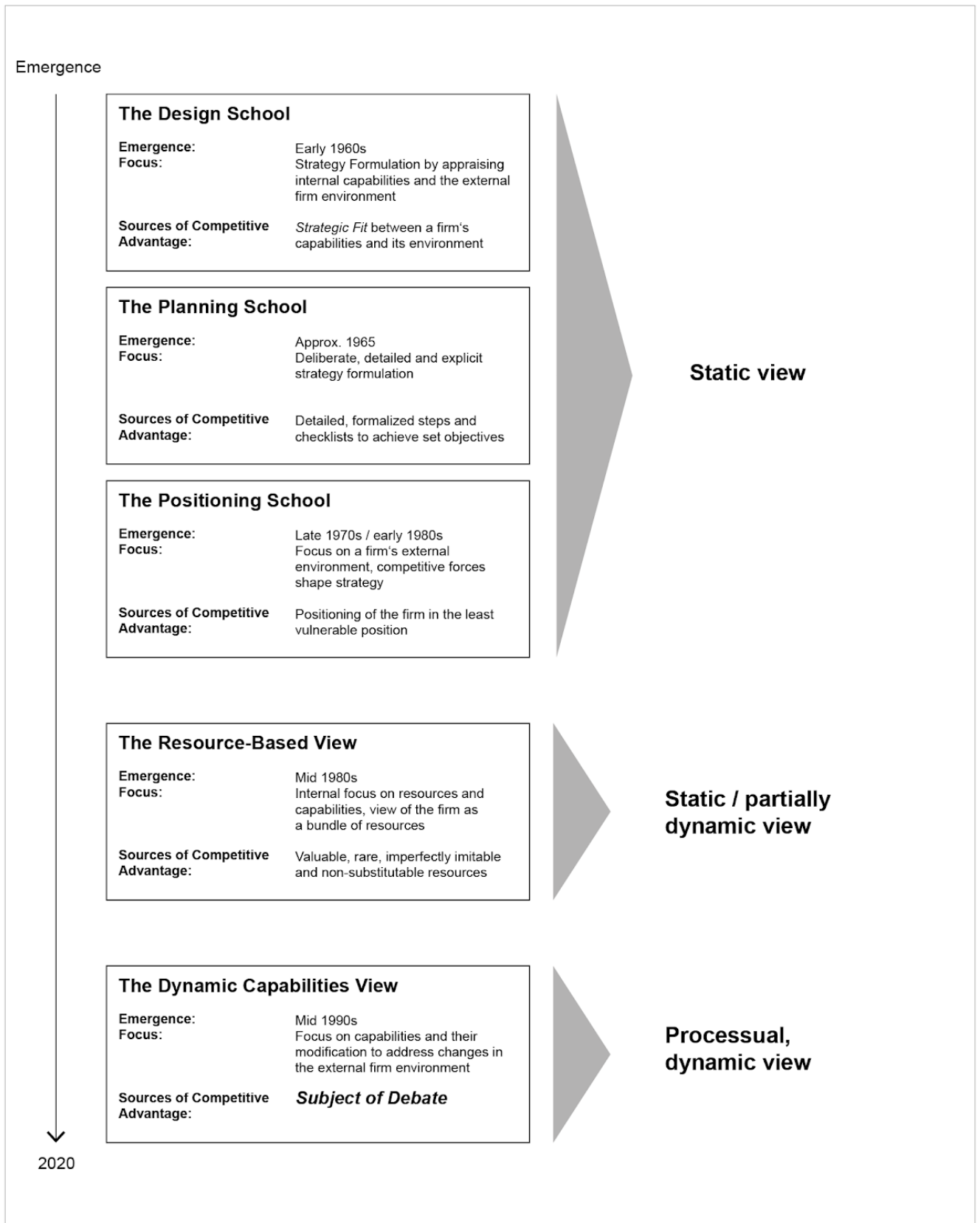


Fig. 1: The Emergence of the Dynamic Capabilities View in Strategic Management (Source: Authors)

3 Methodology

3.1 Chapter Introduction

To analyze the diverging, conceptual scholarly contributions to the Dynamic Capabilities View, a systematic literature review was preferred. Fig. 2 illustrates the structure and the building blocks of the presented methodology. According to Saunders, Lewis & Thornhill (2016), the research design elaborates on research philosophy, research approach and research strategy. Subsequently, the data collection method is exposed. Third, the aim to compare, analyze and synthesize the collected data set is explained. Finally, the validity and reliability of our research are outlined.

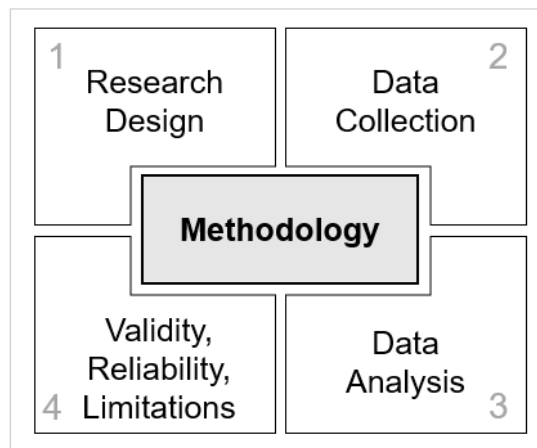


Fig. 2: Building Blocks of the Methodology (Source: Authors)

3.2 Research Design

In general, the selected research philosophy has an impact on the presented results, as it influences the underlying assumptions of conducting the research (Saunders, Lewis & Thornhill, 2016). This investigation consistently adheres to an interpretivism perspective as a foundation of research. Interpretivism assumes that knowledge is subjective and based on

human understanding, experience and origin (Ryan, 2018). It further presumes that scholars are never independent from their knowledge and experience and thus are influenced in their way of conducting research and interpreting data (Ryan, 2018).

An inductive approach is selected for the research design. Theories are formulated based on the literature review (Saunders, Lewis & Thornhill, 2016). Diverging and unconsolidated scholarly contributions within the research of dynamic capabilities cause a lack of universal conceptions of this field (Wang & Ahmed, 2007; Barreto, 2010). The authors hence reason that an inductive approach has a higher potential to advance the concept of dynamic capabilities, harmonizing different contributions and not being limited to underlying deductive assumptions. The findings of this literature review are finally synthesized into an overarching interpretation of how firms achieve and sustain competitive advantage from the Dynamic Capabilities View. The limitation to a prior-defined hypothesis is therefore avoided to ensure generalizability of the findings and create more flexibility to concede adjustments of the research (Saunders, Lewis & Thornhill, 2016).

The presented literature review on dynamic capabilities focuses on conceptual research contributions rather than on empirical research. Conducting literature reviews is generally a well-recognized research strategy with a broad variety of application fields (Guest, Namey & Mitchell, 2013). Literature reviews are methodical studies to assess, evaluate and harmonize scholarly contributions to a certain research field (Efron & Ravid, 2019). To conduct the literature review, the inductive and interpretative method of *meta-ethnography* is used (Efron & Ravid, 2019). A meta-ethnography is conducted systematically (Efron & Ravid, 2019). The selected literature is analyzed by comparing major recurring aspects and themes in the literature relevant to the formulated research questions (Efron & Ravid, 2019). Noblit & Hare (1988) have described three paths to conduct a meta-ethnography. They define a *reciprocal synthesis path*, involving the identification of substantial commonalities in literature, a *refutational synthesis path*, involving the exploration and explanation of substantial differences and opposing arguments in literature, and a *line of arguments synthesis path*, involving the synthesization of literature.

In this study, a two-step approach is employed. Reciprocal synthesis and refutational synthesis are applied to both uncover commonalities and differences among the selected literature and to identify potential groupings (analog RQ1 in chapter 1.4). Based on these findings, the development of potential groupings is tracked over time (analog RQ2 in chapter 1.4). Following

a critical discussion of the results, the authors attempt to synthesize the literature review findings using line of argument synthesis to construct an overarching interpretation of how firms achieve and sustain competitive advantage from the Dynamic Capabilities View (analog RQ3 in chapter 1.4). Implications for future research on dynamic capabilities are provided in an outlook statement.

3.3 Data Collection Method

The analyzed literature is characterized as *secondary, qualitative data* from *multiple sources* (Guest, Namey & Mitchell, 2013). The research is based on secondary data, as scholarly contributions in literature were reviewed and no primary data was collected by the authors. The secondary data in the form of peer-reviewed, scholarly articles published in the highest ranked research journals constitutes multiple sourced data (Guest, Namey & Mitchell 2013). To ensure capturing the most influential and impactful literature, the 25 most impactful journals in the subject area *Strategy and Management* were identified based on the *SCImago Journal Ranking* (SCImago, n.d.). The applied metric to define the impact of each journal was the *SCImago Journal Rank Indicator* (SCImago, n.d.). The latest available search year for the ranking, 2018, was therefore applied. To identify appropriate articles, the search was performed within the databases of the aforementioned highly-ranked journals with the keywords “*dynamic capability*” and “*dynamic capabilities*”. Within these journals, the focus was on conceptual papers, but included empirical studies that enclose an own conceptual contribution. Based on Barreto’s (2010) notation that Teece, Pisano & Shuen’s (1997) contribution *Dynamic Capabilities and Strategic Management* was the breakthrough article within the field of dynamic capabilities, papers within these journals published in the time period from 1997 to 2020 were selected. After screening all listed articles from the databases, 56 articles in 11 journals were identified (short list in Tab. 1 - full list of articles is available in Appendix A).

Tab. 1: Analyzed Articles

Journal	Amount of Papers
Strategic Management Journal	22
California Management Review	9
Organization Science	6
Academy of Management Perspectives	5
Journal of Management	3
Academy of Management Review	3
Journal of International Business Studies	2
Research Policy	2
International Journal of Management Reviews	2
Journal of Management Studies	1
Strategic Organization	1
Sum	56

(Source: Authors)

3.4 Data Analysis

An inductive approach was performed to analyze the data. First, the authors read the selected literature independently. In subsequent consensus meetings, the literature was critically discussed and five parameters were identified. The identification of the parameters thus followed the inductive approach as a dynamic process. The parameters for our data collection and analysis are presented in Tab. 2.

Tab. 2: Parameters of the Literature Review

Number	Parameter
(1)	Definition of Resources
(2)	Definition, Characteristics, and Positioning of Dynamic Capabilities
(3)	Role of the Manager
(4)	Characteristics and Role of the External Firm Environment
(5)	Replicability, Transferability, and Competitive Advantage

(Source: Authors)

These five parameters were benchmarked and compared within the selected literature with regards to the formulated research questions (see chapter 1.4). First, commonalities and differences were identified and clustered into groups for each parameter, according to RQ1.

Second, the development over the investigated time period was outlined for each parameter, according to RQ2. Third, a discussion of the results facilitated a synthesis of the findings, according to RQ3.

3.5 Validity and Reliability

Validity in qualitative research describes how appropriate the processes and data are, meaning how well the different parts of the research are aligned (Leung, 2015). Furthermore, it might be crucial to utilize a suitable methodology to ensure that the right conclusions are drawn (Saunders, Lewis & Thornhill, 2016). Robson (2002) defines threats to validity of data, which were mitigated in the study. Robson (2002) sees the use of incomplete data and to be biased from an initial use of a framework as main threats towards validity. To cover relevant scholarly contributions, the authors searched in highly-ranked journals for articles within the field of dynamic capabilities. A particular framework was not assumed before assessing the articles, so that the authors reasoned unbiasedly.

Reliability in qualitative research is concerned with the question, if other researchers performing the same study would come to the same conclusions (Ali & Yusof, 2011). However, in qualitative research, a certain extent of variance for results has to be accepted due to the nature of the research type (Leung, 2015). The authors' perspective on current literature is founded in subjectivity and the level of experience and knowledge, so that reasoning is susceptible to room for interpretation. Silverman (2010) suggests that it is particularly important to illustrate assessed data so that other researchers can draw independent conclusions, which also supports transparency of the presented findings (Saunders, Lewis & Thornhill, 2016). The reliability of the presented data is ensured by exposing both the literature selection and the parameters imposed for the literature analysis. This allows scholars to also evaluate and interpret the research findings autonomously.

4 Results

4.1 Chapter Introduction

First, commonalities and differences among scholarly contributions were identified for each of the five parameters listed in Tab. 2 (see chapter 3.4). If applicable, the results were clustered into groups to simplify the understanding of different scholarly contributions and to identify favored opinions. Second, the development of scholarly contributions over time was outlined. Fig. 3 illustrates publication dates of the selected literature. Within the publication time frame from 1997 to 2020, literature is almost evenly distributed. A minor increase in the number of sample literature publications up until 2016 can be observed with regards to a moving average of four years (indicated by the dotted blue line). In the years 1998, 1999, 2004 and 2020, no literature was found with regards to the data selection criteria (see chapter 3.3).

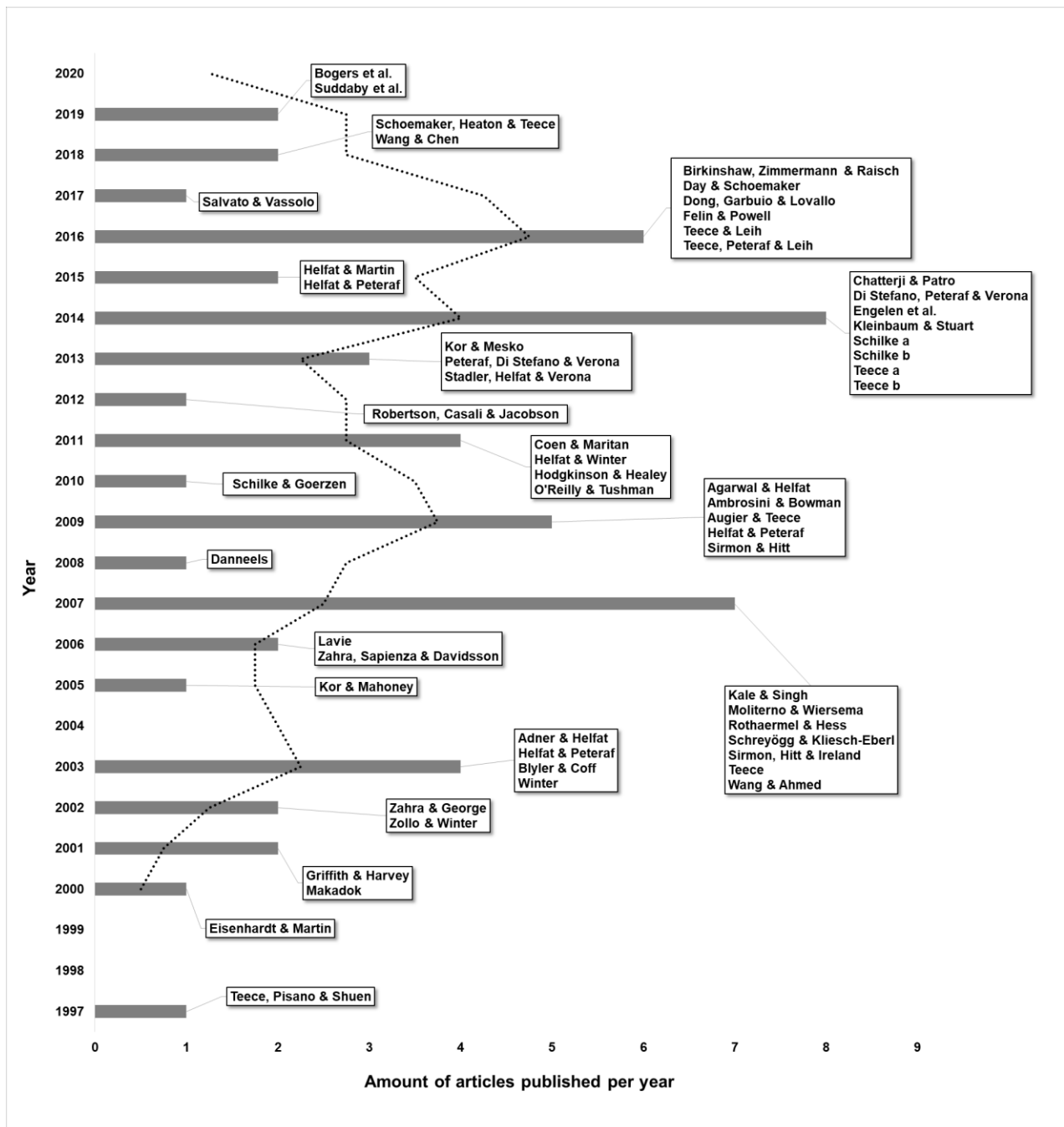


Fig. 3: Development of Contributions to the Dynamic Capabilities View between 1997 and 2020 with Regard to the Data Selection (according to 3.3) (Source: Authors)

4.2 Parameter 1: Definition of Resources

4.2.1 Commonalities and Differences (RQ1)

A definition of resources and an outline of the relation between resources and capabilities was found in n=15 articles. In all other articles of the literature sample, no explicit definition of resources was detected. Within these 15 articles, commonalities and differences in describing internal firm activities were detected with regards to the terminology deployed. Scholars use the terms resources, capabilities, and competencies to describe the internal environment of the firm, but interpret and use these terms differently. The scholarly interpretations were clustered into two groups.

The most prominent interpretation of resources explicitly distinguishes resources from capabilities (Group 1, n=10) (Helfat & Peteraf, 2003; Sirmon, Hitt & Ireland, 2007; Wang & Ahmed, 2007; Danneels, 2008; Agarwal & Helfat, 2009; Helfat & Peteraf, 2009; Sirmon & Hitt, 2009; Stadler, Helfat & Verona, 2013; Teece, 2014a; Teece, 2014b). They describe a resource as a tangible or intangible asset that the firm owns, has access to, or is in control of (Helfat & Peteraf, 2003; Danneels, 2008; Agarwal & Helfat, 2009; Sirmon & Hitt, 2009). Some authors further distinguish human assets from intangible assets (Helfat & Peteraf, 2009; Stadler, Helfat & Verona, 2013; Teece, 2014b). Group 1 outlines that firms bundle, utilize or deploy resources to build organizational capabilities (Sirmon, Hitt & Ireland, 2007; Wang & Ahmed, 2007; Teece, 2014a). Organizational capabilities are a coordinated set of tasks, in which resources are deployed to achieve a desired result (Helfat & Peteraf, 2003). They are namely purposeful, patterned, stable, frequently exercised, and entail routine-like processes (Helfat & Peteraf, 2003; Wang & Ahmed, 2007; Agarwal & Helfat, 2009; Teece, 2014a). In summary, organizational capabilities are the firm activities to make and deliver products (Teece, 2014a). In the investigated literature sample, organizational capabilities are also referred to as competencies (Danneels, 2008) or as operational (Helfat & Peteraf, 2003), nondynamic (Stadler, Helfat & Verona, 2013), or ordinary capabilities (Teece, 2014a). In the following, we prefer the term organizational capability to discuss the findings.

Another prominent interpretation of resources utilizes the term resource more broadly (Group 2, n=4). Group 2 bundles assets and organizational capabilities under the hypernym resource (Eisenhardt & Martin, 2000; Makadok, 2001; Teece, 2007; Ambrosini & Bowman, 2009). Consequently, the term resource does not only describe an asset, but also the deployment of

multiple assets to perform a capability. Makadok (2001) defines capabilities as a specific type of resource. Eisenhardt and Martin (2000) add that abilities, competencies, and skills are also resources. Helfat & Peteraf (2009) emphasize the term resource base as an alternative hypernym to describe both resources and capabilities.

In addition to the presented two scholarly groups, a different individual notion on resources was found. Teece, Pisano & Shuen (1997) describe the term resources as difficult-to-imitate, firm-specific assets. This definition differs from the two identified groupings, as it narrows the term resources down to firm-specific and difficult-to-imitate assets only.

4.2.2 Development (RQ2)

Portraying the development of resource definitions, a continuous, ambiguous use of the term resource was found (Fig. 4). Beginning in 2003, a definition of resources as general firm assets has been adopted more frequently. However, these observations must be treated with caution, as most authors do not explicitly define their interpretation of the term before deploying it.

A shift of opinion was identified in Teece's contributions. His interpretation of the term resources developed from a narrow interpretation, which was not adopted by other scholars (Teece, Pisano & Shuen, 1997), towards a more broadly defined usage in 2007 (Teece, 2007). Later, he uses the term resource to generally describe firm assets (Teece, 2014a; Teece, 2014b).

YEAR	Group 1: Resources are generally firm assets	Group 2: A resource is a hypernym for both assets and capabilities	Individual Opinion
1997			Teece, Pisano & Shuen
1998			
1999			
2000		Eisenhardt & Martin	
2001		Makadok	
2002			
2003	Helfat & Peteraf		
2004			
2005			
2006			
2007	Wang & Ahmed Danneels Helfat & Peteraf	Teece	
2008	Argarwal & Helfat	Ambrosini & Bowman	
2009	Sirmon & Hitt		
2010			
2011			
2012			
2013	Stadler, Helfat & Verona		
2014	Teece (a) Teece (b)		
2015			
2016			
2017			
2018			
2019			
2020			

Fig. 4: Parameter 1: Development of Resource Definitions (Source: Authors)

4.3 Parameter 2: Definition, Characteristics, and Positioning of Dynamic Capabilities

4.3.1 Commonalities and Differences (RQ1)

Definition

Various definitions (n=33) of dynamic capabilities and their characteristics were found. However, the literature reveals a wide consensus on dynamic capabilities being concerned with organizational change. The identified essence is that dynamic capabilities change the way a firm makes a living. Authors associate the term with a firm's process of altering and dynamizing its resource base (a firm's resources and capabilities, according to Helfat & Peteraf, 2009). Among the most frequently cited definitions in the literature sample are the early ones by Teece, Pisano & Shuen (1997), who define a dynamic capability as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (p.516), and by Eisenhardt & Martin (2000), who define dynamic capabilities as "organizational and strategic routines by which managers alter their resource base - acquire and shed resources, integrate them together, and recombine them - to generate new value-creating strategies" (p.1107). Based on these two influential, yet differential definitions, a diverse stream of definitions of dynamic capabilities has followed.

Dynamic capabilities are generally described as an *ability* (Zahra, Sapienza & Davidson, 2006; Augier & Teece, 2009; Teece, 2014b; Birkinshaw, Zimmermann & Raisch, 2016; Bogers et al., 2019), a *competence* (Danneels, 2008), an *organizational routine* (Zollo & Winter, 2002; Kleinbaum & Stuart, 2014; Schilke, 2014a; Schilke, 2014b), a *capacity* (Helfat & Peteraf, 2009; Salvato & Vassolo, 2017), and a *process* (Moliterno & Wiersema, 2007; Ambrosini & Bowman, 2009). While dynamic capabilities are labeled differently, the findings reveal that all scholars apply a rather processual view on dynamic capabilities. Consequently, dynamic capabilities are widely regarded as being embedded in organizational processes and concerned with modifying the resource base. However, conceptualizations vary primarily with regards to (1) what characterizes dynamic capabilities and (2) on how they are positioned in firms.

Characteristics

In general, two different types of characterizations were identified. One scholarly group characterizes dynamic capabilities as organizational routines, the other group characterizes

dynamic capabilities as systematic abilities or capacities that contain both routine and non-routine elements.

Scholars of Group 1 (n=15), who reason dynamic capabilities as organizational routines, describe dynamic capabilities as learned, behavioral, and stable patterns (Eisenhardt & Martin, 2000; Zollo & Winter, 2002; Helfat & Peteraf, 2003; Winter, 2003; Lavie, 2006; Moliterno & Wiersema, 2007; Danneels, 2008; Helfat & Peteraf, 2009; Agarwal & Helfat, 2009; Schilke & Goerzen, 2010; Coen & Maritan, 2011; Helfat & Winter, 2011; Stadler, Helfat & Verona, 2013; Schilke, 2014a; Schilke, 2014b). The incorporation of acquired resources and capabilities exhibits a post-acquisition routine (Helfat & Peteraf, 2003). Moliterno & Wiersema (2007) specify a firm's capability to strategically divest resources to another firm within the industry as a resource divestment routine. Alliance management routines (Helfat & Winter, 2011; Schilke, 2014a; Schilke, 2014b) and product development routines (Helfat & Winter, 2011; Schilke, 2014b) are other examples outlined in the literature. Winter (2003) recognizes that firms may also apply change processes less routinized in character. He defines *ad hoc problem-solving* as a non-repetitive and non-patterned change process.

On the contrary, scholars of Group 2 (n=18) characterize dynamic capabilities as systematic abilities or capacities. According to these scholars, dynamic capabilities are undergirded by processes that may be routinized, but also consist of other, non-routinized elements (Teece, Pisano & Shuen, 1997; Griffith & Harvey, 2001; Zahra & George, 2002; Zahra, Sapienza & Davidsson, 2006; Teece, 2007; Wang & Ahmed, 2007; Ambrosini & Bowman, 2009; Augier & Teece, 2009; O'Reilly & Tushman, 2011; Di Stefano, Peteraf & Verona, 2014; Kleinbaum & Stuart, 2014; Teece, 2014a; Teece, 2014b; Birkinshaw, Zimmermann & Raisch, 2016; Felin & Powell, 2016; Teece & Leih, 2016; Salvato & Vassolo, 2017; Bogers et al., 2019). The notion that dynamic capabilities reside only in organizational routines is objected by these scholars. According to them, the middle ground between purely ad hoc problem solving and routinized processes also constitutes a dynamic capability (Teece, 2014b). For instance, dynamic capabilities can also be based on few, simple rules (Di Stefano, Peteraf & Verona, 2014). Evidence is provided to underline that dynamic capabilities are more adaptive and creative than routines. The creative impact of managerial and entrepreneurial acts on routines is emphasized (Kleinbaum & Stuart, 2014; Teece, 2014a; Teece & Leih, 2016). Zahra, Sapienza & Davidsson (2006) point out that new ventures may have more improvised and experimental processes in place.

Positioning

Scholarly conceptualizations regarding the positioning of dynamic capabilities were clustered into three groups.

The first group (Group 1, n=4) comprises dynamic capabilities on the level of organizational capabilities (Teece, Pisano & Shuen, 1997; Eisenhardt & Martin, 2000; Griffith & Harvey, 2001; Moliterno & Wiersema, 2007). By embedding dynamic capabilities on the same level as organizational capabilities, scholars add a dynamic and transformational dimension to organizational capabilities. It can be seen as an attempt to fuse the dynamic notion of building, integrating and reconfiguring resources and capabilities, promoting continuous change, with the rather stable and reliable construct of an organizational capability.

The second group (Group 2, n=24) exhibits the most prominent scholarly view of the sample and positioned dynamic capabilities higher than organizational capabilities. According to them, dynamic capabilities modify organizational capabilities, and hence operate as a first-order capability (Zahra & George, 2002; Zollo & Winter, 2002; Helfat & Peteraf, 2003; Winter, 2003; Lavie, 2006; Teece, 2007; Wang & Ahmed, 2007; Agarwal & Helfat, 2009; Ambrosini & Bowman, 2009; Augier & Teece, 2009; Helfat & Peteraf, 2009; Coen & Maritan, 2011; Helfat & Winter, 2011; O'Reilly & Tushman, 2011; Stadler, Helfat & Verona, 2013; Di Stefano, Peteraf & Verona, 2014; Kleinbaum & Stuart, 2014; Teece, 2014a, Teece, 2014b, Birkinshaw, Zimmermann & Raisch, 2016; Felin & Powell, 2016, Teece & Leih, 2016; Salvato & Vassolo, 2017; Bogers et al., 2019). Post-acquisition integration (Helfat & Peteraf, 2003; Agarwal & Helfat, 2009), new product development and research and development (R&D) (Winter, 2003), and alliancing (Helfat & Winter, 2011) are examples of dynamic capabilities that potentially integrate or reconfigure existing organizational capabilities or provide the impulse to develop new organizational capabilities. O'Reilly & Tushman (2011) describe organizational ambidexterity as a dynamic capability, as it refers to a firm's ability to simultaneously exploit existing resources through capabilities and sense and seize new opportunities, leading to modified organizational capabilities.

The third group (Group 3, n=4) comprises scholars who argue that there are first-order and second-order capabilities and build their conceptualization on the assumption that dynamic capabilities are routines (Danneels, 2008; Schilke & Goerzen, 2010; Schilke, 2014a; Schilke, 2014b). Following this notion, first-order capabilities are routines reconfiguring organizational capabilities, and second-order capabilities are routines reconfiguring first-level capabilities

(Danneels, 2008; Schilke, 2014b). Taking alliance management for instance, a learning routine to improve alliance management capabilities is positioned as a second-order capability (Schilke, 2014b).

Zahra, Sapienza & Davidsson (2006) take a differential approach and solely describe second-order dynamic capabilities as dynamic capabilities.

According to the scholarly literature, the respective characteristics and positions of dynamic capabilities are illustrated in Fig. 5.

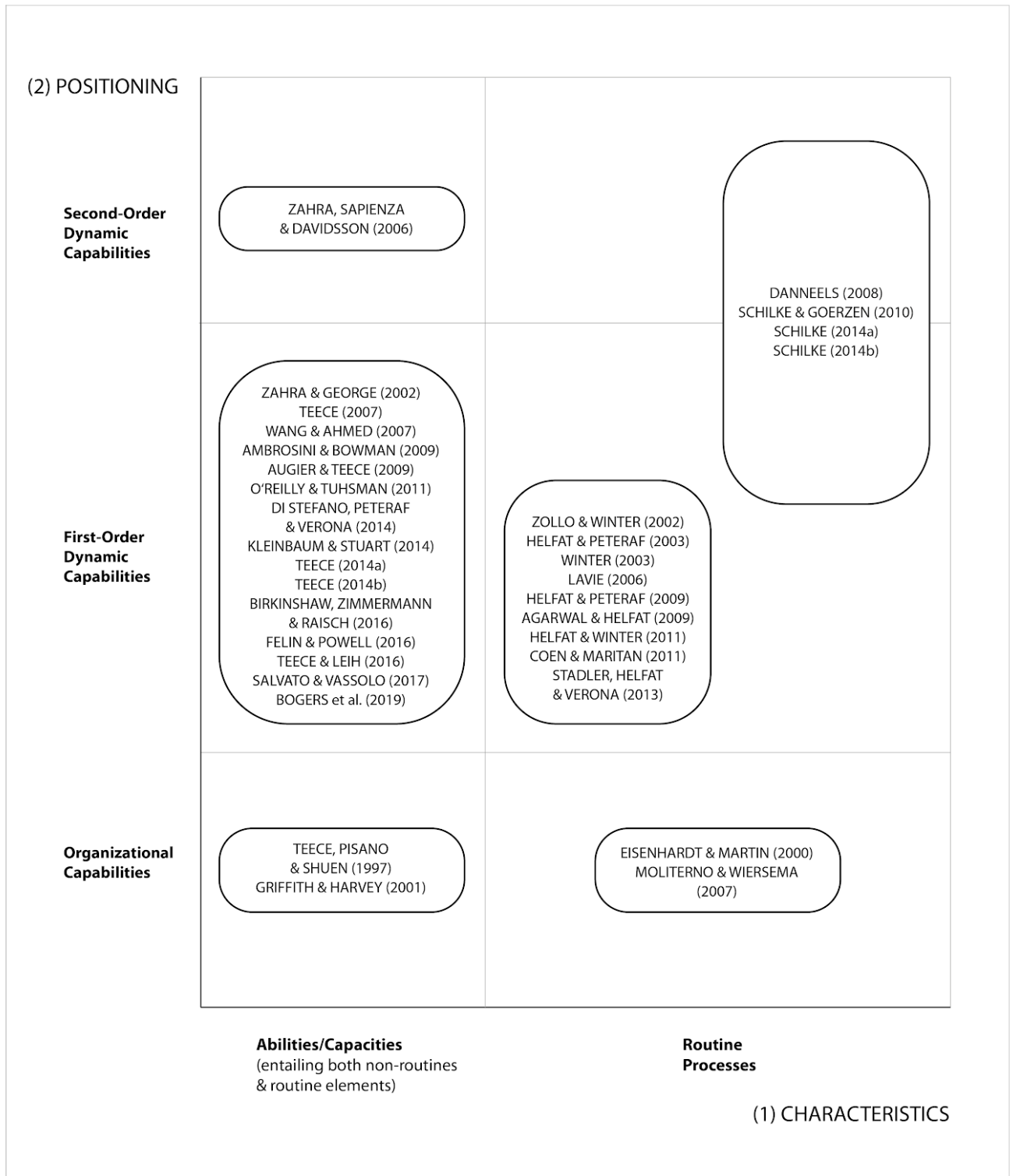


Fig. 5: Parameter 2: Definition, Characteristics, and Positioning of Dynamic Capabilities: A Classification into Conceptual Groups (Source: Authors)

4.3.2 Development (RQ2)

Over the course of the examined time period, diverse conceptualizations developed and provided continuously new insights on what characterizes dynamic capabilities and where internally they apply in firms (Fig. 5). Several developments were identified.

First, the seminal notion of dynamic capabilities, described by Teece, Pisano & Shuen (1997), has been further developed and modified by subsequent research. Contrary to their integrational approach, the vast majority positioned dynamic capabilities on a higher level than organizational capabilities. This conceptual shift can be observed beginning in 2002 and 2003, when scholars further clarified the relation between organizational and dynamic capabilities (Zollo & Winter, 2002; Helfat & Peteraf, 2003). The analysis also revealed that Teece (2007) eventually adopted this view and described dynamic capabilities as a first-order capability in comparison to organizational capabilities. Nevertheless, the definition of Teece, Pisano & Shuen (1997) continuously remained to be the most frequently cited definition of dynamic capabilities. Second, Eisenhardt & Martin's (2000) conceptualization was first in characterizing dynamic capabilities as routines. This notion was further developed by Zollo & Winter (2002) providing ground for a continuous stream of contributions. Third, the debate whether dynamic capabilities are organizational routines or abilities entailing non-routine elements, has continuously evolved. Based on the investigated literature, this debate is balanced with scholarly support for both conceptions.

Upon today, no definition and characterization of dynamic capabilities is widely regarded as superior. The latest state of research is unconsolidated.

4.4 Parameter 3: Role of the Manager

4.4.1 Commonalities and Differences (RQ1)

The importance of top management as an essential element of dynamic capabilities was pointed out in n=39 articles. The majority argues that managerial decision making actively affects firm performance and enhances heterogeneity among firms (Teece, Pisano & Shuen, 1997; Eisenhardt & Martin, 2000; Adner & Helfat, 2003; Helfat & Peteraf, 2003; Kor & Mahoney, 2005; Lavie, 2006; Zahra, Sapienza & Davidsson, 2006; Kale & Singh, 2007; Rothaermel & Hess, 2007; Teece, 2007; Danneels, 2008; Agarwal & Helfat, 2009; Ambrosini & Bowman,

2009; Augier & Teece, 2009; Helfat & Peteraf, 2009; Sirmon & Hitt, 2009; Schilke & Goerzen, 2010; Coen & Maritan, 2011; Hodgkinson & Healey, 2011; O'Reilly & Tushman, 2011; Robertson, Casali & Jacobson, 2012; Kor & Mesko, 2013; Chatterji & Patro, 2014; Schilke, 2014a; Teece, 2014a; Teece 2014b; Helfat & Martin, 2015; Helfat & Peteraf, 2015; Birkinshaw, Zimmermann & Raisch, 2016; Day & Schoemaker, 2016; Felin & Powell, 2016; Teece, Peteraf & Leih, 2016; Salvato & Vassolo, 2017; Schoemaker, Heaton & Teece, 2018; Suddaby et al., 2019). The metaphor of a manager as an *asset orchestrator* or *architect* is widely adopted, and refers to the compilation and reconfiguration of assets and capabilities (i.a. Makadok, 2001; Sirmon & Hitt, 2009; Chatterji & Patro, 2014; Teece, 2014a; Teece, 2014b; Teece, Peteraf & Leih, 2016). Sirmon & Hitt (2009) emphasize the manager's ability to first search and select potential resources and to second configure and deploy these resources to maximize firm performance. The term *architect* broadens the focus from a manager simply picking resources to his or her ability to build capabilities (Makadok, 2001), and emphasizes therefore the value and the effect managers have on firms' assets and on firm performance.

The concept of dynamic managerial capabilities was identified as a distinct research stream with several contributions (n=12) focusing on managerial capabilities and underlying microfoundations (Adner & Helfat, 2003; Teece, 2007; Augier & Teece, 2009; Sirmon & Hitt, 2009; Hodgkinson & Healey, 2011; O'Reilly & Tushman, 2011; Chatterji & Patro, 2014; Helfat & Peteraf, 2015; Birkinshaw, Zimmermann & Raisch, 2016; Bogers et al., 2018; Schoemaker, Heaton & Teece, 2018; Suddaby et al., 2019). This stream aims to explain the underlying cognitive functions of managers and sheds light on the sources of managerial skills and their importance towards firm performance. Scholars within this stream tend to classify managerial skills into *sensing*, *seizing* and *reconfiguring* (Teece, 2007; Augier & Teece, 2009; Hodgkinson & Healey, 2011; Chatterji & Patro, 2014; Helfat & Peteraf, 2015; Felin & Powell, 2016; Schoemaker, Heaton & Teece, 2018; Bogers et al., 2019). *Sensing* refers to identifying opportunities and threats in the external environment and is favored by environmental scanning, managerial alertness and discovery (Helfat & Peteraf, 2015) *Seizing* pertains to capitalizing on changes in the external firm environment, for instance by innovation and implementation of novel structures (Schoemaker, Heaton & Teece, 2018). *Reconfiguring* activities are exemplarily concerned with the integration of external knowledge crucial to transform the firm (Bogers et al., 2019).

Lastly, Teece (2014a) emphasizes the role of the manager as an entrepreneurial entity of dynamic capabilities. The manager is seen as a crucial element to create *signature processes*; processes deeply embedded in the firm, based on path dependency, managerial actions and learning. Furthermore, Teece (2014a) argues that dynamic capabilities only prove successful with a well aligned strategy, putting again managerial strategic decisions at the center of dynamic capabilities. Salvato & Vassolo (2017) add that employees may also adopt an entrepreneurial mindset.

4.4.2 Development (RQ2)

Following the notion that managers are generally important for firm performance (i.a. Teece, Pisano & Shuen, 1997; Eisenhardt & Martin, 2000; Makadok, 2001), the concept of dynamic managerial capabilities has shifted the focus from an organizational level to managerial cognition and underlying microfoundations (Adner & Helfat, 2003; Teece, 2007; Augier & Teece, 2009; Sirmon & Hitt, 2009; Kor & Mesko, 2013; Helfat & Martin, 2015; Helfat & Peteraf, 2015; Felin & Powell, 2016; Dong, Garbuio & Lovallo, 2016). The concept of dynamic managerial capabilities has developed as a stream of the Dynamic Capabilities View since 2003. The notion of *sensing*, *seizing* and *reconfiguring* to classify cognitive functions of managerial capabilities gained more and more scholarly attention and recognition (Teece, 2007; Augier & Teece, 2009; Hodgkinson & Healey, 2011; Chatterji & Patro, 2014; Helfat & Peteraf, 2015; Felin & Powell, 2016; Schoemaker, Heaton & Teece, 2018; Suddaby et al., 2019).

Recently, scholars expanded the microfoundations of dynamic capabilities by emphasizing the importance of employees and their value to organizational processes and resource reconfiguration. Salvato & Vassolo (2017) for instance introduce a meso-level of interpersonal relationships to conceptualize the connection and path between employees, managerial orchestration, the organizational implementation and execution of a dynamic capability.

4.5 Parameter 4: Characteristics and Role of the External Firm Environment

4.5.1 Commonalities and Differences (RQ1)

The research findings reveal different scholarly interpretations with regards to the external firm environments in which dynamic capabilities prove most successful. In a total of n=29 articles referring to the firm's environment, n=20 scholars perceive dynamic capabilities as being especially important in volatile markets (Teece, Pisano & Shuen, 1997; Griffith & Harvey, 2001; Blyler & Coff, 2003; Kor & Mahoney, 2005; Lavie, 2006; Teece, 2007; Wang & Ahmed, 2007; Augier & Teece, 2009; Coen & Maritan, 2011; Kleinbaum & Stuart, 2014; Teece, 2014a; Teece, 2014a; Helfat & Peteraf, 2015; Birkinshaw, Zimmermann & Raisch, 2016; Day & Schoemaker, 2016; Felin & Powell, 2016; Teece & Leih, 2016; Teece, Peteraf & Leih, 2016; Schoemaker, Heaton & Teece, 2018; Bogers et al., 2019). The scholars allocate different attributes to the volatile environment; some refer to high unpredictability (Lavie, 2006; Schoemaker, Heaton & Teece, 2018), others to complexity (Helfat & Peteraf, 2015; Teece & Leih, 2016) or to rapid change (Teece, Pisano & Shuen, 1997; Griffith & Harvey, 2001; Wang & Ahmed, 2007; Augier & Teece, 2009; Kleinbaum & Stuart, 2014; Teece, 2014a; Teece, 2014b; Teece, Peteraf & Leih, 2016)

However, other scholars (n=7) also emphasize that dynamic capabilities proof successful in more stable environments (Eisenhardt & Martin, 2000; Zollo & Winter, 2002; Helfat & Peteraf, 2003; Winter, 2003; Zahra, Sapienza & Davidsson, 2006; Ambrosini & Bowman, 2009; Helfat & Winter, 2011) and that a volatile environment is not a necessary prerequisite for the utilization and development of dynamic capabilities (Zahra, Sapienza & Davidsson, 2006; Ambrosini & Bowman, 2009, Helfat & Winter, 2011). Helfat & Peteraf (2003) underline the importance of dynamic capabilities in stable markets as they provide an opportunity for efficient firms to conquer new markets. Helfat & Winter (2011) extend this notion by outlining the value of dynamic capabilities to foster and leverage existing businesses.

The hypothesis that dynamic capabilities might be less effective in low dynamized or extremely high dynamized environments was adopted by one author (Schilke, 2014a, Schilke, 2014b). Schilke (2014a, 2014b) hypothesizes that dynamic capabilities are most successful in moderately dynamic environments and argues that positive effects of dynamic capabilities in extremely stable environments do not outweigh their costs connected with change processes.

In environments with extremely high dynamism, Schilke (2014a) proposes that routinized dynamic capabilities might impede spontaneous adaptation to novel situations.

4.5.2 Development (RQ2)

A shift over time concerning the relation between a firm and its external environment from the Dynamic Capabilities View was found. Teece, Pisano & Shuen (1997) introduced dynamic capabilities to address changes in volatile firm environments. By doing so, they emphasized the unilateral, reactive nature of dynamic capabilities to the external environment. Eisenhardt & Martin (2000) then argued that dynamic capabilities not only react to changes in a firm's external environment, but also directly impact and change the external environment. This perspective emphasizes the bilateral relation between a firm and its external environment, mutually influencing each other. Teece (2007) later adopted this notion and highlighted the coevolutionary nature between a firm and its external environment.

4.6 Parameter 5: Replicability, Transferability and Competitive Advantage

4.6.1 Commonalities and Differences (RQ1)

The Dynamic Capabilities View was initially introduced to explain how firms can achieve and sustain competitive advantage (see chapter 2.2.5). The research findings revealed scholarly debates about the replicability and transferability of dynamic capabilities and if dynamic capabilities are a potential source of sustained competitive advantage.

Replicability and Transferability

Two scholarly groups debating the replicability and transferability of dynamic capabilities were identified.

Group 1 (n=10), introduced by Teece, Pisano & Shuen (1997), argues that dynamic capabilities are firm-specific, idiosyncratic, and difficult to replicate and therefore non-imitable by competitors (Teece, Pisano & Shuen, 1997; Blyler & Coff, 2003; Rothaermel & Hess, 2007; Teece, 2007; Wang & Ahmed, 2007; Augier & Teece, 2009; Teece, 2014a; Teece, 2014b; Salvato & Vassolo, 2017; Schoemaker, Heaton & Teece, 2018). Scholars emphasize that

knowledge is embedded in firms and thus difficult to replicate (Rothaermel & Hess, 2007; Teece, 2007). Furthermore, scholars highlight the difficulty of imitating meta-capabilities (Teece, 2014b; Blyler & Coff, 2003; Teece 2007), especially in comparison to organizational capabilities, which have become imitable to a large extent (Teece, 2014b). The notion of path dependencies is also picked up. Scholars reason that dynamic capabilities entail the unique history, experience, culture and creativity and hence embody a firm's signature processes (Wang & Ahmed, 2007; Teece, 2014b; Schoemaker, Heaton & Teece, 2018). Scholars also underline that intangible assets, and especially intellectual human capital, are very difficult to replicate (Rothaermel & Hess, 2007; Augier & Teece, 2009; Teece, 2014b). Salvato & Vassolo (2017) add that while the embedded, routinized processes may be replicable, the way of how employees interact in the process is nearly inimitable.

The second identified scholarly group (Group 2, n=5) was introduced by Eisenhardt & Martin (2000) and argues that dynamic capabilities themselves are, to a significant extent, replicable and hence similar across firms (Eisenhardt & Martin, 2000; Lavie, 2006; Zahra, Sapienza & Davidsson, 2006; Ambrosini & Bowman, 2009; Griffith & Harvey, 2001). As best practices and common features of dynamic capabilities exist among firms, Eisenhardt & Martin (2000) conclude that competitive advantage derives from a unique combination of resources and not from the processes themselves. Griffith & Harvey (2001) and Zahra, Sapienza & Davidsson (2006) support this notion and emphasize that it is the altering of the resource base that leads to unique combinations of resources, which are difficult-to-imitate and not dynamic capabilities per se.

Competitive Advantage

All authors particularly referring to competitive advantage (n=30) define dynamic capabilities as a source and means to achieve competitive advantage (Teece, Pisano & Shuen, 1997; Eisenhardt & Martin, 2000; Griffith & Harvey, 2001; Zahra & George, 2002; Helfat & Peteraf, 2003; Blyler & Coff, 2003; Winter, 2003; Zahra, Sapienza & Davidsson, 2006; Moliterno & Wiersema, 2007; Sirmon, Hitt & Ireland, 2007; Teece, 2007; Wang & Ahmed, 2007; Ambrosini & Bowman, 2009; Augier & Teece, 2009; Schilke & Goerzen, 2010; Coen & Maritan, 2011; O'Reilly & Tushman, 2011; Peteraf, di Stefano & Verona, 2013; Stadler, Helfat & Verona, 2013; Di Stefano, Peteraf & Verona, 2014; Kleinbaum & Stuart, 2014; Schilke, 2014a; Schilke, 2014b; Teece, 2014a; Teece, 2014b; Helfat & Martin, 2015; Day & Schoemaker, 2016; Teece, Peteraf & Leih, 2016; Salvato & Vassolo, 2017; Schoemaker, Heaton & Teece, 2018).

However, scholars seize different explanations to explain the sources of competitive advantage. On the one hand, the high innovation capacity of dynamic capabilities is seen as a basis for competitive advantage (Teece, Pisano & Shuen, 1997). On the other hand, scholars refer to a reconfigured resource base to illustrate the source of competitive advantage (Eisenhardt & Martin, 2000).

Regarding the question, if dynamic capabilities can lead to *sustained* competitive advantage, scholarly contributions are varying. Some scholars mention the importance of dynamic capabilities to sustain competitive advantage, especially in volatile environments (Teece, Pisano & Shuen, 1997, Winter, 2003; Ambrosini & Bowman, 2009; O'Reilly & Tushman, 2011). Others argue that dynamic capabilities per se cannot lead to sustained competitive advantage (Eisenhardt & Martin, 2000; Zahra, Sapienza & Davidsson, 2006). Teece, Pisano & Shuen (1997) introduced the Dynamic Capabilities View to explain how firms achieve and sustain competitive advantage in turbulent environments. They reason that the sustainability of this advantage lies in the simplicity of imitation for competitors. Winter (2003) further explains that dynamic capabilities prevent organizational capabilities from becoming obsolete, which favors continuous improvement and potentially a sustained competitive advantage. Ambrosini & Bowman (2009) extend that notion, arguing that dynamic capabilities reconfigure a firm's resource base, which can lead to sustained competitive advantage if the resource base is not replicated by other firms.

On the contrary, Eisenhardt & Martin (2000) emphasize that dynamic capabilities do not lead to sustainable competitive advantage due to their substitutability. From their point of view, dynamic capabilities are replicable because different firms can reach similar resource configurations via various paths. Zahra, Sapienza & Davidsson (2006) agree to this notion and even question the existence of sustained competitive advantage.

4.6.2 Development (RQ2)

Teece, Pisano & Shuen's (1997) formulation of firm-specific processes has gained significant scholarly support. Many scholars agree that dynamic capabilities are, at least to some extent, firm-specific and difficult-to-replicate. They emphasize that dynamic capabilities entail valuable, difficult-to-replicate characteristics and hence may be a source of sustained competitive advantage. However, Eisenhardt & Martin's (2000) notion of best practices and common features in dynamic capabilities across firms continues to be relevant and was

supported by other scholars. Zahra, Sapienza & Davidsson (2006) refer to the mode of imitation, in which one firm imitates another to develop novel dynamic capabilities. According to them, imitation thus presumes that dynamic capabilities are replicable between firms.

Early definitions of dynamic capabilities (Teece, Pisano & Shuen, 1997; Eisenhardt & Martin, 2000) led to diverging opinions if dynamic capabilities are only a source to achieve or even to sustain competitive advantage. Still quite recently, some scholars argue that firms can sustain competitive advantage through dynamic capabilities (Kleinbaum & Stuart, 2014; Day & Schoemaker, 2016), whereas others question the capacity of dynamic capabilities to sustain competitive advantage (Schilke, 2014a; Schilke, 2014b; Helfat & Martin, 2015).

4.7 Chapter Summary and Main Conclusions

The scholarly publications, selected in the time period from 1997 to 2020, were analyzed with regards to the five selected parameters.

Parameter 1: Two scholarly interpretations were found. Group 1 argues that resources are tangible, intangible or human assets which are bundled, utilized and deployed to form organizational capabilities, whereas Group 2 conceptualizes resources as an overarching hypernym, which comprises resources and capabilities.

Parameter 2: Diverse scholarly definitions of dynamic capabilities were detected. Upon today, the process characteristics, which dynamic capabilities are embedded in, and the level on which dynamic capabilities occur, are subject of debate.

Parameter 3: The analysis provided evidence that top management assumes a crucial role as an asset orchestrator. Microfoundations of dynamic managerial capabilities, sensing opportunities and threats, seizing opportunities and reconfiguring resources and capabilities, were emphasized.

Parameter 4: The findings uncovered a continuous co-evolution of a firm and its external environment. In what type of environment dynamic capabilities prove most successful, is contested by various scholars.

Parameter 5: Two scholarly groups provided different explanations of how dynamic capabilities contribute to achieve competitive advantage. The sustainability of competitive advantage is subject of scholarly debate and depends on the replicability and transferability of dynamic capabilities.

With regards to the diverging scholarly perspectives for all five parameters, a holistic answer to how firms achieve and potentially sustain competitive advantage could not be identified (see RQ3). In the subsequent chapter, following a detailed discussion of the parameters and their coherencies and contingencies, an overarching interpretation of how firms achieve and potentially sustain competitive advantage is provided by the authors to answer RQ3.

5 Discussion

5.1 Chapter Introduction

The results of the literature review were critically discussed with regards to the five investigated parameters and identified coherencies and contingencies, followed by an overarching interpretation of how firms achieve and potentially sustain competitive advantage from the Dynamic Capabilities View.

5.2 Definition of Resources

The continuous, ambiguous use of the term resource can be traced back to the terminology used in the Resource-Based View. Group 1 defines resources as firm assets, following Amit & Schoemaker's (1993) definition (see chapter 2.2.4). This notion adds a hierarchical order to the linkage of resources and capabilities, as assets are leveraged through their deployment in organizational capabilities. Group 2 uses the term as a hypernym in accordance with Barney's (1991) definition of resources, which construes all activities, assets, attributes, and processes of a firm as resources (see chapter 2.2.4).

Scholarly views on resources affect the definition of dynamic capabilities as well. For instance, Griffith & Harvey (2001) define dynamic capabilities as a combination of resources difficult to replicate. The question, whether resources are defined as firm assets only or also as capabilities, consequently affects the scope of this dynamic capabilities definition. If resources were defined as assets, the definition would comprise one difficult-to-imitate capability as a dynamic capability. If resources were defined as both resources and capabilities, the definition would describe the combination of multiple organizational capabilities as a dynamic capability. Consequently, the different resource definitions illustrate the difficulty to evaluate how other scholars, who do not provide an explicit definition of the term, interpret resources.

To resolve this terminological confusion, Helfat & Peteraf (2009) propose to define resources as assets, capabilities as a combination of deployed assets, and a firm’s array of assets and organizational capabilities as the resource base. Based on this notion, resources and capabilities can be clearly distinguished and summarized under the hypernym resource base (Fig. 6).

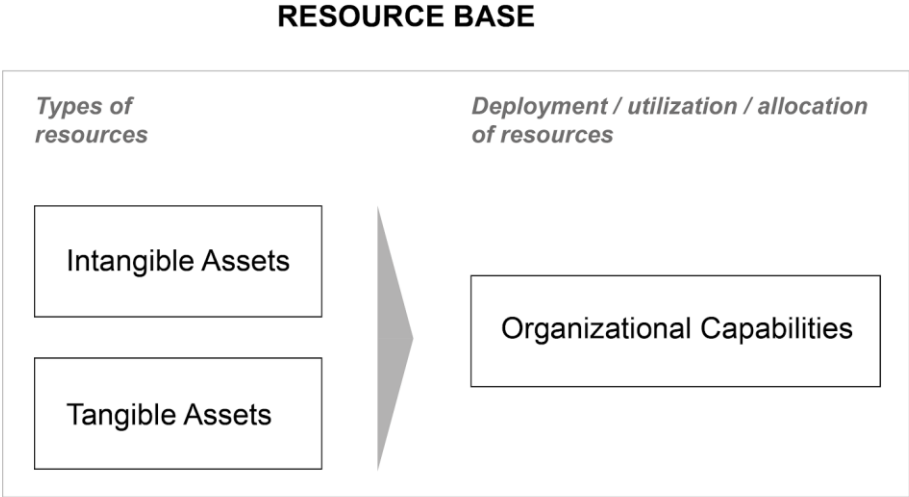


Fig. 6: The Resource Base (Source: Authors)

5.3 Definition, Characteristics, and Positioning of Dynamic Capabilities

Definition

Definitions of dynamic capabilities are varying with regards to the characteristics and the positioning within firms. However, the results document a consensus on the Dynamic Capabilities View seizing a processual perspective of the firm relating to organizational change.

Characteristics

Scholars are torn if dynamic capabilities only reside in routines or also in non-routines. No characterization of dynamic capabilities was identified as superior.

The conceptualization of an organizational routine can be traced back to Nelson & Winter (1982) (see chapter 2.3). Winter (2003) emphasizes that the repetitive nature of routines exhibits a costly endeavor for firms, as dynamic capabilities must be, following this conceptualization,

frequently exercised. To account for more organizational flexibility and learning, some scholars conceptualize second-order dynamic capabilities that reconfigure the rather static first-order dynamic capabilities. In the investigated literature, several examples of dynamic capability routines were outlined, such as alliancing, product development, or post-acquisition integration (see chapter 4.3).

Other scholars provide evidence that dynamic capabilities must not necessarily constitute a routine. Managerial cognition (Adner & Helfat, 2003; Teece, 2007; Augier & Teece, 2009), improvisation (Zahra, Sapienza & Davidsson, 2006), and creative actions (Wang & Ahmed, 2007) are emphasized as non-routine elements. It is outlined that entrepreneurial management is not embedded in routines, but rather in individual managerial capabilities leading to heterogeneity among firms (Teece, 2007).

The different scholarly perspectives on the characteristics of dynamic capabilities are not necessarily contradicting, and might even be complementary. In firms, commonly several dynamic capabilities are practiced concurrently (i.a. Teece, 2014b), and comprise a bundle of different processes (Peteraf, Stefano & Verona, 2013). Consequently, a firm may perform a routinized dynamic capability such as product development (Wang & Chen, 2015), and simultaneously conquer new markets with experimental and less routinized dynamic capabilities orchestrated by creative managers (Day & Schoemaker, 2016).

Positioning

Most scholars agree to position dynamic capabilities on a higher level than organizational capabilities. At the beginning of the investigated time period, dynamic capabilities have been positioned on the same level as the resource base (Teece, Pisano & Shuen, 1997; Eisenhardt & Martin, 2000). By integrating dynamic capabilities, promoting change and dynamization, with the stable and repetitive organizational capabilities, this notion fuses change and stability and hence exhibits a conceptual conflict (Schreyögg & Kliesch-Eberl, 2007). Consequently, scholars advanced the concept and defined dynamic capabilities as first-order capabilities, acting on organizational capabilities to initiate change (i.a. Kale & Singh, 2007). Upon today, dynamic capabilities are commonly assumed to develop, integrate or transform organizational capabilities (i.a. Helfat & Peteraf, 2003; Rothaermel & Hess, 2007; Teece, 2014a; Felin & Powell, 2016). Some scholars went even further and introduced another level in the capability hierarchy in the form of second-order dynamic capabilities routines that reconfigure first-order dynamic capabilities routines. However, this notion was appealed, as it describes infinite

regress (Teece, 2014a). The construct to modify a routine that modifies a routine and so forth could be developed until ad infinitum (Winter, 2003). Consequently, a segregation of dynamic capabilities in first-order and second-order is mostly avoided in the investigated literature. Therefore, a hierarchical tripartite of resources, organizational capabilities, and dynamic capabilities is widely accepted.

5.4 Role of the Manager

The literature review reveals that scholars unanimously agree upon the important role of firm management in facilitating organizational and strategic change. Already in 1997, managers were portrayed as crucial to coordinate and integrate activities effectively and efficiently within the firm (Teece, Pisano & Shuen, 1997). Scholars associate the role of an asset orchestrator to top management (Makadok, 2001; Sirmon & Hitt, 2009; Chatterji & Patro, 2014; Teece, 2014a; Teece, 2014b; Teece, Peteraf & Leih, 2016).

Sensing opportunities and threats in the external environment, seizing opportunities and mitigating threats through dynamic capabilities, and reconfiguring the resource base, top management exhibits the crucial connection between the firm's internal activities and its external environment. In the orchestration process, top management must develop fit between its decisions to invest and select and to deploy and integrate resources and capabilities (Sirmon & Hitt, 2009). Additionally, management has to balance operational fitness derived from stable, organizational capabilities and evolutionary fitness through dynamic capabilities enabling change (Schreyögg & Kliesch-Eberl, 2007). If firms rely too heavily on dynamic capabilities, they lose the expertise and efficiency gained from the learned, stable and complex organizational capabilities, because the resource base is constantly modified. On the contrary, if no dynamic capabilities are implemented in organizations, firms risk the obsolescence of their organizational capabilities. O'Reilly & Tushman (2011) introduced the similar concept of *organizational ambidexterity*. They find that organizations have to simultaneously exploit existing businesses with organizational capabilities while also exploring new markets and products through dynamic capabilities. This illustrates the importance of balancing organizational and dynamic capabilities to establish evolutionary and operational fitness of a firm.

Building both strong organizational capabilities, which are reliable, repetitive, and rigid processes, and modifying these processes through dynamic capabilities may pose a conundrum to managers (Schreyögg & Kliesch-Eberl, 2007). Path dependencies can narrow the manager's room for strategic maneuvers (Teece, Pisano & Shuen, 1997; Schreyögg & Kliesch-Eberl, 2007). Organizational capabilities are reliable and important processes, but foster inertia and pose a barrier for change and therefore may limit the strategic alternatives for managers (Schreyögg & Kliesch-Eberl, 2007). Even if the manager senses opportunities appropriately and is willing to seize them through dynamic capabilities, the inertia of organizational capabilities may complicate the modification process. The repetitiveness in organizational capabilities may even affect the manager's cognitive ability, for example by decision heuristics, and restrict the manager's entrepreneurial capacity (Salvato & Vassolo, 2017). A synergy of technical (organizational capabilities) and evolutionary fitness (dynamic capabilities) can only evolve, if top management is capable of various cognitive tasks, such as perception and attention to sense opportunities and threats, problem solving and reasoning capabilities to seize opportunities and mitigate threats, and social cognition to align assets and overcome resistance (Helfat & Peteraf, 2015). Following the dynamic and processual thinking of the Dynamic Capabilities View, the impact and performance of top management over a period of time can be analyzed.

To investigate managerial cognitive capabilities, a stream of conceptual work examining the importance and the effect of managerial behavior and decision making on firm performance was identified (see chapter 4.4.2) (Adner & Helfat, 2003; Teece, 2007; Augier & Teece, 2009; Sirmon & Hitt, 2009; Hodgkinson & Healey, 2011; O'Reilly & Tushman, 2011; Chatterji & Patro, 2014; Helfat & Peteraf, 2015; Birkinshaw, Zimmermann & Raisch, 2016; Bogers, Chesbrough, Heaton & Teece, 2018; Schoemaker, Heaton & Teece, 2018; Suddaby et al., 2019). The sequential classification of dynamic capabilities into sensing, seizing, and reconfiguring was adopted from the organizational level to the managerial level (Helfat & Peteraf, 2015). Following this logic, top management takes on a crucial role in sensing opportunities and threats in the external firm environment, seizing opportunities and reconfiguring assets and processes.

A manager's social cognition to align assets and overcome resistance to change is discussed by few scholars (Helfat & Peteraf, 2015; Salvato & Vassolo, 2017). A proposed solution to successfully conduct the orchestration process of selecting and deploying resources is to include

lower-level employees into the change process. Salvato & Vassolo (2017) introduce a meso-level of interpersonal relationships to conceptualize the connection and path between individuals and the organizational implementation and execution of a dynamic capability. As the asset reconfiguration relies on top management's ability to persuade others (Helfat & Peteraf, 2015), the inclusion of lower-level employees may prove fruitful. Management must promote flexibility and learning by adopting a less authoritative leadership style (Teece, 2014b). However, it has to be mentioned that lower-level employees are not in the position to holistically oversee the asset orchestration process. Top management must develop fit between its decisions to invest and select and to deploy and integrate resources (Sirmon & Hitt, 2009).

5.5 Characteristics and Role of the External Firm Environment

The literature review documents different perspectives on the role and characteristics of the firm environment in relation to dynamic capabilities. It becomes clear that organizational change can be reactive or proactive.

On the one hand, change is portrayed as an exogenous variable that impacts incumbents at various levels (Teece, Pisano & Shuen, 1997; Eisenhardt & Martin, 2000; Lavie, 2006). Environmental change can affect a firm's organizational capabilities directly, or it can increase or decrease uncertainty, alter structural conditions, demand conditions or customer preferences (Lavie, 2006). Exogenous change may make previously developed competencies obsolete (Danneels, 2008). Winter (2003) argues that most organizational change is forced by the external environment.

On the other hand, the literature also emphasizes that firms can actively shape and dynamize the environment (Eisenhardt & Martin, 2000; Teece, 2014b). Exemplary, the modification of the resource base may lead to innovative products or services providing greater value to customers, or managers may sense opportunities before they materialize (Helfat & Peteraf, 2015). Scholars also emphasize the acquisition, assimilation, and exploitation of knowledge as a source of competitive advantage (Zahra & George, 2002). There is evidence that firms and their environment frequently coevolve in a reciprocal relationship.

In what type of environment dynamic capabilities may be sources of competitive advantage is also debated. In Teece, Pisano & Shuen's (1997) seminal work, dynamic capabilities were originally conceptualized to operate in rapidly changing environments. Eisenhardt & Martin (2000) introduced a different conceptualization of dynamic capabilities and argued that dynamic capabilities resemble different types of processes for certain types of environments. Dynamic capabilities in rapid change regimes are defined as simple and fragile, and in moderately dynamic markets as complex routines (Eisenhardt & Martin, 2000).

The two different illustrations from Teece, Pisano & Shuen (1997) and Eisenhardt & Martin (2000) outline that scholarly opinions on the role of the environment are inevitably connected to how scholars define and characterize dynamic capabilities (see chapters 4.3.1 and 4.3.2). Consequently, the key observation is that the type of environment the firm operates in may affect the characteristics of dynamic capabilities necessary to achieve competitive advantage. Winter (2003) emphasizes that change is costly and firms must benchmark the cost of dynamic capabilities to the financial benefit they generate. Consequently, he describes ad hoc problem solving as an alternative to dynamic capabilities. Yet, literature implies frequently that embedding dynamic capabilities processes in the organization helps firms be less vulnerable and surprised to changes in the external environment. This diminishes the reliance on individuals to sense, seize and reconfigure, and systemizes organizational change, at least to some extent (Teece, 2007). The discussion indicates that dynamic capabilities may prove successful in different types of external environments.

5.6 Replicability, Transferability and Competitive Advantage

The literature review generally reveals scholarly consensus that dynamic capabilities can help firms to achieve competitive advantage, but different opinions on whether dynamic capabilities themselves are sources of competitive advantage and whether competitive advantage can be sustainable were detected. The Dynamic Capabilities View, initially built on some conceptual foundations of the Resource-Based View, assumes that resources which meet the VRIN criteria are sources of competitive advantage (Barney, 1991). As the value of resources is always benchmarked against those of the competition (Collis, 1991), the value of resources may be in a constant state of flux in a dynamized world of open innovation (Teece, 2014b). Consequently,

the modification of the resource base becomes crucial for firms to maintain strong resource positions. The question, if dynamic capabilities are sources to achieve and potentially sustain competitive advantage centers on the level of replicability and transferability of dynamic capabilities and arrives at this conclusion: The lower the ease of replicability and transferability, the higher a firm's potential to achieve a sustained competitive advantage, and the higher the ease of replicability and transferability, the lower a firm's potential for competitive advantage.

Debating the replicability and transferability of dynamic capabilities, two scholarly views were identified in the literature sample. The first view (Group 1) argues that dynamic capabilities are firm-specific, at least to some extent (Teece, Pisano & Shuen, 1997; Blyler & Coff, 2003; Wang & Ahmed, 2007; Stadler, Helfat & Verona, 2013), whereas the other view (Group 2) argues that dynamic capabilities may be similar across firms, entailing common features and best practices (Eisenhardt & Martin, 2000; Griffith & Harvey, 2001; Zahra, Sapienza & Davidson, 2006).

Group 1 emphasizes that best practices do primarily exist in organizational capabilities, and that dynamic capabilities cannot be as easily replicated as organizational capabilities (Teece, 2014b). First, they entail a company's history, experience and culture (Kor & Mahoney, 2005; Suddaby et al., 2019), which makes dynamic capabilities path dependent. Second, top management's behavior and decision making leads to differential firm performances, even if firms pursue similar investment strategies (Kor & Mahoney, 2005). For example, managers differ in their cognitive managerial capabilities (Helfat & Peteraf, 2015), creativity (Teece, 2014b), and ability to facilitate change (Hodgkinson & Healey, 2011). As firms may possess more than one dynamic capability and also consist of various organizational capabilities, it is important to consider the capability portfolio of firms holistically to assess its imitability. Imitating an array of interlocked activities becomes much harder for a competitor (see Porter, 1996 in Teece, 2007).

Group 2 argues that, as there are more effective and less effective ways of solving certain problems, commonalities in dynamic capability processes exist across firms. For example, cross-functional teams in product development have proven to be successful (Eisenhardt & Martin, 2000). Zahra, Sapienza & Davidsson (2006) further introduce the mode of imitation between firms as a way to develop new dynamic capabilities, which requires replicable dynamic capabilities. The argument that dynamic capabilities are difficult to replicate due to their path dependent nature was put into perspective by Schreyögg & Kliesch-Eberl (2007), presenting a

theory that organizational capabilities are also path dependent. Since organizational capabilities have become imitable to an extent (Teece, 2014b), the question can be asked whether dynamic capabilities can become imitable as well. Eisenhardt & Martin (2000) reasoned that path dependent dynamic capabilities are not necessarily difficult-to-imitate, and that two firms can even so reach similar asset configurations following two different paths.

To conclude, the ease of replication and transfer of dynamic capabilities determines the type of competitive advantage emerging. Various authors provided different explanations of whether dynamic capabilities are replicable and transferable and or not. The ease of replication and transfer is dependent on the processual characteristics of dynamic capabilities. Highly routinized dynamic capabilities might be easier to replicate and transfer than less routinized dynamic capabilities.

5.7 Synthesis (RQ3)

The discussion of identified scholarly views and research developments regarding the five investigated parameters reveals that different conceptualizations must not necessarily be interpreted as contradicting, but rather can be understood as complementary to one another. Outlined coherencies and interdependencies are therefore synthesized in a comprehensive framework, offering an overarching interpretation of how firms achieve and potentially sustain competitive advantage from the Dynamic Capabilities View. A dynamic, reciprocal relationship between the external and internal firm environment is portrayed, allowing to account for the evolution of the internal firm environment and its resources and capabilities over time, and to illustrate how competitive advantage may evolve or dissolve (Fig. 7)

The internal firm environment consists of the four building blocks *Top Management*, *Employees*, *Dynamic Capabilities*, and *Resource Base*, and determines the building blocks *Replicability & Transferability* and *Competitive Advantage*. The building block *External Firm Environment* is portrayed on the left hand side. The dependencies are indicated with arrows or double arrows for reciprocal relationships. To integrate various complementary scholarly conceptualizations and account for contingencies, corridors are marked with a gradient and a boundary condition on each side. The overall framework covers a comprehensive summary of the field and allows for the elaboration for each building block separately and their relationships in detail.

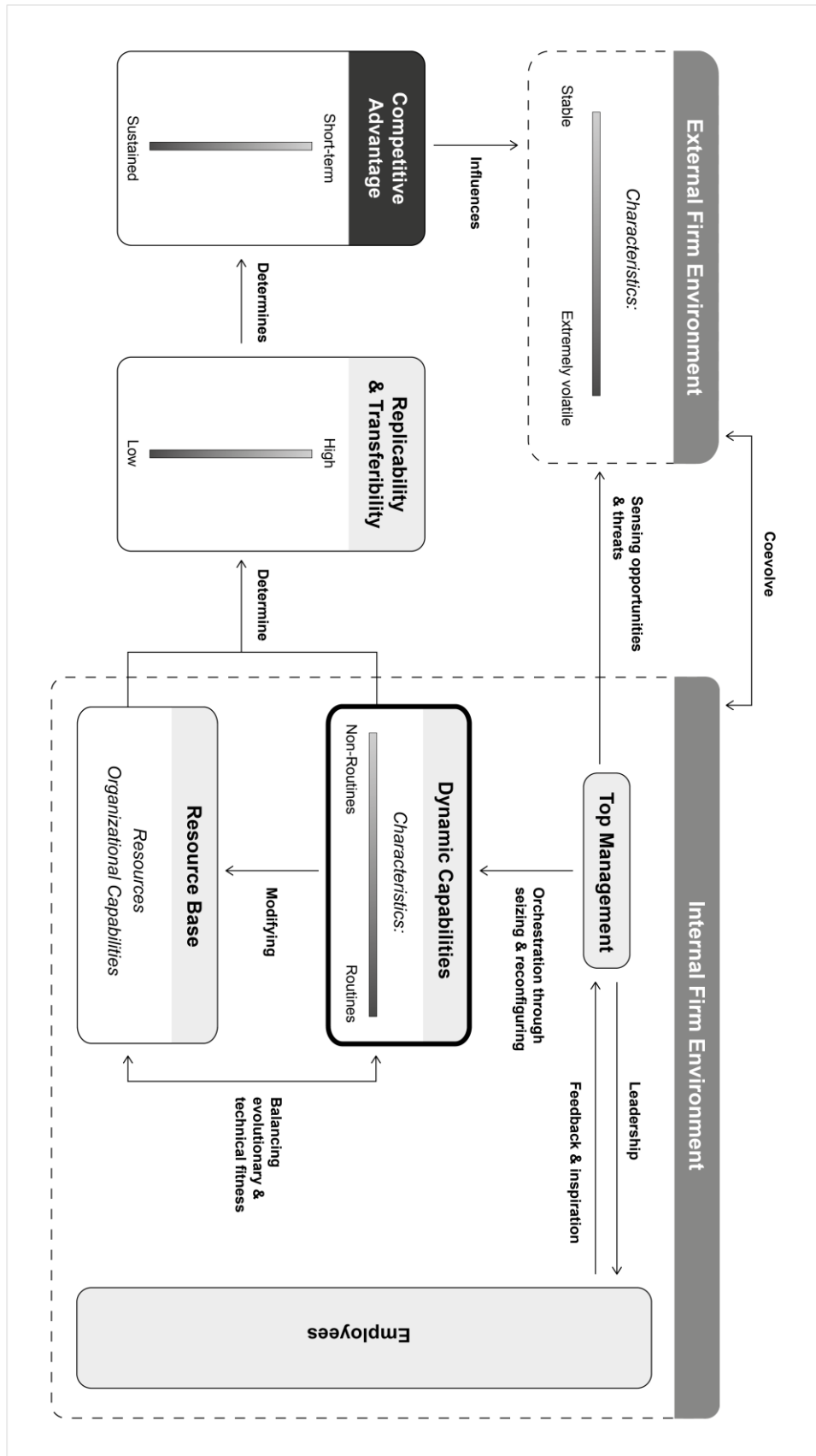


Fig. 7: Overarching Interpretation of how Firms Achieve and Potentially Sustain Competitive Advantage from the Dynamic Capabilities View (Source: Authors)

External Firm Environment

A firm's external environment can adopt various characteristics, ranging from stable to extremely volatile (see chapters 4.5 and 5.5). Regardless of the nature of a firm's external environment, opportunities and threats present themselves continuously to the firm. In stable external environments, firms may have an opportunity to conquer new markets or develop products ahead of the competition. In extremely volatile environments, firms may be required to consistently change to remain competitive. In moderately dynamic environments, continuous, incremental opportunities may arise. The ability to sense opportunities and threats in the external environment is a crucial antecedent of organizational change.

Top Management

Top management assumes the responsibility to sense opportunities and threats in the external firm environment, seize opportunities or mitigate threats by reconfiguring the resource base through dynamic capabilities and lead employees through the change process, and thereby represents the hub of the internal firm environment (see chapters 4.4 and 5.4). Thus, top management links the external firm environment with internal firm activities, significantly impacts firm performance, and exhibits a source of firm heterogeneity.

Employees

Employees are involved in organizational and dynamic capabilities. Top management leads employees by guiding, inspiring and aligning them to maximize operational effectiveness and overcome resistance to change. In return, top management integrates employees in strategic decisions by incorporating employee feedback and inspiration. Top management thereby capitalizes on the operational proximity of employees and maximizes the exploitation of a firm's innovative capacity.

Dynamic Capabilities

Orchestrated by top management, dynamic capabilities are embedded in processes and aim at modifying a firm's resources and capabilities to seize opportunities or mitigate threats (see chapters 4.3 and 5.3). Dynamic capabilities are crucial to a firm's innovation capacity, exploring and integrating new assets, technologies, products, business models, or markets. A firm may have several dynamic capabilities in place. Less routinized dynamic capabilities are entrepreneurial in character and rely on few simple rules and the creativity and entrepreneurial mindset of both management and employees. Highly routinized dynamic capabilities are

embedded in complex, repetitive, and stable patterns, such as R & D or post acquisition integration routines.

Resource Base

The resource base, consisting of resources and capabilities, is purposely modified by dynamic capabilities (see chapters 4.3 and 5.3). Assets are added, shedded, developed, built, integrated or reconfigured to alter or develop new organizational capabilities and to assume new positions in the market (see chapter 4.2 and 5.2). New organizational capabilities require time to develop to achieve maximum reliability and efficiency. Over time, top management must balance renewal and exploitation of the resource base (see chapter 5.4). The renewal of the resource base through dynamic capabilities drives the evolutionary fitness of the firm, while the exploitation of existing resources drives the technical fitness (efficiency and effectiveness) of the firm. A continuous, radical renewal of the resource base may weaken the technical fitness of the firm. A continuous reliance on existing resources and capabilities may diminish a firm's innovation and change capacity.

Replicability and Transferability

The potential replicability and transferability of a firm's resource base is a critical determinant for the creation of competitive advantage (see chapters 4.6 and 5.6). If a firm's resources and capabilities meet the VRIN criteria, they exhibit sources of competitive advantage. Intangible and human assets, such as specific know-how, most frequently meet the VRIN criteria. In a dynamic world of open innovation, resources and capabilities are of fleeting value, as competitors attempt to imitate and potentially adopt critical VRIN resources and capabilities on their own. While individual organizational capabilities may be often replicable, a firm's holistic array of capabilities, exhibiting a coherent firm strategy, are more difficult to replicate, as this would require competitors to replicate entire firm strategies. Dynamic capabilities allow a firm to develop and modify the resource base to continuously own VRIN resources and capabilities. Dynamic capabilities themselves are easier to replicate if they are routinized and therefore be potentially codified by competitors, but their path-dependent and creative nature make cross-firm replicability a difficult maneuver.

Competitive Advantage

The replicability and transferability of a firm's position (resource base) and a firm's change and innovation capacity (dynamic capabilities) determines if competitive advantage can be

achieved and potentially sustained (see chapters 4.6 and 5.6). The lower the ease of replicability and transferability, the higher a firm's potential to achieve a sustained competitive advantage. In contrast, the higher the ease of replicability and transferability, the lower a firm's potential for competitive advantage. If a firm achieves competitive advantage, it influences the external firm environment and may affect competitors. Firms that exhibit both difficult-to-imitate dynamic capabilities and difficult-to-imitate resources and capabilities may sustain a competitive advantage, as they continuously meet the VRIN criteria through their innovative and change capacity.

In summary, a firm and its external environment mutually evolve (see chapter 5.5). Firms leverage dynamic capabilities not only to adapt to influences from the external environment, but also to proactively innovate and achieve and potentially sustain competitive advantage.

6 Conclusion and Outlook

6.1 Summary

According to the research purpose, conceptual literature on dynamic capabilities between 1997 and 2020 was analyzed regarding commonalities, differences, and the development over time. Therefore, a structured literature review of 56 articles published in 25 highly ranked journals in strategic management was conducted, scholarly contributions were compared and benchmarked, and conceptual groups identified. Five parameters were consulted in consensus reading to analyze the literature: The definition of resources (Parameter 1), definition, characteristics, and positioning of dynamic capabilities (Parameter 2), role of the manager (Parameter 3), role and characteristics of the external firm environment (Parameter 4), and replicability, transferability, and competitive advantage (Parameter 5).

The results document that scholarly contributions in dynamic capability research diverge with regards to the five investigated parameters. The identified conceptual groups outline substantial conceptual differences within the Dynamic Capabilities View. Regarding the definition of resources, some scholars interpret resources as firm assets, while others use the term as a hypernym to describe both firm assets and organizational capabilities. Dynamic capabilities are generally described as processes concerned with organizational change. However, definitions vary with regards to what characterizes dynamic capabilities and where they are positioned in firms. The results also illustrate that top management assumes a key role in orchestrating change by sensing opportunities and threats, seizing opportunities and reconfiguring resources and capabilities. It is argued that the firm and its environment frequently co-evolve. In what type of environment dynamic capabilities are most effective is debated by scholars. Whether and how dynamic capabilities contribute to achieving and potentially sustaining competitive advantage is contested as well.

Following the discussion of the research findings, the authors outline a synthesization, integrating various scholarly perspectives and accounting for coherencies and contingencies, to

provide an overarching interpretation of how firms achieve and potentially sustain competitive advantage from the Dynamic Capabilities View.

6.2 Limitations

This research investigates conceptual scholarly contributions of the 25 most influential journals in strategic management based on the *SCImago Journal Rank Indicator* (SCImago, n.d.) in 2018. However, scholarly contributions to other journals or other publication sources were not evaluated. As this research focuses on scholarly conceptualizations of dynamic capabilities, empirical studies without an own conceptual contribution were not taken into consideration. Furthermore, this research utilizes limited keywords to assess contributions, which might have narrowed the scope of potential findings.

The authors focus on five parameters, determined in consensus reading. The parameters cover the most important debates in dynamic capabilities research, but the authors acknowledge the existence of other less popular and potentially valuable parameters. As this research work adheres to an Interpretivism perspective and focuses on qualitative, secondary data, the literature review findings are susceptible to room of interpretation. To mitigate that risk, the authors performed the data analysis in consensus.

The overarching interpretation in chapter 5.7 was based on a theoretical research purpose and is not empirically tested, yet.

6.3 Theoretical Implications and Future Research

In the past, dynamic capabilities research was characterized by varying conceptualizations, and a holistic examination of the similarities, differences and the overall development of the varying conceptual literature was missing. This research outlines a novel synthesization of 56 influential scholarly conceptualizations within the Dynamic Capabilities View to offer the possibility of harmonizing the field by examining frequently addressed parameters and accounting for their contingencies. The authors of this research suggest that diverging scholarly articles are not necessarily contradictory, but rather complementary, as dynamic capabilities are a situational bundle of various building blocks. This research clearly positions dynamic capabilities as first-

order capabilities and outlines the varying possible characteristics of dynamic capabilities. The terms resources and organizational capabilities are defined, characterizing the resource base. The role of top management and employees in conducting organizational change through dynamic capabilities is specified. Furthermore, the reciprocal relationship of the internal and external firm environment and how competitive advantage emerges is outlined. The provided overarching interpretation of the investigated literature advances the understanding of how firms achieve and sustain competitive advantage from the Dynamic Capabilities View.

To further advance the field of dynamic capabilities, the authors encourage researchers to empirically examine the dependencies and contingencies among the building blocks outlined in the overarching interpretation (see chapter 5.7). Furthermore, we invite scholars to consider different types of dynamic capabilities simultaneously. Examining the parallel application of various dynamic capabilities could shed light on the dynamic capability portfolio of firms and provide implications of their combined effect on firm performance.

Investigating the correlation between dynamic and organizational capabilities could enhance the understanding of the relationship between technical and evolutionary fitness. Finding empirical implications for an optimal fit between change and innovation processes (dynamic capabilities) and operational effectiveness (organizational capabilities) should deliver valuable implications for organizational design and managerial decision making.

Future research should further attempt to transfer the notion of sensing, seizing and reconfiguring from a managerial level to an employee level. Only a few scholars have investigated the role and the value of lower-level employees in dynamic capabilities. A better understanding of the role of employees from a Dynamic Capabilities View could outline implications and guidance for managers leading and leveraging employees in change processes.

6.4 Practical Implications

This research emphasizes how dynamic capabilities affect competitive advantage under consideration of associated variables (see synthesis in 5.7). The provided synthesis can serve top management as a guide for conducting organizational and strategic change with the aim to achieve and potentially sustain competitive advantage. Top management can leverage different types of dynamic capabilities to address a desired change outcome under consideration of

factors in the internal and external environment. Top management, positioned as the crucial hub between the external and internal firm environment, orchestrates the firm's resource base through dynamic capabilities, which offer a wide array of less or higher routinized processes. The value of strategic coherency in the orchestration process of sensing opportunities, and seizing and reconfiguring them through dynamic capabilities, is accentuated. This research furthermore addresses the position and function of dynamic capabilities in the internal firm environment. By institutionalizing change processes in the form of dynamic capabilities, top management may embed change as a constant in the firm. In addition to operational excellence, this allows firms to continuously stay agile and flexible.

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Appendix A: List of Journals and Articles

SCImago Journal Rankings (SCImago, n.d.).
 Subject Category: Strategy and Management
 Ranked by the SCImago Journal Rank Indicator 2018
 Top 25

Name of the Journal	Number of Articles found
1. Journal of Financial Economics	0
2. Journal of Human Resources	0
3. Academy of Management Journal	0
4. Academy of Management Review <ul style="list-style-type: none"> • Absorptive Capacity: A Review, Reconceptualization, and Extension (Zahra & George, 2002) • Capability Reconfiguration: An Analysis of Incumbent Responses to Technological Change (Lavie, 2006) • Managing Firm Resources in Dynamic Environments to Create Value: Looking Inside the Black Box (Sirmon, Hitt & Ireland, 2007) 	3
5. Strategic Management Journal <ul style="list-style-type: none"> • Building Firm Capabilities through Learning: The Role of the Alliance Learning Process in Alliance Capability and Firm-Level Alliance Success (Kale & Singh, 2007) • Contingencies within Dynamic Managerial Capabilities: Interdependent Effects on Resource Investment and Deployment on Firm Performance (Sirmon & Hitt, 2009) • Corporate Effects and Dynamic Managerial Capabilities (Adner & Helfat, 2003) • Dynamic Capabilities: What are they? (Eisenhardt & Martin, 2000) • Dynamic Capabilities and Strategic Management (Teece, Pisano & Shuen, 1997) • Dynamic Capabilities, Social Capital, and Rent Appropriation: Ties That Split Pies (Blyler & Coff, 2003) • Dynamic Managerial Capabilities: Configuration and Orchestration of Top Executives' Capabilities and the Firm's Dominant Logic (Kor & Mesko, 2013) • Explicating Dynamic Capabilities: The Nature and Microfoundations of (Sustainable) Firm Performance (Teece, 2007) • Firm Performance, Rent Appropriation, and the Strategic Resource Divestment Capability (Moliterno & Wiersema, 2007) • History and the micro-foundations of dynamic capabilities (Suddaby et al., 2019) 	22

<ul style="list-style-type: none"> • How Dynamic can Organizational Capabilities be? Towards a Dual-Process Model of Capability Dynamization (Schreyögg & Kliesch-Eberl, 2007) • How Dynamics, Management, and Governance of Resource Deployments Influence Firm-Level Performance (Kor & Mahoney, 2005) • Managerial Cognitive Abilities and the Microfoundations of Dynamic Capabilities (Helfat & Peteraf, 2015) • On the contingent value of Dynamic Capabilities for Competitive Advantage: The Nonlinear Moderating Effect of Environmental Dynamism (Schilke, 2014) • Organizational Antecedents of Second-Order Competences (Danneels, 2008) • Psychological Foundations of Dynamic Capabilities: Reflexion and Reflection in Strategic Management (Hodgkinson & Healey, 2011) • The Dynamic Resource-based View: Capability Lifecycles (Helfat & Peteraf, 2003) • The Elephant in the Room of Dynamic Capabilities: Bringing two Diverging Conversation Together (Peteraf, di Stefano & Verona, 2013) • The sources of dynamism in dynamic capabilities (Salvato & Vassolo, 2017) • Towards a Synthesis of the Resource-Based and Dynamic-Capability Views of Rent Creation (Makadok, 2001) • Understanding Dynamic Capabilities (Winter, 2003) • Untangling dynamic and operational capabilities: Strategy for the (N)ever-Changing World (Helfat & Winter, 2011) 	3
<p>6. Journal of Management</p> <ul style="list-style-type: none"> • Alliance Management Capability: An Investigation of the Construct and Its Measurement (Schilke & Goerzen, 2010) • Capability Stretching in Product Innovation (Wang & Chen, 2015) • Dynamic Managerial Capabilities: Review and Assessment of Managerial Impact on Strategic Change (Helfat & Martin, 2015) 	6
<p>7. Organization Science</p> <ul style="list-style-type: none"> • Building Dynamic Capabilities: Innovation Driven by Individual-, Firm-, and Network-Level Effects (Rothaermel & Hess, 2007) • Deliberate Learning and the Evolution of Dynamic Capabilities (Zollo & Winter, 2002) • Dynamic Capabilities and the Role of Managers in Business Strategy and Economic Performance (Augier & Teece, 2009) • Investing in Capabilities: The Dynamics of Resource Allocation (Coen & Maritan, 2011) • Strategic renewal of organizations (Agarwal & Helfat, 2009) • The Impact of Dynamic Capabilities on Resource Access and Development (Stadler, Helfat & Verona, 2013) 	0
<p>8. Journal of Operations Management</p>	0
<p>9. Management Science</p>	0
<p>10. Journal of International Business Studies</p>	2

<ul style="list-style-type: none"> • A dynamic capabilities-based entrepreneurial theory of the multinational enterprise (Teece, 2014) • A Resource Perspective of Global Dynamic Capabilities (Griffith & Harvey, 2001) 	
11. Manufacturing and Service Operations Management	0
12. Organization Research Methods	0
13. Research Policy	2
<ul style="list-style-type: none"> • Entrepreneurial orientation in turbulent environments: The moderating role of absorptive capacity (Engelen et al., 2014) • Managing open incremental process innovation: Absorptive Capacity and distributed learning (Robertson, Casali & Jacobson, 2012) 	
14. Academy of Management Perspectives	5
<ul style="list-style-type: none"> • Dynamic Capabilities and Managing Human Capital (Chatterji & Patro, 2014) • Network Responsiveness: The Social Structural Microfoundations of Dynamic Capabilities (Kleinbaum & Stuart, 2014) • Second Order Dynamic Capabilities: How do they matter? (Schilke, 2014) • The Foundations of Enterprise Performance: Dynamic and Ordinary Capabilities (Teece, 2014) • The Organizational Drivetrain: A Road to Integration of Dynamic Capability Research (Di Stefano, Peteraf & Verona, 2014) 	
15. Omega	0
16. Journal of Management Studies	1
<ul style="list-style-type: none"> • Entrepreneurship and Dynamic Capabilities: A Review, Model and Research Agenda (Zahra, Sapienza & Davidsson, 2006) 	
17. Journal of Product Innovation Management	0
18. Tourism Management	0
19. International Journal of Management Reviews	2
<ul style="list-style-type: none"> • Dynamic capabilities: A review and research agenda (Wang & Ahmed, 2007) • What are dynamic capabilities and are they a useful construct in strategic management? (Ambrosini & Bowman, 2009) 	
20. Strategic Entrepreneurship Journal	0
21. California Management Review	9
<ul style="list-style-type: none"> • Adapting to Fast-Changing Markets and Technologies (Day & Schoemaker, 2016) • Designing Organizations for Dynamic Capabilities (Felin & Powell, 2016) • Dynamic Capabilities and Organizational Agility: Risk, Uncertainty, and Strategy in the Innovation Economy (Teece, Peteraf & Leih, 2016) • Generative Sensing: A Design Perspective on the Microfoundations of Sensing Capabilities (Dong, Garbuio & Lovallo, 2016) • How Do Firms Adapt to Discontinuous Change? Bridging the Dynamic Capabilities and Ambidexterity Perspectives (Birkinshaw, Zimmermann & Raisch, 2016) 	

<ul style="list-style-type: none"> • Innovation, Dynamic Capabilities, and Leadership (Schoemaker, Heaton & Teece, 2018) • Organizational Ambidexterity in Action: How Managers Explore and Exploit (O'Reilly & Tushman, 2011) • Strategic Management of Open Innovation: A Dynamic Capability Perspective (Bogers et al., 2019) • Uncertainty, Innovation, and Dynamic Capabilities: An Introduction (Teece & Leih, 2016) 	
22. Strategic Organization	1
<ul style="list-style-type: none"> • Understanding dynamic capabilities: progress along a developmental path (Helfat & Peteraf, 2009) 	
23. Human Relations	0
24. Organization Studies	0
25. Industrial and Labor Relations Review	0
<u>Total:</u>	<u>56</u>