Title
The historical evolution of dynamic capabilities: From resource reconfiguration to strategic orchestration

Journal
Journal of Management History

ISSN
1751-1348

Authors
Cristofaro, Matteo
Giardino, Pier Luigi
Teece, David J

Publication Date
2026

DOI
10.1108/jmh-04-2026-0086

Journal of Management History

The historical evolution of dynamic capabilities: From resource reconfiguration to strategic orchestration

Matteo Cristofaro
Department of Management and Law, University of Rome Tor Vergata, Rome, Italy

Pier Luigi Giardino
Pontificia Universidad Javeriana, Bogotá, Colombia, and

David J. Teece
Berkeley Haas School of Business, University of California, Berkeley, California, USA

Received 27 April 2026
Revised 22 June 2026
Accepted 24 June 2026

Abstract

Purpose – The study reconstructs the historical evolution of research on dynamic capabilities (DCs), perhaps the most influential framework in contemporary strategic management for explaining how firms achieve and sustain competitive advantage. By examining its development over nearly three decades, the study aims to explain how recurring theoretical and practical challenges shaped the framework's evolution and growing centrality within strategic-management research.

Design/methodology/approach – The study adopts a Historical Literature Review of 140 articles published between 1997 and 2026 in leading management and organization journals. The analysis combines systematic corpus construction, bibliometric structuring, reflexive thematic analysis and historical periodization to reconstruct the field's evolution and identify major turning points.

Findings – DCs research evolved through five historical phases. Each phase emerged from the interaction between shifts in strategic-management thinking, changes in firms' competitive environments, and unresolved questions within the DCs literature itself. Across these phases, the framework progressively expanded from an emphasis on resource reconfiguration toward a broader conception of strategic orchestration encompassing managerial capabilities, organizational renewal, ecosystem governance and environmental shaping. As this expansion unfolded, five persistent tensions became increasingly central to understanding how DCs operate: stability versus flexibility, organizational mechanisms versus managerial agency, microfoundations versus contingency, architectural integration versus causal ambiguity, and adaptation versus shaping. Rather than being resolved, these tensions were repeatedly reframed as the framework evolved across new theoretical and empirical domains.

Originality/value – This study moves beyond existing reviews that primarily synthesize contemporary perspectives on DCs. By adopting a historical lens, it explains how the framework evolved, why its core debates emerged, and how they became constitutive of its current form. Building on this reconstruction, the study develops an integrative framework that reconceptualizes dynamic capabilities as mechanisms of strategic orchestration through which firms continuously navigate and

Journal of Management History
Emerald Publishing Limited
1751-1348
DOI 10.1108/JMH-04-2026-0086

rebalance persistent strategic tensions while pursuing competitive advantage under conditions of ongoing change.

Keywords Dynamic capabilities, Strategic management, Historical literature review, Competitive strategy, Competitive advantage, Management history

Paper type Literature review

1. Introduction

Since their introduction by Teece and Pisano (1994) Teece *et al.* (1997), dynamic capabilities (DCs) have fundamentally reshaped how scholars understand competitive advantage – not as a static function of resource endowments, as in the resource-based view (RBV) (Barney, 1991), but as a dynamic process of technological and organizational renewal grounded in the firm's ability to purposefully integrate, build and reconfigure internal and external competences over time (Teece, 2025a). In this sense, DCs redefine the problem itself by shifting attention from what resources firms own/control to how they continuously transform what they have.

Over the past three decades, this framework has become widely adopted and deeply embedded within strategic management and beyond, establishing itself as the most prominent lens for explaining how firms achieve and sustain competitive advantage in environments characterized by continuous change. As illustrated in Figure 1, DCs show the strongest relative expansion in scholarly attention [1] over the 2000–2025 period compared to other foundational frameworks – such as the RBV, agency theory, neo-institutional theory and absorptive capacity – highlighting its central and increasingly dominant position within the field.

As the DCs framework has been increasingly applied across domains—including international business and entrepreneurship (e.g. Pitelis *et al.*, 2024)—it has also undergone substantive internal transformation, with shifts in assumptions, levels of analysis and explanatory logics (Teece, 2007; Helfat and Peteraf, 2015; Schilke *et al.*, 2018; Helfat, 2022). This dual movement—simultaneous diffusion and conceptual reconfiguration—requires careful reading. The rapid uptake of the framework by numerous scholars and practitioners who do no't always understand it well creates a degree of confusion and requires clarification of underlying assumptions. The extant literature is increasingly central yet internally heterogeneous. This heterogeneity is not entirely random and reflects the emergence of persistent and interdependent tensions within the DCs literature.

Existing reviews (see Appendix) have made important contributions by classifying definitions (Easterby-Smith *et al.*, 2009; Barreto, 2010), synthesizing evidence on antecedents, mechanisms, contingencies and outcomes (Schilke *et al.*, 2018), and refining measurement (Laaksonen and Peltoniemi, 2018; Bruyaka *et al.*, 2024). However, most of these contributions share a common limitation: they organize the framework as it currently appears, privileging integration and reconciliation over explanation. By focusing on aligning perspectives, they largely abstract from the temporal processes through which tensions emerged, persisted and became constitutive of the framework itself. As a result, they offer limited insight into why core debates endure and how the framework's internal complexity has developed. Accordingly, this study shifts the analytical lens from synthesis to historical explanation. We ask:

Q1. How has DCs research historically evolved, and how have its underlying tensions shaped its current form and future trajectory?

To answer this question, we examine 140 DCs articles published between 1997 and 2026 in leading management and organization journals. We adopted a historical literature review (HLR)

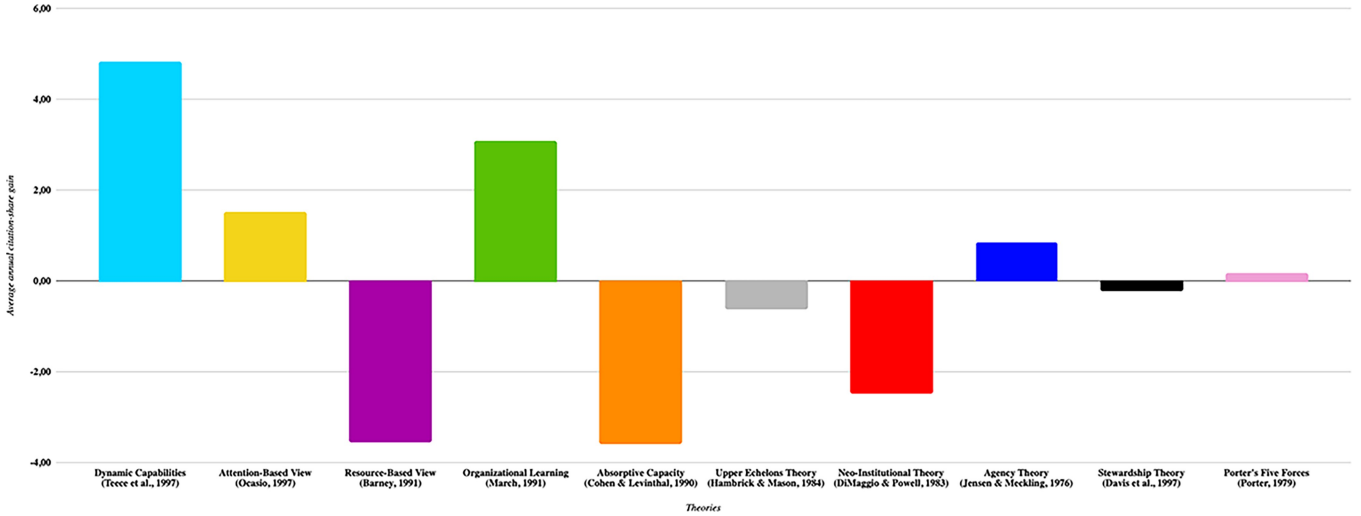

Figure 1. Annual citation-share gain across main management theories, 2000–2025

Note(s): Prominent theories in strategic management were selected following Furrer *et al.* (2008) and Ferreira *et al.* (2016). For the complete comparative analysis of the theories and the computational approach, refer to Supplementary Material 1

Source: Authors' own work

method, combining systematic article selection, bibliometric mapping, reflexive thematic analysis (RTA) and historical periodization. This approach allows us to reconstruct DCs research as an evolving sequence of problem framings (Tranfield *et al.*, 2003; Abatecola and Cristofaro, 2020; Donthu *et al.*, 2021; Braun and Clarke, 2019, 2023; Cristofaro *et al.*, 2025).

Our analysis identifies five historical phases, each marked by a turning point in the development of DCs research. The foundational conceptualization phase (1997–2003) emerged as static explanations of advantage became insufficient for explaining renewal under globalization, deregulation, Internet-based competition and faster innovation cycles. The organizational mechanisms and managerial expansion phase (2004–2010) moved from construct justification to the specification of sensing, seizing, reconfiguring, orchestration and managerial agency. The microfoundational deepening and contingency qualification phase (2011–2015) addressed unresolved questions about performance effects, ordinary–dynamic capability boundaries, cognition, emotion, human capital and contextual fit. The configurational, multilevel and processual consolidation phase (2016–2019) responded to fragmentation by linking capabilities, business models, organizational architectures, ecosystems and digital transformation. Finally, the frontier expansion and adapting–shaping relationship phase (2020–2026) extended DC research toward resilience, foresight, ecosystem orchestration, environmental shaping, AI-enabled strategic renewal and transition management. Across these phases, the framework progressively expanded from an emphasis on resource reconfiguration toward a broader conception of strategic orchestration, while repeatedly reframing—rather than resolving—the persistent tensions that accompanied its theoretical development.

We present DCs as the most comprehensive framework currently available in strategic management for explaining how firms sustain competitive advantage amid ongoing change [2]. The contribution of this article is therefore both historical and theoretical. First, we show that the evolution of the DCs framework is layered and path dependent, as each theoretical advance introduces new tensions that reshape its trajectory while simultaneously broadening the scope of strategic orchestration. Second, we show that the coherence of the framework is inherently historical and dynamic, emerging through the progressive integration of complementary perspectives rather than through definitional convergence or conceptual closure. Building on this insight, we develop an integrative framework that conceptualizes dynamic capabilities as mechanisms of strategic orchestration through which firms continuously rebalance persistent strategic tensions while renewing resources, coordinating capabilities, managing ecosystems and shaping their competitive environments. Rather than treating tensions as residual inconsistencies, the framework positions them as enduring strategic conditions that dynamic capabilities must continuously navigate, linking stability and change, managerial agency and organizational mechanisms, internal coherence and external engagement, and adaptation and shaping within a unified strategic architecture. In doing so, we shift the analytical focus from defining dynamic capabilities to understanding how firms orchestrate capabilities across multiple organizational and environmental levels while managing competing strategic demands over time. Nearly thirty years after Teece *et al.* (1997), the central challenge is no longer simply to refine or extend the construct in isolation, but to explain how the expanding dynamic capabilities framework integrates these enduring tensions without sacrificing conceptual coherence. Without such an effort, continued theoretical expansion risks renewed fragmentation, weakening the explanatory power that has made dynamic capabilities one of the foundational frameworks in strategic management.

2. Methodology. The historical literature review

We adopted a HLR to reconstruct the evolution of DCs literature. Unlike conventional literature reviews, which aim to synthesize existing knowledge at a given point in time

(Tranfield *et al.*, 2003), the HLR is inherently processual: it seeks to explain how a body of thought emerges, stabilizes, fragments and expands over time. This requires comprehensive coverage and a methodological architecture suited to tracing temporal dynamics, conceptual transformations and intellectual turning points (e.g. Abatecola and Cristofaro, 2020; Cristofaro *et al.*, 2025).

We operationalize the HLR as a coherent, multi-stage process composed of four analytically interdependent steps:

(1) systematic corpus construction;

(2) bibliometric structuring;

(3) reflexive thematic analysis; and

(4) historical interpretation and periodization; see Figure 2 for a summary of this integrated framework.

These stages form a unified analytical logic, with each serving a functionally complementary role. The systematic literature review (SLR) ensures rigor, transparency and replicability in constructing the empirical corpus (Tranfield *et al.*, 2003). However, on its own, it produces a static representation of literature. Bibliometric analysis adds a structural layer by mapping relationships among contributions and identifying patterns of intellectual proximity (Donthu *et al.*, 2021; Camilli *et al.*, 2026), yet it remains largely descriptive. The RTA, developed by Braun and Clarke (2006, 2019), helped us transform the ideas discussed across individual articles into clear themes by interpreting repeated patterns of meaning, rather than assuming that themes simply emerged from the data. Finally, historical interpretation and periodization integrate these elements into a dynamic account of the framework's evolution, identifying phases, turning points and trajectories (Cristofaro and Giardino, 2025).

Together, these four steps address the main requirements of historical theorizing: empirical grounding, structural clarity, conceptual abstraction and temporal explanation. The

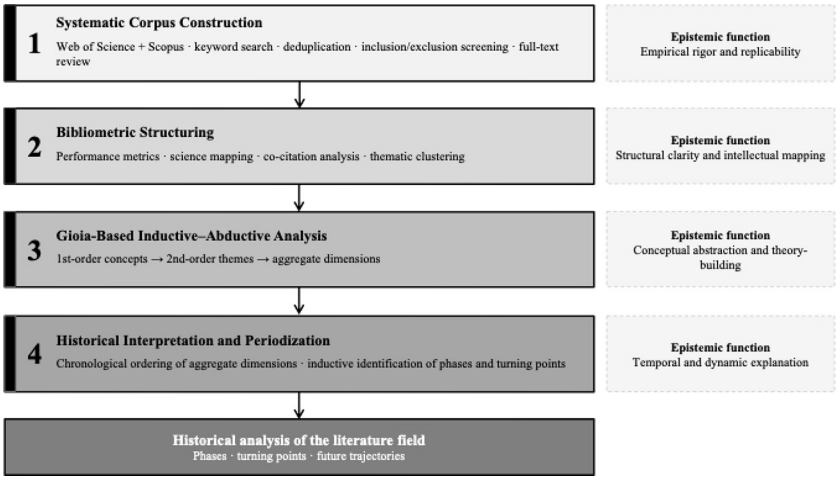

Figure 2. Historical literature review: integrated four-stage framework

Source: Authors' own work

study contributes substantively and methodologically by explaining how an HLR can be conducted as a structured yet flexible process.

2.1 Systematic corpus construction

The first stage focuses on constructing a rigorous and analytically coherent corpus of articles. In line with established protocols (Tranfield *et al.*, 2003), the SLR provides the data construction mechanism through which transparency, replicability and the empirical boundaries of the HLR method are established (see Figure 3).

The process began with a comprehensive search across Web of Science and Scopus, ensuring broad coverage of high-quality research in management and strategy. Following prior influential reviews of the DCs literature (e.g. Barreto, 2010; Schilke *et al.*, 2018), we searched for articles containing the keyword "dynamic capabilit*" in their title, abstract or keywords. The wildcard enabled the inclusion of multiple lexical variations of the construct, generating an initial pool of 688 records.

In the second step, database outputs were merged and duplicates removed, resulting in 322 unique articles. This consolidation is critical, as it establishes a stable

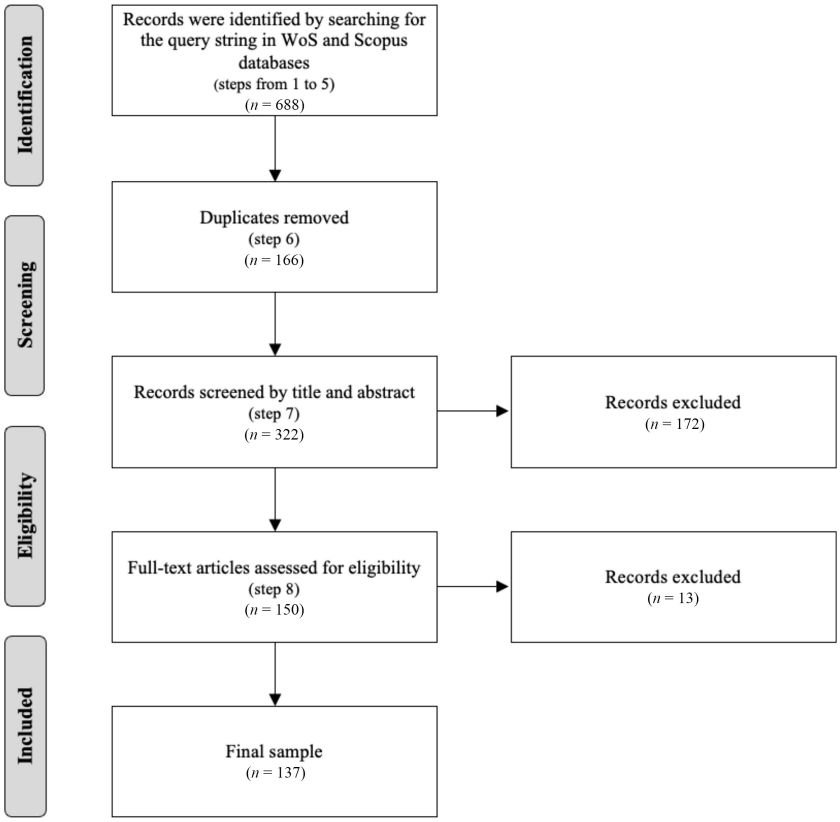

Figure 3. Papers' collection flowchart via systematic literature review

Source: Authors' own work

empirical foundation for subsequent analysis and avoids distortions caused by redundant entries.

The third step applied inclusion and exclusion criteria to ensure relevance and analytical coherence. The temporal scope was restricted to post-1997 publications, corresponding to the seminal contribution of Teece *et al.* (1997). Only English-language, peer-reviewed journal articles ranked 4 or 4* in the Academic Journal Guide (ABS) were included, focusing on Strategy, Ethics–CSR–Management, Organization Studies and Entrepreneurship; 22 outlets in total. This selective focus reflects the HLR's objective of capturing the framework's intellectual core rather than its periphery.

The fourth step involved title and abstract screening to assess substantive relevance. Articles were retained only if they made explicit contributions to the conceptual, theoretical or empirical development of DCs, excluding peripheral mentions. This reduced the sample to 150 articles.

The fifth step consisted of full-text review, ensuring alignment with the study's objective of tracing the mechanisms and evolution of DCs. This iterative filtering process, complemented by forward and backward snowballing, resulted in a final sample of 140 articles, including key contributions by Teece (2018b), Helfat (2022) and Cristofaro *et al.* (2025) that were retained for their central relevance despite falling outside the initial selection criteria (see Supplementary Material SM2).

To enhance robustness, two authors independently conducted screening and evaluation, resolving discrepancies through discussion. Inter-rater reliability was high (Cronbach's $\alpha = 0.94$), indicating strong agreement. For each article, key information—including authorship, year, methodology and theoretical contributions—was extracted (see Supplementary Material SM2). Within the HLR method, this data set constitutes the empirical basis for reconstructing the framework's historical development.

2.2 Bibliometric structuring

The second stage applied bibliometric techniques to describe the structure of the corpus and support the historical interpretation. The analysis was conducted using Bibliometrix (Aria and Cuccurullo, 2017).

Because the historical development of a field is reflected in patterns of publication, influence and intellectual proximity, bibliometric analysis was appropriate for this study. Prior studies in strategic management have used citation and co-citation techniques to reconstruct the intellectual structure and evolution of the field over time (Ramos-Rodríguez and Ruíz-Navarro, 2004). In line with this logic, this stage made the corpus structurally legible before the interpretive coding and periodization.

To combine descriptive and relational evidence, the analysis integrated performance analysis and science mapping. Performance analysis traced the temporal and outlet-level development of the field, including annual publication trends, leading journals and citation patterns. Science mapping examined relationships within the corpus, especially through collaboration and co-citation structures. Collaboration analysis helped trace the international diffusion of DCs research, while co-citation analysis identified shared intellectual foundations and clusters of related contributions. This use of bibliometric evidence follows prior management reviews that combine mapping techniques with historical interpretation of a research stream's evolution (Batistič and Van der Laken, 2019; Camilli *et al.*, 2026).

To reduce distortions caused by metadata variation, the bibliometric database was constructed from the final sample of 140 articles and then standardized for author names, journal titles and cited references. Such cleaning procedures are central in bibliometric

research because inconsistencies in metadata can affect longitudinal trends, citation structures and network representations (Zupic and Čater, 2015; Aria and Cuccurullo, 2017).

The outputs of this stage informed the subsequent RTA by identifying influential contributions, bridging works and clusters of conceptually related articles. They also helped us distinguish structural concentration from conceptual development. The historical phases were then developed by interpreting bibliometric patterns, thematic coding, and the broader theoretical and competitive conditions surrounding each period, consistent with historically oriented bibliometric work in management and strategy (Batistič and Van der Laken, 2019; Camilli *et al.*, 2026).

2.3 Reflexive thematic analysis procedure

The third stage analyzed the corpus through RTA (Braun and Clarke, 2006, 2019) by identifying recurring patterns of meaning across texts. RTA's purpose is to interpret how ideas are developed, connected and repeated. In this study, no codes or themes were defined in advance. Codes were short labels assigned to relevant ideas in the articles; themes were broader patterns linking those codes around a central analytical problem.

Following Braun and Clarke (2019), the analysis followed six recursive steps:

(1) familiarizing ourselves with the corpus;

(2) generating initial codes;

(3) generating themes;

(4) reviewing themes against the coded material and the wider corpus;

(5) defining and naming themes; and

(6) producing the report.

Published articles were treated as textual material. Two authors first coded the articles independently, focusing on how scholars defined DCs, explained their operation, located their sources, and linked them to renewal, adaptation, performance and environmental change. Initial codes captured constructs, arguments and mechanisms such as path dependence, sensing–seizing–reconfiguring, managerial cognition, asset orchestration, environmental dynamism, external-facing capabilities and ecosystem orchestration.

The authors then compared their coding, discussed differences, and refined the thematic structure. Themes were generated around recurring tensions in the literature, including stability versus flexibility, organizational mechanisms versus managerial agency, microfoundations versus contingency, architectural integration versus causal ambiguity, and adaptation versus shaping.

2.4 Historical interpretation and periodization

Following similar studies (e.g. Cristofaro and Giardino, 2025), the final stage reconstructed the historical evolution of DCs research by tracing how themes clustered, gained salience, and changed in relation to developments in strategic management and to practical and competitive pressures faced by firms. The periodization was not imposed ex ante, but derived by examining how shifts in strategy theory and changes in the competitive environment corresponded with changes in the questions, constructs, mechanisms and levels of analysis emphasized in DCs research. Turning points were therefore defined as moments when developments in strategic-management theory and changes in firms' competitive conditions jointly made new DCs research questions salient. This logic was organized around three linked elements: the theoretical shift in strategic management, the practical or competitive shift, and the resulting reorientation of DCs research.

The theoretical element captures what became insufficient in strategic-management theory at each stage. In 1997–2003, static explanations of advantage based on industry position and resource stocks were increasingly unable to explain adaptation and renewal under change (Teece *et al.*, 1997; Hoskisson *et al.*, 1999). In 2004–2010, attention shifted from resource possession to strategy process, managerial agency, practice and orchestration (Jarzabkowski and Paul Spee, 2009; Barreto, 2010). In 2011–2015, behavioral and microfoundational work pushed the field to explain how cognition, judgment, emotions and human capital shape firm-level outcomes (Powell *et al.*, 2011; Felin *et al.*, 2012). In 2016–2019, strategy research moved toward integration, configurations, multilevel theorizing and ecosystems, addressing the limits of isolated firm-level explanations (Wilden *et al.*, 2016; Schilke *et al.*, 2018). In 2020–2026, strategy increasingly turned to systemic uncertainty, resilience, foresight and environmental shaping rather than adaptation alone (Leiblein and Reuer, 2020; Fergnani, 2022).

The practical and competitive element captures the external conditions that led strategic management scholars to revisit existing explanations of advantage and address emerging strategic problems. Globalization, deregulation, the Internet economy and faster innovation cycles made competitive advantage less stable in the late 1990s and early 2000s (Teece *et al.*, 1997). Open innovation, outsourcing, alliances and global value chains later made coordination and orchestration central managerial problems (Chesbrough, 2003). After the global financial crisis, uncertainty, resource constraints and performance heterogeneity raised questions about when capabilities actually generate value (Schilke, 2014ab). From 2016 onward, digital transformation, platforms, ecosystems, business model innovation and sustainability pressures made strategy more interdependent and system-level (e.g. Warner and Wäger, 2019). Since 2020, COVID-19, AI diffusion, geopolitical fragmentation, sustainability transitions and systemic shocks have pushed firms toward resilience, ecosystem governance and future-oriented transformation (Volz *et al.*, 2025).

The DCs-research element captures how the field responded. Early DCs research explained how firms renew, integrate and reconfigure resources in changing environments (Teece *et al.*, 1997; Zollo and Winter, 2002). It then shifted toward how capabilities are built and enacted through sensing, seizing, reconfiguring, entrepreneurial management and resource orchestration (Teece, 2007; Sirmon and Hitt, 2009; Barreto, 2010). The next phase examined managerial cognition, emotions, human capital, microfoundations and boundary conditions, moving from the existence of DCs to their effectiveness (Hodgkinson and Healey, 2011; Peteraf *et al.*, 2013; Helfat and Martin, 2015). Later work expanded toward capability systems, architectures, configurations, ecosystems, digital transformation and cross-level coordination (Wilden *et al.*, 2016; Schilke *et al.*, 2018; Warner and Wäger, 2019). Recent research extends DCs toward resilience, environmental shaping, ecosystem orchestration, foresight and transition management (Suddaby *et al.*, 2020; Foss *et al.*, 2023; Pitelis *et al.*, 2024; Volz *et al.*, 2025).

Overall, each turning point reflects the same pattern: a limitation in strategic-management theory, a practical or competitive pressure that made the limitation consequential, and a corresponding reorientation in DCs research. Importantly, the historical phases should not be interpreted as mechanically derived from bibliometric patterns. Bibliometric analyses were used to identify influential works, intellectual clusters and broad shifts in the literature's structure, thereby providing a descriptive map of the field. The turning points themselves emerged through historical interpretation of the corpus, informed by the RTA and by examination of contemporaneous developments in strategic-management theory and firms' competitive environments. In this sense, bibliometric evidence functioned as a complementary source of historical evidence that supported, rather than determined, the

periodization. This approach is consistent with problematization-based theory development (Alvesson and Sandberg, 2011), historical approaches to management research (Maclean *et al.*, 2016), theory–practice perspectives in management scholarship (Van de Ven and Johnson, 2006), and review-based accounts of DCs consolidation (Barreto, 2010).

3. Results

3.1 Descriptive analysis

The corpus of this review covers the period 1997–2026 and includes 140 documents drawn from 22 sources. The corpus begins with foundational contributions by Teece *et al.* (1997) and Helfat (1997). Thereafter, annual output remained limited through the early 2000s. Growth became visible in the second half of the 2000s and culminated in 2009, when annual production reached 11 documents. From that point onward, the literature entered a sustained phase of development with further peaks in 2016 and 2018 (see Figure 4).

Across the period, *Strategic Management Journal* was the leading outlet, with 29 documents, followed by the *British Journal of Management* (20), *Long Range Planning* (18), *Journal of Management Studies* (11) and *Academy of Management Perspectives* (9). This distribution shows that DC research remained anchored in strategy while gradually extending into adjacent management domains.

The collaboration map (Figure 5) shows that this expansion also took on an international character. The USA is the main hub in the global collaboration network, with strong links to the UK, continental Europe, China and Australia. At the same time, the pattern of collaboration extends beyond an exclusively Anglo-American axis. This suggests that the growth of the framework reflects the wider cross-national circulation of ideas and scholars. As the literature expanded across journals and countries, it also became more differentiated internally.

Furthermore, the citation network (see Figure 6) shows that DCs did not follow a single developmental trajectory. It is organized around three connected clusters. The first (red) is anchored by Teece and includes Barney, Nelson, Penrose, March and Williamson, pointing to the strategy, resource-based and evolutionary foundations of the framework. The second (blue) is centered on Helfat, whose high betweenness suggests a key bridging role across the network, and is associated with work on adaptation, managerial cognition and strategic change. The third (green) is organized around Winter, Zollo, Peteraf and Zahra, and reflects later efforts to specify routines, capability development and the construct's empirical refinement.

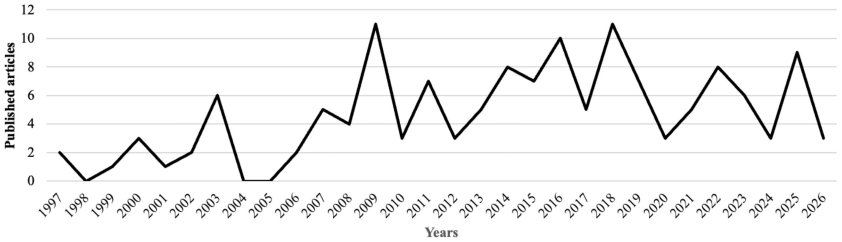

Figure 4. Annual scientific production on DCs

Note(s): The figure reports annual publication counts based on the final sample of 140 articles drawn from 22 selected journals. The year 2026 is excluded, as the data for that year are incomplete and would not provide a reliable representation of publication activity

Source: Authors' own work

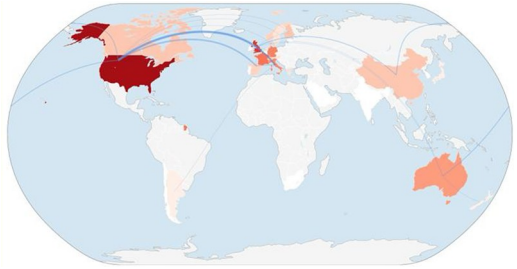

Figure 5. Countries' collaboration world map
Source: Authors' own work

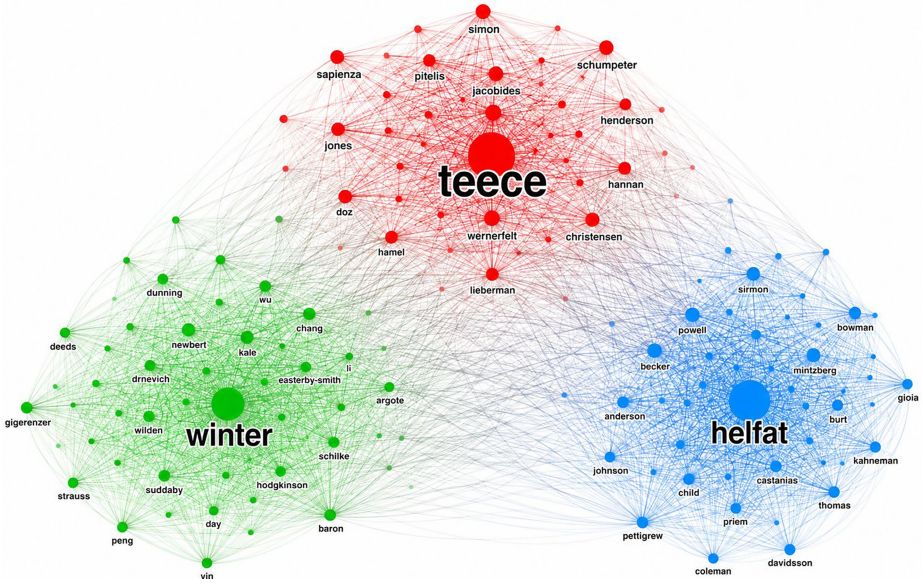

Figure 6. Co-citation network
Source: Authors' own work

The RTA identifies 31 first-order code categories, grouped into ten second-order themes, and 244 recorded occurrences (see Table 1). The most frequent themes are architectural integration (45; 18.4%), contingency (43; 17.6%), microfoundations (31; 12.7%), stability (30; 12.3%) and managerial agency (24; 9.8%). Less frequent but analytically important themes include adaptation (22; 9.0%), shaping (20; 8.2%), flexibility (12; 4.9%), organizational mechanisms (9; 3.7%) and causal ambiguity (8; 3.3%). These themes are grounded in codes such as path dependence, reconfiguration, sensing–seizing–reconfiguring, asset orchestration, managerial cognition, environmental dynamism, strategic alignment, external-facing DCs and ecosystem orchestration.

To connect these results to the historical analysis that follows, Table 2 synthesizes the corpus into a periodized framework. We identify five phases in which specific theoretical

Table 1. Results of the reflexive thematic analysis

Codes	Themes
DC definition; process view; processes, positions, and paths; path dependence; capability lifecycle; evolutionary mechanisms; longitudinal evolution; experience accumulation; organizational learning; capability accumulation; knowledge articulation; knowledge codification; historically embedded routines	Stability
Ordinary versus dynamic capabilities; routine versus non-routine; reconfiguration; continuous change; dynamic learning; learning by experimenting; iteration; continuous morphing; temporary advantage; ad hoc problem-solving boundary; flexible recombination; rapid experimentation	Flexibility
Sensing, seizing, and reconfiguring; capability hierarchy; multidimensional construct; capability development; capability transformation; regenerative capabilities; incremental and renewing DCs; market-knowledge processes; knowledge creation, integration, and deployment; product development learning; portfolio planning; operational linkage	Organizational mechanisms
Dynamic managerial capabilities; managerial role; managerial agency; entrepreneurial action; entrepreneurial management; managerial cognition; sensemaking; creative search; strategic sensemaking; resource orchestration; business model redesign; top management; executive teams; intentional resource reconfiguration	Managerial agency
Microfoundations; cognitive microfoundations; social microfoundations; psychological foundations; emotional cognition; noncognitive capabilities; tacit sensitivities; predispositions; attention control; problem solving; emotion regulation; human capital; social capital; entrepreneurial cognition	Microfoundations
Performance contingencies; environmental dynamism; environmental moderation; competitive intensity; structure fit; environmental fit; inverted-U effects; nonlinear effects; context dependence; transferability limits; ordinary versus dynamic capability boundary; intermediate outcomes; capability effectiveness	Contingency
Theoretical integration; conceptual reconciliation; meta-framework; literature synthesis; architectural model; configurational fit; capability–strategy alignment; business model alignment; strategic alignment; value creation and capture; ecosystem complementarities; strategic orientations; antecedents, mechanisms, moderators, and outcomes	Architectural integration
DC debates; competing perspectives; theoretical fragmentation; critique of DCs; contingency integration; path-dependent enactment; routine dynamics; routine repurposing; relational interaction; negotiation; emotion regulation; broad restructuring versus targeted reconfiguration; codified routines losing effectiveness; unpredictable performance effects	Causal ambiguity
Environmental jolts; performance recovery; new product development capabilities; internationalization capabilities; international adaptation; selective capability deployment; lean routines; continuous adjustment; root-cause analysis; modularization; capability recombination; preservation of core routines; resource renewal	Adaptation
External-facing DCs; ecosystem leadership; ecosystem orchestration; open system orchestration; innovation ecosystem; network embeddedness; external reconfiguration; shared vision; ecosystem-specific investments; strategic use of history; history interpretation; future orientation; future making; scenario analysis; platform governance; innovation trajectory shaping	Shaping

Source(s): Authors' own work

Table 2. Periodization of dynamic capabilities research: phases, turning points and tensions

Periods	Theoretical phases	Representative papers	Turning points	Tensions
1997–2003	Foundational conceptualization of dynamic capabilities	Teece *et al.* (1997); Rindova and Kotha (2001); Zollo and Winter (2002); Helfat and Peteraf (2003); Winter (2003); Zott (2003)	DC research emerged as static explanations of advantage became insufficient for explaining renewal, recombination, and reconfiguration under faster technological and competitive change (Teece *et al.*, 1997)	*Stability vs flexibility*: whether DCs are stable, path-dependent systems of capability building or flexible processes for rapid reconfiguration
2004–2010	Organizational mechanisms and managerial expansion	Zahra *et al.* (2006); Teece (2007); Augier and Teece (2008, 2009); Ambrosini *et al.* (2009); Bruni and Verona (2009); Newey and Zahra (2009); Pandza and Thorpe (2009); Sirmon and Hitt (2009); Barreto (2010)	The field moved from defining DCs to specifying the processes and managerial actions through which renewal occurs, including sensing, seizing, reconfiguring, orchestration, and entrepreneurial management (Teece, 2007; Barreto, 2010)	*Organizational mechanisms vs Managerial agency*: whether adaptation is primarily structured by organizational processes or enacted through managerial judgment, cognition, and intent
2011–2015	Microfoundational deepening and contingency qualification	Helfat and Winter (2011); Hodgkinson and Healey (2011); Drnevich and Kriauciunas (2011); Teece (2012, 2014); Peteraf *et al.* (2013); Wilden *et al.* (2013); Schilke (2014a, 2014b); Bingham *et al.* (2015); Helfat and Martin (2015); Helfat and Peteraf (2015)	Unresolved questions about performance effects, ordinary–dynamic capability boundaries, and contextual variation redirected attention toward microfoundations, managerial cognition, and contingency conditions (Peteraf *et al.*, 2013; Schilke, 2014a; Helfat and Martin, 2015)	*Microfoundations vs contingency*: whether DC value derives from cognition, emotion, human/social capital, and learning, or from fit with environmental and organizational conditions
2016–2019	Configurational, multilevel, and processual consolidation	Fainshmidt *et al.* (2016, 2019); Ringov (2017); Girod and Whittington (2017); Prange *et al.* (2018); Teece (2018a, 2018b); Schilke *et al.* (2018); Salvato and Vassolo (2018); Huy and Zott (2019)	Growing fragmentation across mechanisms, levels, and contexts pushed DC research toward architectural integration, configurations, multilevel theorizing, digital transformation, and ecosystem interaction (Wilden *et al.*, 2016; Schilke *et al.*, 2018; Warner and Wäger, 2019)	*Architectural integration vs causal ambiguity*: whether DCs can be organized into coherent systems or whether their operation remains path-dependent, relational, emotional, and partially opaque

(*continued*)

Table 2. Continued

Periods	Theoretical phases	Representative papers	Turning points	Tensions
2020–2026	Frontier expansion and adapting–shaping relationship	Suddaby *et al.* (2020); Colombo *et al.* (2021); Helfat (2022); Schulze and Brusoni (2022); Fergnani (2022); Foss *et al.* (2023); Teece (2023a, 2023b); Maghzi *et al.* (2024); Cristofaro *et al.* (2025); Hock-Doepgen *et al.* (2025); Aoki (2026)	Systemic disruption, ecosystem dependence, and future-oriented uncertainty shifted DC research beyond adaptation toward resilience, foresight, ecosystem orchestration, environmental shaping, and transition management (Helfat, 2022; Foss *et al.*, 2023; Cristofaro *et al.*, 2025)	*Adaptation vs shaping*: whether DCs primarily restore fit under shocks and misalignment or also enable firms to influence markets, ecosystems, futures, standards, and competitive trajectories

Note(s): The turning points summarize shifts in the field's dominant problem agenda. They do not imply abrupt breaks or deterministic causality. Supplementary Material SM3 provides the extended evidentiary basis for each transition
Source(s): Authors' own work

concerns became dominant, challenged and reconfigured. For each phase, the table reports the period, theoretical focus, representative papers, turning point and central tension. It shows how DCs research moved from foundational debates on stability and flexibility, to mechanisms and agency, microfoundations and contingency, configurational consolidation, and finally the adapting–shaping relationship. Table 2 provides the roadmap for the historical reconstruction developed in the next section.

3.2 A Historical evolution of the dynamic capabilities research

3.2.1 1997–2003: Foundational conceptualization of dynamic capabilities. The first turning point arose when established explanations of competitive advantage became insufficient for explaining renewal under change. By the late 1990s, strategic management had consolidated around industry structure, firm heterogeneity, organizational economics and the RBV, but these perspectives still explained advantage mainly through product-market position or resource stocks. At the same time, globalization, deregulation, the Internet economy and faster innovation cycles made advantage less stable and increased the strategic importance of adaptation, recombination and renewal. DCs research emerged at this intersection: it addressed how firms sustain advantage when existing resources, routines and positions must be transformed rather than merely protected (Teece *et al.*, 1997; Hoskisson *et al.*, 1999).

In this regard, Teece *et al.* (1997) positioned DCs against both Porter's competitive-forces logic (Porter, 1979) and RBV (Barney, 1991). Against Porter, they argued that advantage in rapidly changing, Schumpeterian environments cannot be explained primarily by industry attractiveness, entry barriers or defensible product-market positions. In contrast to the RBV, they accepted the importance of firm-specific assets but argued that possessing valuable resources is not enough. In particular, the RBV provides a largely static "snapshot" of firm resource positions, without explaining how valuable, rare, inimitable and non-substitutable (VRIN) resources are created, renewed or transformed over time.

Subsequent studies extended this initial formulation by clarifying how DCs differ from ordinary capabilities, how they develop, and how they relate to adaptation and performance (Rindova and Kotha, 2001; Zollo and Winter, 2002; Helfat and Peteraf, 2003; Winter, 2003; Zott, 2003). At the core of this phase lies a fundamental question: should dynamic capabilities be understood as stable, path-dependent systems of capability building, or as flexible processes for rapid reconfiguration? The central tension was therefore between stability and flexibility—more precisely, between path-dependent capability accumulation and the need for entrepreneurial, forward-looking reconfiguration in environments characterized by continuous and often discontinuous change. This was evident in the contrast between Teece *et al.*'s (1997) view of DCs as firm-specific, path-dependent processes, positions and paths.

Stability. Scholars emphasized stability by treating DCs as cumulative mechanisms of capability building. Teece *et al.* (1997) placed processes, positions and paths at the center of adaptation, arguing that firms renew advantage by developing difficult-to-imitate organizational and managerial processes. For example, a firm's prior investments in R&D, supplier relationships or brand reputation shape its options and its capacity to respond quickly and effectively to change. In this view, DCs are embedded in routines of coordination, integration, learning and reconfiguration shaped by prior investments and organizational histories.

Scholars deepened this logic by specifying how capabilities develop over time. Zollo and Winter (2002) argued that DCs emerge through the coevolution of experience accumulation, knowledge articulation and codification, highlighting how firms learn through action, reflection and the formalization of knowledge, such as in post-project reviews or best-practice systems. Helfat and Peteraf (2003) extended this through the capability lifecycle, showing how capabilities are founded, developed and transformed through renewal, replication, recombination or retirement. This made DC research more explicitly evolutionary: capabilities have histories and branching paths, and adaptation depends on structured evolution rather than improvization. Closer inspection shows that what Winter and Helfat are describing are what Teece calls ordinary and superordinary capabilities, but not necessarily dynamic capabilities.

Flexibility. Scholars emphasized flexibility by asking how much structure adaptive change can bear. Eisenhardt and Martin (2000) accepted that DCs are identifiable processes, but challenged their uniqueness as sources of sustained advantage. They distinguished between moderately dynamic and high-velocity markets: in the former, DCs are analytic and stable; in the latter, they become simpler, more experiential and iterative. Adaptation here relies less on routines and more on simple rules, real-time information and rapid experimentation—for example, quick product iterations or pilot launches. Rindova and Kotha (2001) extended this view by demonstrating how firms repeatedly redefine products, resources and structures to sustain temporary advantage. Winter (2003) clarified the boundary by distinguishing DCs from *ad hoc* problem solving: DCs require patterned investments, while firms may also change through nonrepetitive actions.

The lasting contribution of this phase was therefore to establish DCs as a framework of adaptive change structured by a foundational tension: firms must build stable, path-dependent capabilities while simultaneously retaining the flexibility to reconfigure them under changing conditions. This unresolved tension between path-dependent capability accumulation and flexible reconfiguration prepared the next phase, in which scholars moved from defining DCs to specifying the mechanisms and managerial actions through which renewal occurs.

3.2.2 2004–2010: Organizational mechanisms and managerial expansion

The second turning point emerged when DCs research moved from justifying the construct to specifying how renewal occurs. In strategic management, attention was shifting from the

sources of advantage to strategy process, managerial agency, cognition, entrepreneurship and practice. At the same time, firms increasingly competed through open innovation, alliances, outsourcing, distributed knowledge systems and global value chains. Renewal therefore could not be understood only as internal resource adjustment; it required coordination across organizational boundaries and managerial orchestration of dispersed knowledge and assets (Chesbrough, 2003; Jarzabkowski and Paul Spee, 2009; Barreto, 2010).

The central tension of this period can therefore be stated clearly: is environmental fit achieved primarily through structured organizational mechanisms, or through the interpretive and intentional action of managers? (Augier and Teece, 2008, 2009; Pandza and Thorpe, 2009). To answer it, scholars decomposed DCs into more specific organizational processes and managerial roles (Zahra *et al.*, 2006; Teece, 2007; Easterby-Smith *et al.*, 2009; Barreto, 2010). In this vein, scholars examined how sensing, seizing, reconfiguring, learning, orchestration and entrepreneurial management operate inside firms and across organizational boundaries (Teece, 2007; Ambrosini *et al.*, 2009; Newey and Zahra, 2009).

Organizational mechanisms. Some scholars emphasized organizational mechanisms by decomposing adaptation into identifiable processes. Teece (2007) provided the most influential articulation by specifying sensing, seizing and reconfiguring as the core microfoundations of DCs: firms detect and interpret opportunities, commit to them through investments and business models, and then recombine assets and structures to sustain adaptation. For instance, sensing may involve identifying emerging customer needs, seizing may require committing resources to a new product line, and reconfiguring may involve reorganizing production or partnerships to support it.

Ambrosini *et al.* (2009) added an important layer by arguing that capability change operates at different depths. Their distinction between incremental, renewing and regenerative DCs showed that some capabilities adjust the resource base, while others reshape the very mechanisms through which adaptation occurs. Thus, while Teece clarified the sequence of adaptation, Ambrosini *et al.* clarified its intensity and scope. Empirical studies then moved from abstract architecture to concrete location. Bruni and Verona (2009) located DCs in market-knowledge processes within pharmaceutical innovation, showing how knowledge is created, integrated and deployed across stages such as drug development, launch and lifecycle management. Newey and Zahra (2009) shifted attention to capability interaction, showing that product development generates learning, but portfolio planning acts as the dynamic capability that absorbs this learning and redirects future investments. Similarly, Sirmon and Hitt (2009) demonstrated that performance depends also on how managers orchestrate those resources—for example, aligning human and physical capital with different service strategies. McKelvie and Davidsson (2009) extended this logic to new firms, showing that capability development depends less on initial resources and more on how the resource base changes over time.

Managerial agency. A complementary stream emphasized managerial agency, arguing that mechanisms do not activate themselves. Zahra *et al.* (2006) positioned principal decision-makers at the center of capability reconfiguration, distinguishing DCs from substantive capabilities and highlighting that adaptation depends on managerial intent and action. This perspective directly challenged tautological interpretations of DCs: firms do not succeed because they have DCs; rather, managers attempt to reconfigure resources, sometimes successfully and sometimes not.

Augier and Teece (2008, 2009) further developed this agency-centered view by framing DCs as a frameowork of entrepreneurial management. Managers operate between path dependence and intentional design: while firms are shaped by prior investments and routines, managers can still sense opportunities, orchestrate assets, align complementarities, and

reshape business models. For example, entering a new technological domain requires not only existing capabilities, but managerial judgment about how to recombine them and where to invest. Pandza and Thorpe (2009) extended this argument by emphasizing the cognitive dimension of agency. They argued that experiential learning explains incremental change, but not major strategic departures. Such departures require creative search—through which managers imagine new possibilities—and strategic sense-making—through which they interpret ambiguity and guide collective action.

The contribution of this phase was to make the mechanisms–agency tension explicit. Scholars clarified that DCs operate through identifiable processes such as sensing, seizing, reconfiguring, learning and orchestration, but also showed that these mechanisms depend on managerial interpretation and intentional action. However, specifying mechanisms did not resolve whether DCs consistently create value, when they impose costs, or how they can be empirically distinguished from ordinary capabilities. These unresolved issues prepared the next phase, in which the field turned toward microfoundations, performance heterogeneity and contingency conditions.

3.2.3 2011–2015: Microfoundational deepening and contingency qualification

The third turning point emerged from unresolved questions about performance, boundary conditions and the sources of capability effectiveness. By the early 2010s, DCs research had specified major renewal processes, but it remained unclear when DCs improve performance, when they impose costs, and why similar capabilities produce different outcomes across firms. This problem became more salient after the global financial crisis, when uncertainty, resource constraints and uneven recovery made simple assumptions about capability investment and advantage harder to sustain. In parallel, strategic management was moving toward behavioral and microfoundational explanations of firm-level outcomes (Powell *et al.*, 2011; Felin *et al.*, 2012; Peteraf *et al.*, 2013).

This redirection is crystallized by a fundamental question: *do dynamic capabilities create value because of what they are (their microfoundations), or because of where and when they are applied (their contingency)?* The central tension concerned microfoundations versus contingency: some studies located DCs in cognition, emotion, human and social capital, and learning, whereas others showed that DCs' value depends on fit, environmental dynamism, nonlinear effects, and the boundary between ordinary and dynamic capabilities (Helfat and Winter, 2011; Peteraf *et al.*, 2013; Di Stefano *et al.*, 2014).

Microfoundational deepening. Helfat and Peteraf (2015) advanced this pole by translating Teece's sensing–seizing–reconfiguring architecture into specific managerial cognitive capabilities. Sensing depends on attention and perception: managers must detect weak signals—for instance, recognizing emerging technologies or shifts in customer preferences—while avoiding bias from prior experience. Seizing depends on reasoning and problem solving: managers evaluate alternatives, commit resources, and make business-model decisions under uncertainty, such as deciding whether to enter a new market or invest in innovation. Reconfiguring depends on communication and social cognition: managers must persuade, coordinate and mobilize others around change, for example aligning different units during a strategic transformation. Hodgkinson and Healey (2011) extended this view by showing that such processes are not purely cognitive. Their reflexion/reflection model highlights the role of emotion, intuition, affect regulation and identity threat. Strategic change, for instance, may generate anxiety or resistance, requiring managers to adjust their thinking while managing emotional responses within the organization.

Helfat and Martin (2015) consolidated this perspective by organizing dynamic managerial capabilities around cognition, social capital and human capital. This highlights

that adaptation is shaped by how managers think, what they know, whom they can mobilize, and the ways prior experience informs decision-making. Teece (2012, 2014) reinforced this view by emphasizing entrepreneurial judgment and asset orchestration, particularly in situations where decisions cannot be routinized. At the same time, other studies reintroduced learning and structure into this pole. Schilke (2014b) showed that second-order DCs, such as alliance learning, can strengthen first-order capabilities, while Bingham *et al.* (2015) demonstrated how firms develop multiple capabilities simultaneously—for example, acquisition and partnership capabilities—through structured learning processes.

Contingency qualification. On the other hand, scholars questioned whether stronger DCs always lead to better outcomes. Drnevich and Kriauciunas (2011) showed that ordinary and DCs have different effects depending on context and level of analysis. Ordinary capabilities often have clearer and more direct performance effects—for example, improving operational efficiency—while DCs become more valuable under conditions of change and heterogeneity. Helfat and Winter (2011) further complicated this distinction by showing that the boundary between ordinary and DCs is not always clear. Repeated but incremental changes—such as Intel's continuous chip development, Walmart's expansion of retail outlets, or Starbucks' store rollout—may appear operational yet cumulatively reshape the firm's resource base over time.

Some scholars refined this contingency logic empirically. Wilden *et al.* (2013) found that DCs improve performance only when aligned with organizational structure and competitive intensity—for example, when flexible, organic structures allow firms to act on sensed opportunities. Schilke (2014a) showed that the relationship between DCs and performance is nonlinear: DCs are most valuable under moderate dynamism, where opportunities exist but routines remain usable, whereas in highly turbulent environments their effectiveness declines. Stadler *et al.* (2013) shifted attention to intermediate outcomes, showing that DCs in oil and gas firms increase both the amount and success of resource access and development, rather than directly affecting final performance.

The contribution of this phase was to clarify that DCs cannot be evaluated apart from their behavioral foundations and conditions of use. DCs depend on cognition, emotion, learning, human capital and social capital, but their value also varies with environmental dynamism, organizational structure, competitive intensity and the ordinary–dynamic capability boundary. This microfoundations–contingency tension made salient a new integrative problem: the field had accumulated mechanisms, levels and boundary conditions, but lacked an architecture for explaining how these elements combine. That problem prepared the move toward configurational, multilevel and processual consolidation.

3.2.4 2016–2019: Configurational, multilevel and processual consolidation

The fourth turning point emerged from the fragmentation created by prior advances. By this stage, DC research had accumulated insights on cognition, emotion, learning, routines, performance contingencies and capability boundaries, but these insights remained dispersed across levels and constructs. At the same time, digital transformation, platform competition, ecosystem interdependence, business model innovation and sustainability pressures made isolated firm-level explanations less adequate. Firms increasingly had to coordinate resources, technologies, partners, users and institutional demands across interdependent systems. This pushed strategy research and DC research toward integration, configurations, multilevel theorizing and ecosystems (Wilden *et al.*, 2016; Schilke *et al.*, 2018).

At the core of this phase lies a fundamental question: can dynamic capabilities be organized into a coherent system that managers can use, or do they remain inherently complex and context-dependent in how they actually operate? This tension structured two

related streams of work. One stream sought to consolidate DCs into architectures linking capabilities, strategy, resources, business models and environments. The other emphasized that even when DCs are formally structured, their enactment remains path-dependent, relational and difficult to predict. The phase therefore combined efforts at theoretical integration with renewed attention to the situated processes through which capabilities are enacted.

Architectural integration. This pole is best understood through Teece's system-level reconceptualization of DCs. Rather than treating sensing, seizing and reconfiguring as isolated mechanisms, Teece (2018a, 2018b) embeds them within a broader organizational system in which capabilities, strategy and business models must be continuously aligned. In this view, DCs shape how firms adapt and how they design value creation and capture across interdependent activities. For example, platform firms must decide how to orchestrate complementarities, whether to open or close their ecosystems, and how to structure revenue models—decisions that require aligning technological capabilities with strategic intent and market positioning. This perspective also implies that misalignment—such as investing in sensing without corresponding reconfiguration capacity—can undermine performance, even when individual capabilities appear strong. DCs thus become a coordinating logic across choices, not simply a set of discrete processes.

At the same time, Schilke *et al.* (2018) advanced a different but complementary integrative move by developing an integrative framework of DCs that connects antecedents, dimensions, mechanisms, moderators and outcomes into a coherent structure. Their contribution is important because it brings structure to the complexity of the framework, showing how microfoundations, performance effects and contextual contingencies fit together within a broader analytical system. Similarly, Fainshmidt *et al.* (2016, 2019) translated this integrative logic into configurational terms, showing that DCs generate advantage only when aligned with appropriate strategic orientations and environmental conditions.

Causal ambiguity. Yet, precisely as integration efforts intensified, another stream showed why full systematization remains elusive. Ringov (2017), for example, demonstrated that even highly codified DCs—such as quantitative portfolio reallocation routines—lose effectiveness under high dynamism, suggesting that what appears as a stable capability may quickly become fragile. Girod and Whittington (2017) further illustrated that different forms of change (broad restructuring versus targeted reconfiguration) have opposite performance effects depending on environmental conditions, making it difficult to generalize a single "best" configuration.

Other studies deepen this ambiguity by showing that DCs evolve through incremental adjustments, reinterpretations and repurposing rather than discrete shifts. Prange *et al.* (2018), for instance, show that DHL repurposed existing routines over time, redirecting them from acquisition integration toward innovation and customer co-creation. Moreover, Salvato and Vassolo (2018) and Huy and Zott (2019) highlight that DCs depend on ongoing interaction, negotiation and emotion regulation: managers must build shared understanding, manage resistance, and sustain commitment over time. Even when firms adopt similar formal structures, their capabilities may evolve differently depending on how actors interpret, negotiate and enact them in practice, making outcomes inherently difficult to standardize or predict.

The contribution of this phase was to show that DCs can be organized into broader architectures, configurations and multilevel frameworks, while their enactment remains partly situated and indeterminate. Integration made the field more cumulative, but it also exposed the limits of fully specifying how DCs operate across contexts, actors and temporal

sequences. This architectural-integration–causal-ambiguity tension prepared the post-2020 phase, where the key problem shifted outward: how DCs operate when environments are not only changing, but also disrupted, ecosystemic, temporally open and partly shapable.

3.2.5 2020–2026: Frontier expansion and adapting–shaping relationship

The fifth turning point emerged when adaptation-centered accounts became insufficient for explaining strategy under systemic disruption and ecosystem dependence. COVID-19, AI diffusion, geopolitical fragmentation, sustainability transitions, and digital-platform governance exposed firms to interdependencies that could not be addressed only through internal reconfiguration. In strategic management, these conditions strengthened attention to resilience, foresight, ecosystem leadership and environmental shaping (Leiblein and Reuer, 2020; Fergnani, 2022; Volz *et al.*, 2025).

At the core of this phase lies a fundamental question: *do dynamic capabilities primarily help firms adapt to changing environments, or do they also enable firms to shape the conditions under which change unfolds?* This question reflects a deeper shift: whether firms remain reactive (adapt) or become co-architects of their environments (shape). Recent work develops this frontier by distinguishing between adaptation to environmental change and efforts to shape the conditions under which change unfolds. It also differentiates discrete shocks from continuous environmental change, thereby expanding the DC-environment nexus beyond sequential adjustment. The phase is therefore organized around two streams: one examines how firms restore fit under disruption, while the other examines how firms influence markets, ecosystems, institutions, technologies, and competitive trajectories.

Adaptation. One stream refines how firms restore fit under disruption. Colombo *et al.* (2021) show that DCs become salient after environmental jolts. Italian high-tech ventures improved post-crisis sales growth through new product development and internationalization capabilities, reconfiguring technological competencies and distribution channels. However, combining these capabilities did not produce superadditive effects, and firm size weakened internationalization outcomes. This suggests that adaptation rests on the selective deployment of capabilities under specific conditions and at the right time.

Schulze and Brusoni (2022) specify the internal process of adaptation. At Newpro, lean practices reshaped product development through continuous adjustments: dashboards identified deviations, while tools such as the Five Whys traced root causes. Adaptation here is ongoing and embedded in routines. Aoki (2026) reinforces this historically. Toyota addressed modularization by incorporating selected external practices while maintaining core routines such as just-in-time and supplier coordination. Adaptation thus becomes filtering and recombination rather than replacement, where continuity and change coexist and are strategically balanced over time.

Shaping. In parallel, a growing stream reconceptualizes DCs as mechanisms through which firms may influence, rather than merely respond to, their external environments. Helfat (2022) is particularly important here because she introduces the notion of external-facing DCs. Despite the original Teece articles referencing both internal and external competence, Helfat correctly observed that DCs research has primarily examined how capabilities alter firms' internal resource bases, while paying less attention to capabilities that directly affect markets, ecosystems, customers, regulators, complementors, suppliers and competitors. External-facing DCs may therefore support adaptation, but they may also shape the external environment by altering platform governance rules, customer perceptions, regulatory arrangements, ecosystem boundaries or market payoff structures.

Suddaby *et al.* (2020), instead, show how firms use history strategically, mobilizing narratives to legitimize change and frame new directions. Fergnani (2022) extends this

through corporate foresight: firms construct multiple futures and act on them, for example by investing early in emerging technologies such as artificial intelligence or renewable energy before demand fully materializes. Foss *et al.* (2023) move shaping beyond the firm, conceptualizing ecosystem leadership as a dynamic capability. Platform firms coordinate complementors, define standards and structure interactions, shaping entire ecosystems—for instance, by determining participation rules or technological interfaces. Teece (2023b) reinforces this view, arguing that advantage in digital markets depends on ecosystem orchestration, data control and innovation trajectories rather than simple market positioning.

Cristofaro *et al.* (2025) synthesize these developments by distinguishing adaptation from shaping and discrete from continuous change. Their key insight is that the frontier lies in coevolutionary contexts, where firms simultaneously adapt to and shape evolving environments. For example, introducing new technologies alters user behavior, which feeds back into further innovation and strategic change. In such contexts, adaptation and shaping are mutually reinforcing, creating feedback loops between firm action and environmental transformation that unfold over time and across multiple levels of analysis.

The contribution of this phase is to extend DC research from internal adaptation toward a broader account of firm–environment interaction. Recent work shows that DCs help firms restore fit under shocks and misalignment, but also participate in interpreting, coordinating, and shaping markets, ecosystems, institutions, technologies and competitive trajectories. The key point is not that DCs have moved beyond adaptation, but that adaptation and shaping increasingly appear as interdependent processes. This unresolved adaptation–shaping tension provides the bridge to the discussion, where DCs are reconceptualized as mechanisms for navigating persistent strategic tensions rather than as a construct moving toward final closure.

4. Reconceptualizing dynamic capabilities as strategic orchestration

The DC literature has developed into a central yet increasingly fragmented perspective in strategic management. Since its foundational articulation (Teece *et al.*, 1997), the framework has expanded across domains such as entrepreneurship (Zahra *et al.*, 2006), international strategy (Teece, 2014; Pitelis *et al.*, 2024), digital transformation (Warner and Wäger, 2019) and sustainability transitions (Re *et al.*, 2025). This expansion enriched the framework but also generated persistent debates about the nature and boundaries of DCs and the mechanisms by which they operate (Barreto, 2010; Peteraf *et al.*, 2013; Schilke *et al.*, 2018).

Building on our historical analysis and a paradox perspective (Schrage *et al.*, 2025), we argue that these debates converge on a common insight. Firms operate in environments marked by persistent, interdependent tensions that cannot be resolved once and for all. We therefore reconceptualize dynamic capabilities as mechanisms of strategic orchestration: the organizational and managerial capacity through which firms coordinate resources, capabilities, managerial agency, organizational architectures and ecosystem relationships while continuously rebalancing these enduring tensions over time (Teece, 2007, 2025b). Understood this way, orchestration is not the coordination of assets alone but the higher-order coordination of the entire strategic system, and the tensions developed below are the enduring conditions under which that orchestration is exercised.

Importantly, these tensions operate at different, but interconnected, analytical levels. Stability versus flexibility reflects a process-level tension concerning how capabilities evolve through path-dependent accumulation while remaining adaptable. Organizational mechanisms versus managerial agency represents an actor-level tension concerning whether change originates primarily from structured routines or managerial interpretation and action. Microfoundations versus contingency captures a contextual tension concerning the

relationship between internal capability drivers and external environmental conditions. Architectural integration versus causal ambiguity reflects a system-level tension concerning the extent to which capabilities can be coordinated into coherent organizational architectures while remaining difficult to observe, replicate or predict. Finally, adaptation versus shaping represents a strategic-level tension concerning whether firms primarily respond to environmental conditions or actively influence and transform them. Together, these tensions form a nested architecture through which dynamic capabilities exercise strategic orchestration, linking processes, actors, contexts, organizational systems and strategic outcomes.

The integrative framework we propose in Figure 7 depicts the firm's strategic environment as a structured system of five interdependent tensions. Antecedent conditions, including assets, prior routines, organizational history, managerial cognition and accumulated positions, form the internal environment from which DCs operate, while industry dynamics, geographical context, environmental dynamism, competitive intensity and ecosystem conditions define the external environment that firms must both respond to and shape (Schilke *et al.*, 2018). Within this architecture, dynamic capabilities operate as mechanisms of strategic orchestration that continuously rebalance the opposing poles of each tension, and their outcomes recursively reshape both organizational capabilities and the competitive landscape over time. Each tension became salient at a distinct moment in the historical reconstruction developed above, and none of them disappears as the framework evolves; instead, later phases inherit, extend and recombine the tensions surfaced by earlier ones.

The first tension, between stability and flexibility, organized the foundational phase. One pole treats DCs as cumulative and path-dependent, so that firms renew advantage by building, articulating, codifying and transforming capabilities embedded in routines and prior investments (Teece *et al.*, 1997; Zollo and Winter, 2002; Helfat and Peteraf, 2003). The other pole treats DCs as flexible reconfiguration processes that operate through simple rules, real-time information, experimentation and continuous morphing in fast-moving markets (Rindova and Kotha, 2001; Winter, 2003). DCs allow firms to rely on stable, path-dependent capabilities while retaining the capacity to reconfigure them, moving between the poles without collapsing into rigidity or chaos.

The second tension, between organizational mechanisms and managerial agency, structured the move from defining DCs to explaining how renewal occurs. One pole locates renewal in identifiable organizational processes, with sensing, seizing and reconfiguring specified as structured mechanisms for detecting opportunities and recombining assets (Teece, 2007; Ambrosini *et al.*, 2009). The other pole holds that mechanisms do not activate themselves, so that renewal depends on managerial interpretation, judgment and intentional action, with managers attempting to reconfigure resources with uncertain success (Zahra *et al.*, 2006; Augier and Teece, 2008, 2009; Pandza and Thorpe, 2009). DCs operate where structured processes and managerial agency meet, because routines supply the architecture of adaptation while managers decide when and how that architecture is put into action (Barreto, 2010).

The third tension, between microfoundations and contingency, emerged as the field asked when and why DCs affect performance. One pole grounds DCs in cognition, emotion, human capital, social capital and learning, locating their source in managerial cognition and in the capacity to mobilize others around change (Adner and Helfat, 2003; Hodgkinson and Healey, 2011; Helfat and Martin, 2015; Helfat and Peteraf, 2015). The other pole shows that the value of DCs depends on the conditions of their use, since their performance effects vary with environmental dynamism, organizational structure, competitive intensity, and the

Figure 7. Dynamic capabilities as a historically evolving system of tension-orchestration mechanisms

Source: Authors' own work

boundary between ordinary and dynamic capabilities (Drnevich and Kriauciunas, 2011; Helfat and Winter, 2011; Wilden *et al.*, 2013; Schilke, 2014a). DCs cannot be evaluated apart from both their behavioral foundations and the contexts in which they are deployed (Peteraf *et al.*, 2013).

The fourth tension, between architectural integration and causal ambiguity, accompanied the field's attempt to consolidate its accumulated insights. One pole organizes DCs into system-level architectures that align sensing, seizing, and reconfiguring with strategy, business models, resources and environmental conditions (Wilden *et al.*, 2016; Fainshmidt *et al.*, 2016, 2019; Teece, 2018a, 2018b; Schilke *et al.*, 2018). The other pole shows why full systematization remains out of reach, since DCs unfold through path-dependent, relational, emotional and interpretive processes that resist standardization and prediction (Ringov, 2017; Girod and Whittington, 2017; Prange *et al.*, 2018; Salvato and Vassolo, 2018; Huy and Zott, 2019). DCs can be arranged into coherent configurations, yet their operation across contexts and actors remains partly indeterminate.

The fifth tension, between adaptation and shaping, defines the current frontier. One pole concerns how firms restore or maintain fit under shocks and ongoing change by selectively reconfiguring resources, routines, products, markets and attention (Colombo *et al.*, 2021; Schulze and Brusoni, 2022; Aoki, 2026). The other pole concerns how firms shape the conditions under which change unfolds, by constructing futures, coordinating ecosystems, setting standards, and altering market and technological trajectories (Suddaby *et al.*, 2020; Helfat, 2022; Fergnani, 2022; Foss *et al.*, 2023; Teece, 2023b). Recent work treats these poles as mutually reinforcing rather than alternative, since firms increasingly adapt to environments that they simultaneously help to construct (Cristofaro *et al.*, 2025).

Across these five tensions, firms navigate a single interdependent strategic system rather than a set of separate problems. The tensions cannot be resolved once and for all, and they must be rebalanced as conditions change (Schrage *et al.*, 2025). Overemphasizing one pole, such as stability or internal coherence, can generate short-term efficiency at the cost of long-term rigidity. Overemphasizing the opposite pole, such as continuous reconfiguration or external engagement, can produce flexibility while undermining coherence and control. Dynamic capabilities therefore operate less by eliminating tensions than by orchestrating organizational responses across them.

This perspective also offers a different account of performance. Prior research emphasized the contingent value of DCs depending on environmental dynamism and strategic fit (Drnevich and Kriauciunas, 2011; Schilke, 2014a; Ringov, 2017; Fainshmidt *et al.*, 2019). Our framework suggests that sustained performance depends more fundamentally on how effectively a firm orchestrates capabilities across the underlying system of tensions. Firms that maintain coherence while continuously rebalancing these tensions are better positioned to renew resources, coordinate complementary assets, shape ecosystems and sustain competitive advantage as their environments evolve.

This reconceptualization also clarifies the historical evolution of the framework. The successive phases of DCs research did not produce competing theories; they surfaced different tensions within the same system, beginning with stability and flexibility, then organizational mechanisms and managerial agency, then microfoundations and contingency, then architectural integration and causal ambiguity, and most recently adaptation and shaping. Across this trajectory, the framework moved from an initial concern with resource reconfiguration toward a broader conception of strategic orchestration spanning managerial agency, organizational architectures, ecosystem

governance and environmental shaping. Each phase added a further layer to the system rather than displacing the previous one, which is why the tensions accumulate rather than resolve. DCs are therefore best understood as mechanisms of strategic orchestration through which firms coordinate across multiple organizational and environmental levels while continuously rebalancing this structured system of persistent and interdependent tensions – a reframing that preserves the core insights of the DCs tradition while offering a more integrative and more actionable account of how firms operate in complex and evolving environments.

5. Future research

Building on our historical reconstruction, future research should confront the unresolved tensions that have structured the field since its origins. The next generation of DCs research should therefore ask how firms orchestrate stability and flexibility, managerial agency and organizational mechanisms, microfoundations and context, integration and ambiguity, and adaptation and shaping. This agenda extends existing DCs research in seven directions.

First, foundational work conceptualized DCs as mechanisms for renewing and reconfiguring the firm's resource base under environmental change (Teece *et al.*, 1997; Helfat and Peteraf, 2003). Later work specified sensing, seizing, transforming, orchestration and managerial agency as the mechanisms through which such adaptation occurs (Teece, 2007; Barreto, 2010). Recent studies on external-facing DCs, foresight, ecosystem leadership and the DCs–environment nexus have begun to challenge the view of the environment as merely external and given (Helfat, 2022; Fergnani, 2022; Foss *et al.*, 2023; Cristofaro *et al.*, 2025). Future research should push this further by theorizing DCs as mechanisms that not only restore fit but also alter the conditions of fit. The key questions are: when do DCs adapt firms to markets, and when do they reshape markets? When do they respond to ecosystems, and when do they govern ecosystems? When do they exploit technological trajectories, and when do they redirect them? This would move DCs framework from adaptive alignment to coevolutionary strategy.

Second, existing research has clarified the role of managerial cognition, emotion, human capital, social capital, attention, judgment and emotion regulation in DCs (Hodgkinson and Healey, 2011; Helfat and Martin, 2015; Helfat and Peteraf, 2015; Huy and Zott, 2019). However, the literature still underspecifies how individual-level attributes become organizational and interorganizational capabilities. The next step is to explain the conversion mechanism: how managerial insight becomes collective attention, how emotion regulation becomes organizational commitment, how social capital becomes ecosystem access, and how individual judgment becomes strategic reconfiguration. Future studies should therefore examine the vertical movement from individuals to teams, routines, business models, ecosystems and institutions. This would strengthen microfoundational research by connecting psychological richness to organizational and interorganizational capability formation.

Third, early DCs research showed that capabilities are shaped by prior investments, routines, learning histories and capability lifecycles (Teece *et al.*, 1997; Zollo and Winter, 2002; Helfat and Peteraf, 2003; Winter, 2003). This established history as a constraint. More recent work suggests that history can also be mobilized as a resource for renewal, legitimacy, identity preservation and future-making (Suddaby *et al.*, 2020; Aoki, 2026). Future research should make this shift explicit. The key question is not only how the past constrains firms, but how firms use the past to authorize change. Scholars should examine when history produces rigidity, when it enables continuity during transformation, and when it becomes a strategic resource for imagining

alternative futures. Temporality would thereby become a core mechanism of DCs framework rather than a background condition.

Fourth, research on digital transformation has shown that firms need DCs to renew structures, routines, business models and ecosystems in response to digitalization (Warner and Wäger, 2019; Teece, 2023b; Foss *et al.*, 2023). AI raises an even deeper issue because it does not merely accelerate existing capabilities; it can reconfigure the architecture through which dynamic capabilities operate. AI can transform sensing through continuous weak-signal detection, seizing through simulation, experimentation and option generation, and transforming through the continuous redesign of routines, business models and resource allocations. At the same time, AI increasingly augments ordinary capabilities by automating coordination, information processing and operational decision-making, thereby shifting managerial attention toward higher-order orchestration activities (Gernone and Teece, 2024). Yet AI may also reinforce inherited data structures, compress dissent, narrow managerial imagination, create algorithmic lock-in, and privilege exploitation over exploration. Future research should therefore move beyond treating AI as another technological antecedent of DCs and instead examine how AI reshapes the relationship between ordinary and dynamic capabilities, alters managerial agency, reduces coordination costs, changes organizational boundaries, and redistributes decision authority across humans and intelligent systems. Such work would advance a theory of human–AI strategic agency in which AI is understood not simply as a resource, but as a transformative component of capability development.

Fifth, recent DCs research has expanded from internal resource reconfiguration to ecosystem orchestration, platform governance, external-facing capabilities and stakeholder interaction (Helfat, 2022; Foss *et al.*, 2023; Pitelis *et al.*, 2024; Hafeez *et al.*, 2025). Yet this literature often treats ecosystems primarily as coordination problems rather than as evolving architectures of complementary assets, distributed capabilities and value appropriation. Future research should therefore examine how firms use DCs not only to shape standards, influence regulation, construct legitimacy, manage dependence and redistribute value among complementors, but also to design and govern the architectures through which ecosystem participants interact. In digital settings, APIs, platform governance, modular system design and complementary assets increasingly become mechanisms through which firms orchestrate innovation across organizational boundaries while maintaining strategic control (Gernone and Teece, 2024). The key questions therefore become: who has the authority to orchestrate an ecosystem? How do orchestrators balance openness with appropriability? When does asset ownership matter more than architectural control? How do digital infrastructures redefine the boundaries between firms, platforms, and ecosystems? Addressing these questions would extend DCs framework toward a richer understanding of ecosystem governance, platform leadership and the strategic management of distributed innovation.

Sixth, existing studies show that DCs do not automatically improve performance; their effects are contingent, nonlinear and dependent on strategic fit, environmental dynamism, organizational structure and capability configuration (Drnevich and Kriauciunas, 2011; Wilden *et al.*, 2013; Schilke, 2014a; Ringov, 2017; Fainshmidt *et al.*, 2019). This has corrected overly direct views of the DC–performance link. However, the field still lacks measures of the mechanism we identify as central: the orchestration of tensions over time. Future research should measure how firms rebalance stability and flexibility, agency and structure, internal coherence and external engagement, adaptation and shaping. The relevant dependent variable is not only financial performance but also strategic coherence, renewal capacity, ecosystem influence, resilience under repeated disruption, and the ability to sustain organizational adaptability over time. Such measures would transform the tension-based framework into an empirical research program.

Table 3. Open avenues in dynamic capabilities research

Research family	What current DC research has established	What remains unresolved	Illustrative research questions
Construct foundations, boundaries and integration	DCs have been defined as abilities, routines, processes, higher-order capabilities, and mechanisms of resource reconfiguration. Prior reviews have clarified definitional plurality and construct boundaries, but without fully resolving them (Barreto, 2010; Schilke *et al.*, 2018)	The construct still risks slippage between capabilities, processes, practices, antecedents, and outcomes. The relationship between ordinary and dynamic capabilities also remains theoretically underdeveloped, particularly as new technologies increasingly automate operational activities while elevating higher-order orchestration (Helfat and Winter, 2011; Peteraf *et al.*, 2013; Gernone and Teece, 2024)	What makes a capability genuinely dynamic? When does operational improvement become strategic reconfiguration? How do ordinary and dynamic capabilities co-evolve? How can DCs integrate adjacent theories without becoming conceptually overextended?
Microfoundations, managerial agency and multilevel capability formation	Research has shown that managerial cognition, emotion, attention, judgment, human capital, social capital, and agency shape DCs (Hodgkinson and Healey, 2011; Helfat and Peteraf, 2015)	The field still underspecifies how individual-level attributes become collective, organizational, and ecosystem-level capabilities. Non-cognitive and embodied foundations also remain underdeveloped (Helfat and Martin, 2015; Huy and Zott, 2019)	How does managerial judgment become organizational reconfiguration? How do affect, intuition, identity, and tacit sensitivity shape sensing and seizing? How do team and ecosystem interactions scale individual capabilities?
Temporality, history, learning and capability decay	DC research has emphasized path dependence, capability lifecycles, experience accumulation, learning, knowledge articulation, codification, and historically embedded routines (Zollo and Winter, 2002; Helfat and Peteraf, 2003)	The literature explains capability accumulation better than abandonment, decay, forgetting, and strategic uses of the past. Recent work opens this direction but does not yet provide a full temporal theory of DCs (Suddaby *et al.*, 2020; Aoki, 2026)	When does history constrain renewal, and when does it enable transformation? How do firms unlearn obsolete capabilities? How do temporal orientations shape sensing, seizing, and transforming?
Performance, paradox, and empirical identification	Empirical studies show that DCs do not automatically improve performance. Their effects are contingent, nonlinear, and shaped by environmental dynamism, strategic fit, organizational structure, and capability	The field still lacks robust measures of DC deployment over time and has limited understanding of when DCs destroy value, produce overload, or create rigidity (Ringov, 2017; Laaksonen and Peltoniemi, 2018)	When do DCs enhance performance, and when do they become costly or counterproductive? Do DCs exhibit diminishing returns? How can sensing, seizing, transforming, and capability orchestration be

(*continued*)

Table 3. Continued

Research family	What current DC research has established	What remains unresolved	Illustrative research questions
	configuration (Drnevich and Kriauciunas, 2011; Schilke, 2014a)		measured dynamically and causally?
Digital, AI-enabled, and business-model dynamic capabilities	DC research has linked digital transformation to renewal of routines, structures, business models, platforms, and ecosystems. Business-model research also shows that DCs support value creation and capture (Teece, 2018a; Warner and Wäger, 2019)	It remains unclear whether AI and digital infrastructures merely support DCs or fundamentally reshape the architecture of capabilities by redistributing cognition, coordination, decision authority, and organizational boundaries. The relationship between AI, ordinary capabilities, dynamic capabilities, and human strategic agency remains theoretically underdeveloped (Chatterji *et al.*, 2026; Csaszar *et al.*, 2026; Gernone and Teece, 2024)	When does AI augment rather than substitute managerial judgment? When does it expand strategic imagination, experimentation, and renewal? When does it reinforce exploitation, suppress dissent, or produce algorithmic lock-in? How does AI transform the relationship between ordinary and dynamic capabilities? How do DCs enable business-model experimentation, scaling, and pivoting?
Ecosystems, networks, governance, environmental shaping and value appropriation	Recent research extends DCs beyond internal resource reconfiguration toward external-facing capabilities, ecosystem leadership, platform governance, foresight, networks, and environmental shaping (Helfat, 2022; Foss *et al.*, 2023)	The literature still undertheorizes architectural governance, complementary assets, platform design, modularity, APIs, value appropriation, power, dependence, legitimacy, regulation, standards, and feedback loops between firm action and environmental change (Fergnani, 2022; Cristofaro *et al.*, 2025; Gernone and Teece, 2024)	When do DCs restore fit, and when do they alter the conditions of fit? Who has authority to orchestrate ecosystems? When does ownership of complementary assets matter more than architectural control? How do APIs and modular architectures reshape ecosystem governance? How do firms simultaneously create and appropriate value while shaping markets, standards, institutions, and technological trajectories?
Grand challenges, sustainability, and pluralistic organizing	DC research has begun to examine sustainability transitions, circular economy innovation, stakeholder complexity, and pluralistic organizational contexts	The field still lacks a strong account of how DCs operate when firms must balance economic, social, environmental, and institutional demands across interconnected systems while maintaining	How do DCs support net-zero and circular transitions? How do firms manage competing social, environmental, and economic logics without mission drift? How do DCs operate across supply

(*continued*)

Table 3. Continued

Research family	What current DC research has established	What remains unresolved	Illustrative research questions
	(Re *et al.*, 2025; Hafeez *et al.*, 2025)	long-term adaptability (Schilke *et al.*, 2018; Pitelis *et al.*, 2024)	chains, regulators, users, platforms, and communities?

Source(s): Authors' own work

Seventh, future research should reconnect DCs with the question that originally motivated much of strategic management research: how firms appropriate value from innovation. While DCs have traditionally emphasized adaptation, renewal and competitive advantage, increasing platformization, ecosystem competition and AI-enabled complementarities suggest that value creation and value capture can no longer be analyzed separately. Future studies should therefore investigate how dynamic capabilities enable firms to orchestrate complementary assets, govern interdependent ecosystems, influence standards, and sustain value appropriation under conditions of distributed innovation and digital competition. Reintegrating capability development with value capture would strengthen the links between DCs, innovation strategy, platform competition and the theory of the firm.

Together, these avenues identify the main research programs that follow from our historical reconstruction. Table 3 complements this discussion by outlining additional future research opportunities.

6. Conclusion

This HLR shows that the evolution of the DCs framework has progressively broadened its analytical horizon through five enduring tensions: stability versus flexibility, mechanisms versus agency, microfoundations versus contingency, architectural integration versus causal ambiguity, and adaptation versus shaping. These tensions constitute the framework's generative core. Each historical phase has surfaced a new layer of this system, extending dynamic capabilities from an initial concern with resource reconfiguration toward a broader conception of strategic orchestration through which firms coordinate resources, managerial agency, organizational architectures and ecosystem relationships while continuously rebalancing these tensions over time. In doing so, the framework has been transformed from a theory of adaptive change into a broader account of how firms navigate complexity. Seen through this lens, DCs are not one perspective among many, but an evolving meta-framework capable of connecting multiple strands of strategic thought (see Teece, 2025b, pp. 40–67, for a detailed comparison with related paradigms). The historical trajectory of DCs research therefore remains open: to understand DCs historically is to recognize that it's a systems view and as the system changes, so must the framework.

Notes

[1.] Dynamic Capabilities did not necessarily receive the most citations in absolute terms, but it shows the strongest relative expansion within the selected set of theories. See Supplementary Material SM1 for details.

[2.] The question is, of course, fundamentally an economic question; but the field of economics has not been able to address it.

References

Abatecola, G. and Cristofaro, M. (2020), "Hambrick and mason's 'upper echelons theory': evolution and open avenues", *Journal of Management History*, Vol. 26 No. 1, pp. 116-136.

Adner, R. and Helfat, C.E. (2003), "Corporate effects and dynamic managerial capabilities", *Strategic Management Journal*, Vol. 24 No. 10, pp. 1011-1025.

Alvesson, M. and Sandberg, J. (2011), "Generating research questions through problematization", *Academy of Management Review*, Vol. 36 No. 2, pp. 247-271.

Ambrosini, V., Bowman, C. and Collier, N. (2009), "Dynamic capabilities: an exploration of how firms renew their resource base", *British Journal of Management*, Vol. 20, pp. S9-S24.

Aoki, K. (2026), "Managerial actions using historical values for tackling hyper-competitive environments: the case of toyota", *Strategic Management Journal*, doi: 10.1002/smj.70069.

Aria, M. and Cuccurullo, C. (2017), "Bibliometrix: an R-tool for comprehensive science mapping analysis", *Journal of Informetrics*, Vol. 11 No. 4, pp. 959-975.

Augier, M. and Teece, D.J. (2008), "Strategy as evolution with design: the foundations of dynamic capabilities and the role of managers in the economic system", *Organization Studies*, Vol. 29 Nos 8-9, pp. 1187-1208.

Augier, M. and Teece, D.J. (2009), "Dynamic capabilities and the role of managers in business strategy and economic performance", *Organization Science*, Vol. 20 No. 2, pp. 410-421.

Barney, J. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120.

Barreto, I. (2010), "Dynamic capabilities: a review of past research and an agenda for the future", *Journal of Management*, Vol. 36 No. 1, pp. 256-280.

Batistič, S. and Van der Laken, P. (2019), "History, evolution and future of big data and analytics: a bibliometric analysis of its relationship to performance in organizations", *British Journal of Management*, Vol. 30 No. 2, pp. 229-251.

Bingham, C.B., Heimeriks, K.H., Schijven, M. and Gates, S. (2015), "Concurrent learning: How firms develop multiple dynamic capabilities in parallel", *Strategic Management Journal*, Vol. 36 No. 12, pp. 1802-1825.

Braun, V. and Clarke, V. (2006), "Using thematic analysis in psychology", *Qualitative Research in Psychology*, Vol. 3 No. 2, pp. 77-101.

Braun, V. and Clarke, V. (2019), "Reflecting on reflexive thematic analysis", *Qualitative Research in Sport, Exercise and Health*, Vol. 11 No. 4, pp. 589-597.

Braun, V. and Clarke, V. (2023), "Toward good practice in thematic analysis: avoiding common problems and be (com) ing a knowing researcher", *International Journal of Transgender Health*, Vol. 24 No. 1, pp. 1-6.

Bruni, D.S. and Verona, G. (2009), "Dynamic marketing capabilities in science-based firms: an exploratory investigation of the pharmaceutical industry", *British Journal of Management*, Vol. 20, pp. S101-S117.

Bruyaka, O., Prange, C. and Li, H.A. (2024), "Dynamic capabilities measurement safari: a roadmap", *International Journal of Management Reviews*, Vol. 26 No. 4, pp. 495-517.

Camilli, R., Mechelli, A. and Coronella, L. (2026), "History of behavioral accounting research (1960–2023): a bibliometric analysis", *Journal of Management History*, Vol. 32 No. 1, pp. 195-211.

Chatterji, A., Csaszar, F.A., Evans, J., Felin, T., Hullman, J., Lakhani, K.R. and Zenger, T. (2026), "Can AI do strategy? A dialogue and debate", *Strategy Science*, doi: 10.1287/stsc.2026.ed.v11.n1.

Chesbrough, H.W. (2003), *Open Innovation: The New Imperative for Creating and Profiting from Technology*, Harvard Business Press, : Boston, MA, USA.

Colombo, M.G., Piva, E., Quas, A. and Rossi-Lamastra, C. (2021), "Dynamic capabilities and high-tech entrepreneurial ventures' performance in the aftermath of an environmental jolt", *Long Range Planning*, Vol. 54 No. 3, p. 102026.

Cristofaro, M. and Giardino, P.L. (2025), "Surfing the AI waves: the historical evolution of artificial intelligence in management and organizational studies and practices", *Journal of Management History*, doi: 10.1108/JMH-01-2025-0002.

Cristofaro, M., Helfat, C.E. and Teece, D.J. (2025), "Adapting, shaping, evolving: Refocusing on the dynamic capabilities–environment nexus", *Academy of Management Collections*, Vol. 4 No. 1, pp. 20-46.

Csaszar, F.A., Lee, G., Zemsky, P. and Zenger, T. (2026), "Can AI do strategy?", *Strategy Science*, Vol. 1 No. 1, pp. 1-15.

Drnevich, P.L. and Kriauciunas, A.P. (2011), "Clarifying the conditions and limits of the contributions of ordinary and dynamic capabilities to relative firm performance", *Strategic Management Journal*, Vol. 32 No. 3, pp. 254-279.

Di Stefano, G., Peteraf, M. and Verona, G. (2014), "The organizational drivetrain: a road to integration of dynamic capabilities research", *Academy of Management Perspectives*, Vol. 28 No. 4, pp. 307-327.

Donthu, N., Kumar, S., Mukherjee, D., Pandey, N. and Lim, W.M. (2021), "How to conduct a bibliometric analysis: an overview and guidelines", *Journal of Business Research*, Vol. 133, pp. 285-296.

Easterby-Smith, M., Lyles, M.A. and Peteraf, M.A. (2009), "Dynamic capabilities: Current debates and future directions", *British Journal of Management*, Vol. 20, pp. S1-S8.

Eisenhardt, K.M. and Martin, J.A. (2000), "Dynamic capabilities: What are they?", *Strategic Management Journal*, Vol. 21 Nos 10-11, pp. 1105-1121.

Fainshmidt, S., Pezeshkan, A., Lance Frazier, M., Nair, A. and Markowski, E. (2016), "Dynamic capabilities and organizational performance: a meta-analytic evaluation and extension", *Journal of Management Studies*, Vol. 53 No. 8, pp. 1348-1380.

Fainshmidt, S., Wenger, L., Pezeshkan, A. and Mallon, M.R. (2019), "When do dynamic capabilities lead to competitive advantage? The importance of strategic fit", *Journal of Management Studies*, Vol. 56 No. 4, pp. 758-787.

Felin, T., Foss, N.J., Heimeriks, K.H. and Madsen, T.L. (2012), "Microfoundations of routines and capabilities: Individuals, processes, and structure", *Journal of Management Studies*, Vol. 49 No. 8, pp. 1351-1374.

Ferreira, J.J.M., Fernandes, C.I. and Ratten, V. (2016), "A co-citation bibliometric analysis of strategic management research", *Scientometrics*, Vol. 109 No. 1, pp. 1-32.

Fergnani, A. (2022), "Corporate foresight: a new frontier for strategy and management", *Academy of Management Perspectives*, Vol. 36 No. 2, pp. 820-844.

Foss, N.J., Schmidt, J. and Teece, D.J. (2023), "Ecosystem leadership as a dynamic capability", *Long Range Planning*, Vol. 56 No. 1, p. 102270.

Furrer, O., Thomas, H. and Goussevskaia, A. (2008), "The structure and evolution of the strategic management field: a content analysis of 26 years of strategic management research", *International Journal of Management Reviews*, Vol. 10 No. 1, pp. 1-23.

Gernone, F. and Teece, D.J. (2024), "Competing in the age of AI: firm capabilities and antitrust considerations", In Abbott A. and Schrepel, T. (Eds), *Artificial Intelligence and Competition Policy*, Concurrences, Paris, pp. 17-34.

Girod, S.J. and Whittington, R. (2017), "Reconfiguration, restructuring and firm performance: dynamic capabilities and environmental dynamism", *Strategic Management Journal*, Vol. 38 No. 5, pp. 1121-1133.

Hafeez, S., Shahzad, K. and De Silva, M. (2025), "Enhancing digital transformation in SMEs: the dynamic capabilities of innovation intermediaries within ecosystems", *Long Range Planning*, Vol. 58 No. 3, p. 102525.

Helfat, C.E. (1997), "Know-how and asset complementarity and dynamic capability accumulation: the case of R&D", *Strategic Management Journal*, Vol. 18 No. 5, pp. 339-360.

Helfat, C.E. (2022), "Strategic organization, dynamic capabilities, and the external environment", *Strategic Organization*, Vol. 20 No. 4, pp. 734-742.

Helfat, C.E. and Martin, J.A. (2015), "Dynamic managerial capabilities: review and assessment of managerial impact on strategic change", *Journal of Management*, Vol. 41 No. 5, pp. 1281-1312.

Helfat, C.E. and Peteraf, M.A. (2003), "The dynamic resource-based view: capability lifecycles", *Strategic Management Journal*, Vol. 24 No. 10, pp. 997-1010.

Helfat, C.E. and Peteraf, M.A. (2015), "Managerial cognitive capabilities and the microfoundations of dynamic capabilities", *Strategic Management Journal*, Vol. 36 No. 6, pp. 831-850.

Helfat, C.E. and Winter, S.G. (2011), "Untangling dynamic and operational capabilities: strategy for the (N) ever-changing world", *Strategic Management Journal*, Vol. 32 No. 11, pp. 1243-1250.

Hock-Doepgen, M., Heaton, S., Clauss, T. and Block, J. (2025), "Identifying microfoundations of dynamic managerial capabilities for business model innovation", *Strategic Management Journal*, Vol. 46 No. 2, pp. 470-501.

Hodgkinson, G.P. and Healey, M.P. (2011), "Psychological foundations of dynamic capabilities: reflexion and reflection in strategic management", *Strategic Management Journal*, Vol. 32 No. 13, pp. 1500-1516.

Hoskisson, R.E., Hitt, M.A., Wan, W.P. and Yiu, D. (1999), "Theory and research in strategic management: swings of a pendulum", *Journal of Management*, Vol. 25 No. 3, pp. 417-456.

Huy, Q. and Zott, C. (2019), "Exploring the affective underpinnings of dynamic managerial capabilities: How managers' emotion regulation behaviors mobilize resources for their firms", *Strategic Management Journal*, Vol. 40 No. 1, pp. 28-54.

Jarzabkowski, P. and Paul Spee, A. (2009), "Strategy-as-practice: a review and future directions for the field", *International Journal of Management Reviews*, Vol. 11 No. 1, pp. 69-95.

Laaksonen, O. and Peltoniemi, M. (2018), "The essence of dynamic capabilities and their measurement", *International Journal of Management Reviews*, Vol. 20 No. 2, pp. 184-205.

Leiblein, M.J. and Reuer, J.J. (2020), "Foundations and futures of strategic management", *Strategic Management Review*, Vol. 1 No. 1, pp. 1-33.

Maghzi, A., Lin, N., Pfarrer, M.D., Gudergan, S. and Wilden, R. (2024), "Creating opportunities: Heuristic reasoning in proactive dynamic capability deployment", *Academy of Management Review*, Vol. 49 No. 3, pp. 514-535.

McKelvie, A. and Davidsson, P. (2009), "From resource base to dynamic capabilities: an investigation of new firms", *British Journal of Management*, Vol. 20, pp. S63-S80.

Maclean, M., Harvey, C. and Clegg, S.R. (2016), "Conceptualizing historical organization studies", *Academy of Management Review*, Vol. 41 No. 4, pp. 609-632.

Newey, L.R. and Zahra, S.A. (2009), "The evolving firm: how dynamic and operating capabilities interact to enable entrepreneurship", *British Journal of Management*, Vol. 20, pp. S81-S100.

Pandza, K. and Thorpe, R. (2009), "Creative search and strategic sense-making: missing dimensions in the concept of dynamic capabilities", *British Journal of Management*, Vol. 20, pp. S118-S131.

Peteraf, M., Di Stefano, G. and Verona, G. (2013), "The elephant in the room of dynamic capabilities: bringing two diverging conversations together", *Strategic Management Journal*, Vol. 34 No. 12, pp. 1389-1410.

Pitelis, C.N., Teece, D.J. and Yang, H. (2024), "Dynamic capabilities and MNE global strategy: a systematic literature review-based novel conceptual framework", *Journal of Management Studies*, Vol. 61 No. 7, pp. 3295-3326.

Porter, M.E. (1979), "How Competitive forces shape strategy", *Harvard Business Review*, Vol. 57 No. 2, pp. 137-145.

Powell, T.C., Lovallo, D. and Fox, C.R. (2011), "Behavioral strategy", *Strategic Management Journal*, Vol. 32 No. 13, pp. 1369-1386.

Prange, C., Bruyaka, O. and Marmenout, K. (2018), "Investigating the transformation and transition processes between dynamic capabilities: evidence from DHL", *Organization Studies*, Vol. 39 No. 11, pp. 1547-1573.

Ramos-Rodríguez, A.R. and Ruíz-Navarro, J. (2004), "Changes in the intellectual structure of strategic management research: a bibliometric study of the strategic management journal, 1980–2000", *Strategic Management Journal*, Vol. 25 No. 10, pp. 981-1004.

Re, B., Magnani, G. and Previtali, P. (2025), "Dynamic capabilities for circular economy innovations towards net zero: Acqua and sole case study", *British Journal of Management*, *Ahead-of-Print*,

Rindova, V.P. and Kotha, S. (2001), "Continuous 'morphing': competing through dynamic capabilities, form, and function", *Academy of Management Journal*, Vol. 44 No. 6, pp. 1263-1280.

Ringov, D. (2017), "Dynamic capabilities and firm performance", *Long Range Planning*, Vol. 50 No. 5, pp. 653-664.

Salvato, C. and Vassolo, R. (2018), "The sources of dynamism in dynamic capabilities", *Strategic Management Journal*, Vol. 39 No. 6, pp. 1728-1752.

Schilke, O. (2014a), "On the contingent value of dynamic capabilities for competitive advantage: the nonlinear moderating effect of environmental dynamism", *Strategic Management Journal*, Vol. 35 No. 2, pp. 179-203.

Schilke, O. (2014b), "Second-order dynamic capabilities: how do they matter?", *Academy of Management Perspectives*, Vol. 28 No. 4, pp. 368-380.

Schilke, O., Hu, S. and Helfat, C.E. (2018), "Quo vadis, dynamic capabilities? A content-analytic review of the current state of knowledge and recommendations for future research", *Academy of Management Annals*, Vol. 12 No. 1, pp. 390-439.

Schrage, S., Andriopoulos, C., Lewis, M.W. and Smith, W.K. (2025), "Unleashing the creative potential of research tensions: toward a paradox approach to methods", *Organizational Research Methods*, p. 10944281251346804.

Schulze, A. and Brusoni, S. (2022), "How dynamic capabilities change ordinary capabilities: reconnecting attention control and problem-solving", *Strategic Management Journal*, Vol. 43 No. 12, pp. 2447-2477.

Sirmon, D.G. and Hitt, M.A. (2009), "Contingencies within dynamic managerial capabilities: interdependent effects of resource investment and deployment on firm performance", *Strategic Management Journal*, Vol. 30 No. 13, pp. 1375-1394.

Stadler, C., Helfat, C.E. and Verona, G. (2013), "The impact of dynamic capabilities on resource access and development", *Organization Science*, Vol. 24 No. 6, pp. 1782-1804.

Suddaby, R., Coraiola, D., Harvey, C. and Foster, W. (2020), "History and the micro-foundations of dynamic capabilities", *Strategic Management Journal*, Vol. 41 No. 3, pp. 530-556.

Teece, D. and Pisano, G. (1994), "The dynamic capabilities of firms: an introduction", *Industrial and Corporate Change*, Vol. 3 No. 3, pp. 537-556.

Teece, D.J. (2007), "Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance", *Strategic Management Journal*, Vol. 28 No. 13, pp. 1319-1350.

Teece, D.J. (2012), "Routines versus entrepreneurial action", *Journal of Management Studies*, Vol. 49, pp. 1395-1401.

Teece, D.J. (2014), "The foundations of enterprise performance: dynamic and ordinary capabilities in an (economic) theory of firms", *Academy of Management Perspectives*, Vol. 28 No. 4, pp. 328-352.

Teece, D.J. (2018a), "Business models and dynamic capabilities", *Long Range Planning*, Vol. 51 No. 1, pp. 40-49.

Teece, D.J. (2018b), "Dynamic capabilities as (workable) management systems theory", *Journal of Management and Organization*, Vol. 24 No. 3, pp. 359-368.

Teece, D.J. (2023a), "Evolutionary economics, routines, and dynamic capabilities", In *Routledge Handbook of Evolutionary Economics*, Routledge, pp. 197-214.

Teece, D.J. (2023b), "Big tech and strategic management: how management scholars can inform competition policy", *Academy of Management Perspectives*, Vol. 37 No. 1, pp. 1-15.

Teece, D.J. (2025a), *Dynamic Capabilities*, Cambridge University Press, Cambridge.

Teece, D.J. (2025b), *Dynamic Capabilities and Related Paradigms*, Cambridge University Press, Cambridge.

Teece, D.J., Pisano, G. and Shuen, A. (1997), "Dynamic capabilities and strategic management", *Strategic Management Journal*, Vol. 18 No. 7, pp. 509-533.

Tranfield, D., Denyer, D. and Smart, P. (2003), "Towards a methodology for developing evidence-informed management knowledge by means of systematic review", *British Journal of Management*, Vol. 14 No. 3, pp. 207-222.

Van de Ven, A.H. and Johnson, P.E. (2006), "Knowledge for theory and practice", *Academy of Management Review*, Vol. 31 No. 4, pp. 802-821.

Volz, F., Münch, C., Küffner, C. and Hartmann, E. (2025), "Digital ecosystems and their impact on organizations—a dynamic capabilities approach", *International Journal of Management Reviews*, Vol. 27 No. 3, pp. 398-419.

Warner, K.S. and Wäger, M. (2019), "Building dynamic capabilities for digital transformation: an ongoing process of strategic renewal", *Long Range Planning*, Vol. 52 No. 3, pp. 326-349.

Wilden, R., Devinney, T.M. and Dowling, G.R. (2016), "The architecture of dynamic capability research identifying the building blocks of a configurational approach", *Academy of Management Annals*, Vol. 10 No. 1, pp. 997-1076.

Wilden, R., Gudergan, S.P., Nielsen, B.B. and Lings, I. (2013), "Dynamic capabilities and performance: strategy, structure and environment", *Long Range Planning*, Vol. 46 Nos 1-2, pp. 72-96.

Winter, S.G. (2003), "Understanding dynamic capabilities", *Strategic Management Journal*, Vol. 24 No. 10, pp. 991-995.

Zahra, S.A., Sapienza, H.J. and Davidsson, P. (2006), "Entrepreneurship and dynamic capabilities: a review, model and research agenda", *Journal of Management Studies*, Vol. 43 No. 4, pp. 917-955.

Zollo, M. and Winter, S.G. (2002), "Deliberate learning and the evolution of dynamic capabilities", *Organization Science*, Vol. 13 No. 3, pp. 339-351.

Zott, C. (2003), "Dynamic capabilities and the emergence of intraindustry differential firm performance: insights from a simulation study", *Strategic Management Journal*, Vol. 24 No. 2, pp. 97-125.

Zupic, I. and Čater, T. (2015), "Bibliometric methods in management and organization", *Organizational Research Methods*, Vol. 18 No. 3, pp. 429-472.

Further reading

Allen, R.T. and McDonald, R.M. (2026), "How well can AI do strategy? Empirical benchmarking using strategy simulations", *Strategy Science*, Vol. 11 No. 1, pp. 93-117.

Appendix

Table A1. Selected reviews on dynamic capabilities

Year	Authors	Title	Focus	Findings	Limitations
2010	Barreto	*Dynamic capabilities: a review of past research and an agenda for the future*	Assess prior DC research, organize definitional diversity, propose a clearer conceptualization, and set a future research agenda	The literature remains conceptually fragmented; definitions differ on nature, role, context, heterogeneity, outcomes, and purpose; the field has advanced but is not yet a theory because it lacks construct consolidation, clear causal laws, and well-specified contingencies	Notes definitional proliferation, disconnected research streams, vagueness, tautology concerns, limited boundaries and contingencies, unresolved tension between idiosyncrasy and commonality, and weak measurement development
2018	Laaksonen and peltoniemi	*The essence of dynamic capabilities and their measurement*	Examine how DCs are measured, assess whether these measures align with the theoretical essence of the construct, and propose recommendations for future empirical work	Identifies Four major operationalization types; finds substantial mismatch between theory and empirical measures; proposes Eight recommendations, including clearer distinction between ordinary and dynamic capabilities, indirect performance logic, longitudinal data, and better measurement of learning outcomes	Finds that empirical studies often fail to distinguish DCs from ordinary capabilities, model DCs as direct determinants of performance, rely on common method variance, measure quantity rather than type/existence, ignore longitudinal accumulation, and privilege learning opportunities over learning outcomes
2018	Schilke *et al.*	*Quo vadis, dynamic capabilities? A content-analytic review of the current state of knowledge and recommendations for future research*	Synthesize the current state of dynamic capabilities research, develop a comprehensive meta-framework of antecedents, dimensions, mechanisms, moderators, and outcomes, and derive future research directions from a systematic coding of limitations and recommendations in prior work	The review finds increasing convergence in definitions; richer theorizing around assumptions such as bounded rationality, agency, and heterogeneity; broader theory integration; and significant empirical progress on antecedents, dimensions, consequences, moderators, and, to a lesser extent,	The article identifies several limitations and unresolved issues in the literature: only partial consensus on definitions; need for clearer elaboration of theoretical assumptions such as bounded rationality and agency; insufficient study of mechanisms/ mediators; underdeveloped work on shaping markets and ecosystems; unresolved tensions

(*continued*)

Table A1. Continued

Year Authors	Title	Focus	Findings	Limitations
			mechanisms. It proposes a comprehensive organizing framework for DC research and argues that the literature has become more coherent and cumulative than critics often assume. It also identifies weak spots, especially limited work on mediating mechanisms, insufficient attention to market and ecosystem shaping, underdeveloped treatment of some theoretical integrations, and continued need for methodological diversification	regarding routinization and dimensionalization; excessive empirical focus on performance rather than proximate outcomes; and reliance on a relatively narrow empirical toolkit dominated by surveys and qualitative case studies
2024Pitelis *et al.*	*Dynamic capabilities and MNE global strategy: a systematic literature review-based novel conceptual framework*	Assess how DCs have been used in MNE global strategy research, compare theory and evidence, identify gaps, and propose a new framework	Global strategy cannot be understood without DCs; the MNE literature underuses DCs despite their relevance; empirical work over-relies on surveys; key themes include global strategy, resources, innovation, entrepreneurship, and performance; underexplored areas include co-creation, imagination, and co-specialization	Notes weak direct measurement of sensing/seizing/reconfiguring, limited distinction between DCs and ordinary capabilities, inconsistency in higher- vs lower-order categorization, underdeveloped treatment of governance, resource-base mediation, context creation, FDI/modality consequences, competition as moderator, and causality/simultaneity issues
2024Bruyaka *et al.*		Clarify the operationalization of	Finds large diversity in measurement	Identifies lack of transparency,

(*continued*)

Table A1. Continued

Year Authors	Title	Focus	Findings	Limitations
	Dynamic capabilities measurement safari: a roadmap	the DC construct in quantitative research, especially the conceptual definition, construct scope, dimensionality, and measurement model choice	models; unidimensional models remain prevalent despite multidimensional calls; the same type of DC is often measured inconsistently across studies; measurement choices often appear disconnected from conceptual definitions. The article proposes a roadmap built around Four auxiliary-theory decisions and recommends controlled plurality rather than random diversity	mismatch between conceptualization and operationalization, neglect of dimensionality, inconsistent model specification, use of different models for the same DC types, and continued risk of measurement misspecification and false findings. Also notes its own limits: exclusion of qualitative studies and no adjudication of whether every labeled construct is truly a DC

Source(s): Authors' own work

Supplementary material
The supplementary material for this article can be found online.

Corresponding author
Matteo Cristofaro can be contacted at: matteo.cristofaro@uniroma2.it