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# Unlocking dynamic capabilities: Pathways for empirical research

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The literature on dynamic capabilities has long faced the challenge of empirically investigating a concept that is inherently intangible, complex, and organization-specific. Empirical clarity is crucial because dynamic capabilities are argued to be essential for achieving sustainable competitive advantage in changing environments, and only empirical research can validate this claim. Despite significant advancements, issues related to measurement, methodologies, and the robustness of findings persist. This article addresses these concerns by offering key recommendations for empirical research in this domain. First, we underscore the importance of construct validity and the need for clear definitions and focused dimensions of dynamic capabilities. Second, we recommend empirical designs with time lags between the measurement of dynamic capabilities and their antecedents or outcomes, and sector-specific studies to capture the temporal dynamics and contextual nuances. Third, we encourage leveraging established survey measures, close proxies in archival research, and innovative experiments and qualitative methods. Finally, we highlight the potential of multimethod approaches to triangulate findings and enhance theoretical insight. Our hope is to help future researchers address the unique challenges of studying dynamic capabilities empirically, paving the way for continued progress in this significant field of strategic management.

Keywords: Dynamic capabilities; empirical methods; construct validity; future directions

Dynamic capabilities are often considered the "Holy Grail" of strategic management (Helfat & Peteraf, 2009), given their ambition to explain nothing less than sustainable competitive advantage (Teece et al., 1997), even (or especially) in constantly changing environments (Schilke, 2014). One of the features central to their appeal is that dynamic capabilities

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tend to be difficult to imitate, given their intangibility, complexity, and organizational specificity (Gibson & Birkinshaw, 2004; Helfat & Winter, 2011). But these same characteristics make dynamic capabilities difficult to study empirically, which is why early research on the topic was predominantly conceptual in nature (see the critiques by Kraatz & Zajac, 2001; Williamson, 1999). However, this focus has shifted over the past two decades, and the majority of dynamic capabilities research today is empirically oriented (Schilke et al., 2018).

Nonetheless, despite the proliferation of empirical research and evolving analytical techniques, the key challenge of rigorously studying a construct as intangible, complex, and organization-specific as dynamic capabilities remains. Thus, whether a given study is truly measuring dynamic capabilities, whether the chosen research design and methodology are appropriate to do so, and whether the findings are robust and generalizable are questions at the heart of many review processes we have observed as authors and reviewers of empirical dynamic capabilities papers.

The purpose of this essay is to provide some guidance for scholars to avoid common pitfalls in empirical research on this topic. Our hope is that this guidance will help future scholars both in designing studies that address the unique challenges of investigating dynamic capabilities empirically and in crafting manuscripts that clearly communicate and justify the appropriateness of the empirical choices made.

#### **Recommendations for empirical research**

In what follows, we will discuss some recommendations on how to approach dynamic capabilities empirically. We will start with general suggestions that apply broadly and largely irrespective of the specific empirical methodology being adopted. Subsequently, we will address some of the most commonly used empirical methods in dynamic capabilities scholarship before advocating for more multimethod investigations in this stream of research.

#### General

*Construct validity.* One of the key challenges in empirical research on dynamic capabilities is related to construct validity—that is, the degree to which the study measures what it claims to be measuring (Shadish et al., 2002). To enhance construct validity specifically in research on dynamic capabilities, we offer the following suggestions.

Provide an adequate definition of dynamic capabilities. This recommendation may seem straightforward, yet some empirical papers still lack a formal definition of dynamic capabilities (Schilke et al., 2018), making it impossible for the reader to evaluate whether the study's measure is consistent with the authors' conceptual understanding. As the literature on dynamic capabilities has developed, scholars have elaborated on the characteristics of dynamic capabilities and have employed definitions that emphasize different aspects of the concept (for an in-depth discussion and review, see Schilke et al., 2018). In the broadest sense of the concept, a dynamic capability is a capability that is directed toward change (Winter, 2003), where a capability (dynamic or otherwise) is the capacity to perform an activity (a coordinated set of tasks) reliably and repeatedly (Amit & Schoemaker, 1993; Helfat &

Peteraf, 2003) in at least a minimally satisfactory manner (Helfat & Winter, 2011). Most prominent definitions of dynamic capabilities emphasize change and reflect many of the general characteristics of capabilities. In their path-breaking article, Teece et al. (1997, p. 516) defined dynamic capabilities as "the firm's ability to integrate, build, and reconfigure internal and external competences." Eisenhardt and Martin (2000, p. 1107) then defined dynamic capabilities as the "routines by which firms achieve new resource configurations," consistent with Winter's (2000) definition of an organizational capability as a collection of routines. Adner and Helfat (2003) subsequently introduced the concept of "dynamic managerial capabilities," referring to the capacity of managers to bring about strategic and organizational change. Synthesizing these definitions, Helfat et al. (2007) defined a dynamic capability as "the capacity of an organization to purposefully create, extend, or modify its resource base" (its resources and capabilities) through both organizational routines and managerial means. Teece (2007) further elaborated that dynamic capabilities consist of the capacity to sense opportunities and threats, seize opportunities, and reconfigure and transform the organization. In addition, Eisenhardt and Martin (2000), Teece (2007), and Helfat and Winter (2011) pointed to the capacity of dynamic capabilities to influence not just the firm's internal resource base but also its external environment.

Dynamic capabilities contrast with what Winter (2003) termed "ordinary" or "operational" capabilities that enable a firm to maintain the *status quo* in its operations, products and services, customer base, and relationships with the external environment. However, the line between dynamic and ordinary/operational capabilities is inevitably blurry because change is always ongoing to at least some degree, the cumulative effect of what look like small changes in the short run may be very large over time, and "some capabilities can be used for both operational and dynamic purposes" (Helfat and Winter 2011, p. 1245). This means that an empirical study must make the case that the capability under investigation qualifies as a dynamic capability in its specific setting.

Dynamic capabilities may reside at the level of an organization (e.g., a firm), a unit or division within an organization, or a team—generally referred to as organizational capabilities and such capabilities consist of organizational routines (procedures and processes) (Eisenhardt & Martin, 2000; Winter, 2003). In addition, individuals such as managers and entrepreneurs may have dynamic managerial capabilities (Helfat et al., 2007; Teece, 2007), underpinned by these individuals' human capital, social capital, and cognition (Adner & Helfat, 2003; Helfat & Martin, 2015; Helfat & Peteraf, 2015). Thus, a study must clearly identify the level at which the dynamic capability under investigation resides. Moreover, researchers must take care not to conflate individual and organizational capabilities. The capabilities of individuals may not aggregate up to organizational capabilities in a simple additive way (Winter, 2013); instead, the interactions of individuals may generate or alter the nature of the capabilities (Nelson & Winter, 1982; Piezunka & Schilke, 2023; Winter, 2013), and the capabilities of individuals and the capabilities of organizations may interact as well (Felin et al., 2012).

In this article, we do not intend to endorse one definition over others (see Kurtmollaiev, 2020 for a recent comparison); rather, the crucial point is that a given paper should offer a clear definition and consistently adhere to it. There are some characteristics, however, that make certain definitions more useful than others as a basis for empirical research aiming for high construct validity. Perhaps most importantly, the definition should clearly separate

dynamic capabilities from their outcomes and the external environment in which they are embedded (Helfat & Peteraf, 2009; Schilke, 2014; Zahra et al., 2006)—factors that may be more appropriately modeled as dependent and contextual variables distinct from dynamic capabilities. Although Teece et al. (1997, p. 516) emphasized that dynamic capabilities apply in "rapidly changing environments," subsequent research has argued and shown that dynamic capabilities also apply and can create substantial value in moderately dynamic and even relatively stable external environments (Eisenhardt & Martin, 2000; Schilke, 2014; Winter & Szulanski, 2001).

Zoom in on a specific dimension of dynamic capabilities. Although a paper's argument may start with a high-level discussion of dynamic capabilities, the theoretical construct typically does not lend itself to operationalization due to its abstractness. As Winter (2003) noted, dynamic capabilities are context-dependent and there are no general-purpose capabilities. To make dynamic capabilities measurable, empirical researchers are thus well-advised to focus on selecting specific areas where these capabilities are evident when testing their hypotheses (Helfat & Winter, 2011; Schilke, 2014), rather than attempting to measure an inherently broad dynamic capability construct. Although this approach of selecting one or a few particular dimensions as representations of dynamic capabilities may limit the generalizability of the findings to some extent, it is necessary to make the empirical research feasible. Through theoretical induction, studying these specific dynamic capability dimensions can illuminate not only the particular processes involved but also the broader nature of dynamic capabilities (Eisenhardt & Martin, 2000). However, it is critically important for researchers to provide a convincing conceptual argument explaining how the selected dimension(s) are closely linked to and representative of the general notion of dynamic capabilities. Doing so is meant to ensure sufficient coherence, which is critical for theoretical generalization from the study's empirical focus on a specific dimension to the broader concept of dynamic capabilities. Furthermore, appreciating the distinct dimensions of dynamic capabilities may also inform constructive replication studies, in which hypotheses previously tested based on one dimension get reevaluated with data on a different dimension, further enhancing generalization to the theoretical construct of dynamic capabilities (Kraimer et al., 2023). For these reasons, scholars may benefit from Schilke et al.'s (2018, pp. 401-404) review of different dimensionalization approaches, which distinguish among the procedural, routinization, functional, hierarchical, and unit-of-analysis dimensions of dynamic capabilities. This typology shows that it is virtually impossible to capture the entirety of dynamic capabilities in a single study, and most readers/reviewers will understand the need for some focus in empirical work to make it feasible, precise, and thorough-especially if the adopted focus is proactively justified and acknowledged as a study limitation.

*Study design.* The design of a study, whether quantitative or qualitative, critically affects the validity of its findings. Therefore, we recommend that researchers use study designs that make it more likely that a study will reveal the effects of dynamic capabilities when they exist.

Focus on one or a few sectors. Just as distinct dimensions of dynamic capabilities may differ markedly, so may dynamic capabilities function differently across diverse environments. For example, how strategic change is achieved may be qualitatively different in grassroots environmental nonprofits than in the aerospace industry. For this reason, unless the study is focused on elaborating such context-specificity, it may be advisable to control for industry-level factors by design. Again, this more focused approach has the advantage of not having to devise measures that work universally but that are more specific and thus capture the essence of dynamic capabilities *in situ*. In selecting specific sectors, dynamic capabilities scholars may find it useful to focus on those with moderately high environmental turbulence, as these conditions have been shown to be particularly conducive to dynamic capabilities in generating competitive advantages across various environments might require extending beyond a single sector. However, our recommendation even in these cases is to keep the number of sectors relatively small and choose comparable ones that ideally only differ in the characteristic of theoretical interest. To give a concrete example, avoid combining manufacturing and service industries in your sample unless the distinction between them is central to the model under investigation.

Avoid contemporaneous designs. that link behaviors to outcomes at the same point in time. "Dynamic" denotes change (Helfat & Winter, 2011; Winter, 2003), and change takes time to materialize. Dynamic capabilities involve change-related processes like sensing opportunities, seizing them, and reconfiguring resources (Teece, 2007), all of which unfold over time. The development and deployment of dynamic capabilities are evolutionary (Cristofaro & Lovallo, 2022; Helfat & Peteraf, 2003), requiring a temporal lens to understand how these capabilities emerge, evolve, and impact firm performance.

Empirical designs that reflect the temporal sequence of events are also more appropriate for examining the predominantly causal effects suggested by the dynamic capabilities framework, such as the master hypothesis that dynamic capabilities will lead to competitive advantage (Teece et al., 1997). But this effect could possibly also go in the opposite direction; that is, while dynamic capabilities can influence firm performance, performance outcomes (and the access to resources that derive from them) can also influence firms in developing or refining dynamic capabilities (Helfat & Peteraf, 2003). Such reciprocal causality is difficult to capture and disentangle in contemporaneous designs. Separating cause and effect (e.g., did the development of dynamic capabilities lead to better performance, or did high-performing firms invest more in developing these capabilities?) typically calls for empirical designs in which dynamic capabilities and their outcomes are separated in time.

The appropriate temporal design of an empirical study depends on the nature of the dynamic capability under investigation, the setting (e.g., industry, technology), and the associated time lag between the capability and its antecedents or outcomes. For example, in two studies of dynamic capabilities in the oil and gas industry involving R&D and advanced technologies, Helfat (1997) and Stadler et al. (2013) constructed measures of dynamic capabilities that were specific to the particular technologies and types of capabilities, and that reflected the accumulation of capabilities prior to their performance outcomes. Similarly, in a study of three industries in which firms employed alliances frequently, Schilke (2014) measured each firm's alliance and R&D capability at one point in time and the outcome of these capabilities 3 years later (Schilke, 2014, p. 187), consistent with prior research on time lags in similar settings. As another example, Danneels (2008) examined the effects on the extent of dynamic capabilities in R&D and marketing of their antecedents with a 4-year lag,

which allowed sufficient time for the antecedents to have an effect in the industrial and consumer products companies in the study. These examples illustrate the more general point that strategic change takes time. In line with this, Nickerson and Silverman (2003) found that firms required a 4- to 5-year period to adjust vertical integration following a regulatory change in the trucking industry. More recently, Martin and Cuypers (2024) found that it took approximately 5 years for firms involved in foreign alliances to adjust misaligned governance (specifically, equity levels) at average levels of experiential and vicarious learning. Overall, we advise scholars to structure their studies to account for time lags in the accumulation and impact of specific types of dynamic capabilities in specific settings.

Investigate more proximate performance outcomes. Although researchers often focus on firm profits as the outcome of interest for dynamic capabilities, there are many steps between the exercise of dynamic capabilities and any profits that accrue. We therefore recommend examining the impact of dynamic capabilities on more proximate outcomes of their development and use as well (also see Ray et al., 2004). Researchers can investigate the impact of specific types of dynamic capabilities on direct performance outcomes, such as changes in the costs of conducting an activity that relies on dynamic capabilities (Stadler et al., 2013). In addition, at a more macro level, we suggest that researchers devote more attention to a performance outcome that in some contexts may be more proximate to dynamic capabilities than profits—namely, the growth of the firm or a particular business (Helfat et al., 2007). For example, recent research has highlighted the rapid growth ("scaling") of successful digital firms (Giustiziero et al., 2023), which arguably benefits from dynamic capabilities. Finally, when a study follows our earlier recommendation to focus on a specific dimension of dynamic capabilities, the study's focal outcomes should also reflect that particular dimension. For example, a study examining alliance management capability as a type of dynamic capability may want to evaluate outcomes specific to alliances (Schilke & Goerzen, 2010).

Probe mechanisms through which dynamic capabilities affect performance outcomes. The effect of dynamic capabilities on performance depends in part on the mechanisms through which the capabilities operate. Based on prominent conceptualizations of dynamic capabilities (Eisenhardt & Martin, 2000; Helfat et al., 2007; Teece et al., 1997), the empirical literature on mechanisms has often focused on changes in the firm's resource base (Schilke et al., 2018). However, as mentioned earlier, dynamic capabilities may also alter features of the external environment in which the firm operates, which in turn may affect profits and growth (Helfat, 2022). Teece (2007, p. 1322) highlighted that dynamic capabilities involve "shaping (and not just adapting to)" the external environment. In modeling search and shaping, Gavetti et al. (2017, p. 207) further noted that "dynamic capabilities are often integral to efforts to shape the business context." This entails altering features of the environment, including by altering the available technologies, customer demand, ecosystems, laws and regulations, and broader institutional forces (Gavetti et al., 2017; Helfat, 2021, 2022; Teece, 2007).

Firms may use "external-facing dynamic capabilities" (Helfat, 2022, p. 734) in their efforts to shape the external environment, such as capabilities for mergers and acquisitions (to identify and negotiate with targets), alliances, marketing and sales, organizing ecosystems, and

managing nonmarket relationships. Dynamic capabilities for new product development and innovation may also indirectly shape the external environment when firms introduce the resulting products and processes and they disrupt the market (Helfat, 2021). Although shaping has attracted increasing scholarly attention in recent years (for a review, see Pontikes & Rindova, 2020), dynamic capabilities for shaping remain understudied. We therefore urge scholars to take a broader view of dynamic capabilities and design their studies to incorporate a wider range of mechanisms appropriate to the study context.

#### Data and methods

*Surveys*. Surveys represent the most popular approach to collecting data on dynamic capabilities, being used in about one third of existing investigations (Schilke et al., 2018). The attractiveness of surveys likely stems from the fact that they allow for capturing firm-internal processes while also identifying quantitative effects that may be generalizable beyond the study sample. For these reasons, we anticipate that survey research will likely remain a workhorse for empirical scholarship on dynamic capabilities. Our earlier examination of problems with contemporaneous designs for the study of dynamic capabilities may be particularly pertinent to such studies, given that most survey research has traditionally involved one-time data collections (Rindfleisch et al., 2008). More recently, however, there have been repeated calls —and constructive suggestions—for designing surveys across time (Kalton, 2009; Lynn, 2009). Dynamic capabilities scholars using survey designs have heeded such calls (e.g., Alves & Galina, 2021; Danneels, 2008; Schilke, 2014; Zhou et al., 2014), and we encourage future research to continue to follow this route.

Cross-validate your survey measures. Expectations regarding the validation of survey measures are likely to rise, because managers' evaluation of dynamic capabilities may potentially be distorted (Laaksonen & Peltoniemi, 2018). For instance, social desirability bias—specifically, the desire to give a good impression of the firm—may lead key informants to overstate their firms' dynamic capabilities to appear more competent or innovative. In addition, recall bias (stemming from inaccurate memories) may cause respondents to misrepresent past events, processes, or decisions related to the development and deployment of dynamic capabilities. Perceptual differences of the firm's dynamic capabilities among individual informants from the same firm may also contribute to measurement error. It is thus advisable to triangulate self-reported data on key study measures with other data sources (Homburg et al., 2012)—such as multiple informants from the same organization, objective measures from archival sources, and/or qualitative data—to scrutinize validity concerns stemming from issues such as common-method and single-respondent bias and enrich the survey measurement (more on multimethod approaches below).

Adopt established measures. The field of dynamic capabilities research has seen a considerable proliferation of survey measures, with studies using various scales to evaluate the processes and outcomes associated with these capabilities. However, inconsistent operationalizations of dynamic capabilities across studies not only raise the bar for any new study to establish the validity of its measure but also pose challenges in comparing results and making generalizable conclusions (Arend & Bromiley, 2009). As a result, we advise dynamic capabilities scholars to build on prior survey measures whenever possible. Existing measures have often undergone rigorous validation processes, ensuring they accurately capture the constructs they are intended to measure (Vomberg & Klarmann, 2022). Practically speaking, using previously validated instruments not only increases the likelihood that readers will trust the validity of the new study but also helps to save time and effort and to avoid pitfalls associated with creating new measures from scratch. Moreover, using existing dynamic capabilities measures allows researchers to more systematically compare their findings with those from previous studies. Doing so is essential for understanding how new results fit within the broader landscape of dynamic capabilities scholarship.

*Archival data and analysis.* Archival data are attractive to dynamic capabilities scholars because they are often viewed as less subjective (Stadler et al., 2013) and because they are readily accessible for a large number of firms, especially publicly traded ones. Nonetheless, archival research comes with unique challenges for dynamic capabilities scholars that require careful attention to the selection and justification of appropriate proxies.

Opt for close proxies. The use of accounting data, such as those from annual reports, provides an important window into firm operations and thus has a long history in strategic management research, but such data can at best serve as a proxy (rather than a direct) measure of dynamic capabilities. That is, financial data can only offer indirect evidence or an approximation of something as intangible as dynamic capabilities. Thus, while inferring the presence of dynamic capabilities is inherently necessary for this line of inquiry, the choice of proxies that are closely aligned and overlap with the focal dynamic capability dimension is pivotal for any inferences made to the theoretical framework to be considered valid (Ketchen et al., 2013).

We previously mentioned the critique about inferring the presence of dynamic capabilities from broad firm performance outcomes (e.g., profitability), and this problem is probably nowhere as pertinent as in archival research. The performance inference practice is problematic on two grounds. First, it assumes rather than empirically establishes the central effect of the theory, and prior research has shown that this effect is highly contingent rather than universally valid (Schilke, 2014). Second, even if we agree for a minute that dynamic capabilities do help improve firm performance, a plethora of other success factors may do so as well (Kamasak, 2017). In other words, there will always be highly successful firms with weak or nonexistent dynamic capabilities. Although these types of inference problems may be difficult to completely avoid with any type of financial proxy, they can be alleviated to some extent by choosing correlates that are conceptually closer to dynamic capabilities. Revisiting the theoretical framework and especially the downstream correlates of dynamic capabilities, it becomes clear that there is at least one factor much more closely related to dynamic capabilities than firm performance-namely, resource change. In line with prominent theoretical arguments (Eisenhardt & Martin, 2000; Helfat, 2022; Protogerou et al., 2012), firms often use dynamic capabilities to modify their resource base or their environment, which only subsequently translates into firm performance variations. We therefore encourage future scholars to build on existing measures of changes in firms' resource allocation (e.g., Lovallo et al., 2020; Triana et al., 2014; Wowak et al., 2016) when attempting to approximate dynamic capabilities with accounting data.

Alternatively, archival researchers may turn to close antecedents of dynamic capabilities that is, conditions that are highly conducive to the development these capabilities. In this regard, theory points to a firm's prior paths and positions (Teece et al., 1997), which can be usefully captured through the firm's past experience (Pisano, 2002) and specialized organizational structures (Henderson & Cockburn, 1994) that support the focal dynamic capability dimension. For example, focusing on the context of strategic alliances, Schilke and Goerzen (2010) demonstrated that alliance experience and an organizational alliance function are correlated with alliance management capability, giving credence to the use of such measures as proxies of this capability (Hoang & Rothaermel, 2005; Kale et al., 2002; Zollo et al., 2002).

In summary, while accounting data can serve as useful information, it is crucial to select proxies that closely align with the dynamic capabilities dimension being measured. Future archival studies should continue to refine these proxies and reassess theoretical frameworks to further enhance the validity of their theoretical inferences.

Leverage recent advances in large language models. Moving beyond accounting data, we recommend dynamic capabilities scholars embrace text as data and use various forms of firm communication to infer dynamic capabilities (Helfat et al., 2023). The shift towards digital communication within and among firms presents novel opportunities for scholars to uncover aspects of dynamic capabilities that were previously difficult to capture. For instance, researchers can collect documents such as annual reports, press releases, earnings call transcripts, letters to shareholders, patents, and trade journals and then apply machine learning techniques to efficiently make sense of the vast amount of data (Mikolov et al., 2013). Particularly attractive candidates for studying a concept as complex and multidimensional as dynamic capabilities are word embedding models (e.g., Aceves & Evans, 2024; Li et al., 2021) and topic modeling (e.g., Hannigan et al., 2019; Kaplan & Vakili, 2015). Such methodologies can help to identify key concepts related to dynamic capabilities; perform thematic analysis to distinguish subdimensions; and study interrelationships between such subdimensions, their relationships to other constructs (e.g., firm performance outcomes), and their evolution over time. All of these advantages would allow researchers to gain deeper insights into the nature and functioning of dynamic capabilities.

*Experiments*. Experimental methods are well-known for their unique ability to establish causal effects and identify theoretical mechanisms (Croson et al., 2007; Levine et al., 2023), both of which are key objectives of dynamic capabilities research, yet the use of experiments has remained surprisingly rare in this field. Especially as the individual level of analysis—represented by notion of dynamic managerial capabilities—is gaining increasing traction in this line of research (Adner & Helfat, 2003; Helfat & Martin, 2015), we encourage greater usage of experimental methodology in both the lab and the field. While experiments were long considered outside the strategy toolbox, they have gained increasing acceptance in the community in recent decades (Bitektine et al., 2022; Di Stefano & Gutierrez, 2019), and several hands-on guidelines have made them considerably more accessible to strategy scholars (Bolinger et al., 2022; Levine et al., 2023).

As dynamic capabilities scholars join this movement, we again strongly recommend they build on the (scarce) existing research. For instance, scholars could adopt the design by Levine et al. (2017) to study the role of dynamic managerial capabilities in managerial decision making and adaptation in an economic market. Building on Cohen and Bacdayan's (1994) Target the Two card game, the experimental design devised by Wollersheim and Heimeriks (2016) allows for studying how individuals working together adjust their routines to environmental shocks—a key theme in dynamic capabilities research. Dynamic capabilities researchers could also build on the origami-folding paradigm used by Kane et al. (2005) to examine how factors such as social identity and knowledge quality influence the adaptability and evolution of organizational routines in dynamic environments. Another interesting approach would be to run experiments similar to Kurtmollaiev et al.'s (2018) to examine whether investments in training help managers develop dynamic capabilities. The latter study is particularly notable as one of the few field experiments on dynamic capabilities; we especially encourage more studies of this type due to their potential to offer practical insights and validate the effectiveness of dynamic capabilities in applied settings.

While experiments might be most apparently suitable to study the individual level of analysis, they can also shed light on organization-level issues in dynamic capabilities theorizing. Bolinger et al. (2022) discuss several useful approaches for firm-level experiments, including recruiting firms as participants or designs where participants are put in the role of stakeholders evaluating a firm. Moreover, Puranam (2018) and Levine et al. (2023) encourage experiments among groups of participants as proxies for organizations. An example of this type of research is the work by Piezunka and Schilke (2023, pp. 1930–1931), who employ a series of group experiments to examine the impact of organizational voting rules on firms' dynamic capabilities. This study also makes clear that aggregation from the individual to the organizational level of analysis often does not amount to a simple sum of individual actions, especially if individuals tend to act differently in group contexts compared to when they are alone.

In conclusion, embracing experimental methods holds immense promise for dynamic capabilities research. This approach can not only contribute substantial insights on the precise elements constituting dynamic capabilities but also illuminate these capabilities' origins and consequences.

Qualitative research. Qualitative research has made and will no doubt continue to make, important contributions to our understanding of dynamic capabilities. It excels in exploring complex and multifaceted phenomena while providing contextual richness (Denzin & Lincoln, 2011), making it well-suited for studying dynamic capabilities. In particular, qualitative methods can provide detailed accounts of the specific processes involved in dynamic capabilities, elucidate the roles of different levels of management, reveal the mechanisms through which dynamic capabilities impact firm outcomes, and describe these capabilities' interaction with the environment (Easterby-Smith et al., 2009). Moreover, qualitative methods are well-suited for capturing temporal dynamics (Langley, 1999), thus shedding light on how dynamic capabilities are built, refined, and leveraged over their lifecycle and in response to changing circumstances (Helfat & Peteraf, 2003). In-depth case studies can also highlight best practices and lessons learned, potentially offering useful practical insights for managers attempting to build dynamic capabilities. All of these contributions have the potential to add a layer of depth to dynamic capabilities scholarship that is unique to qualitative research designs. To foster the advancement of further qualitative research in the field, we offer the following two suggestions.

Explicitly justify your approach. With its 30-year history going back to Teece and Pisano (1994), dynamic capabilities research may not yet have reached full maturity (Helfat & Peteraf, 2009), but it is also no longer in its infancy. In our experience, some scholars, especially those with a quantitative background, hold the somewhat simplified view that qualitative research is most (or even exclusively) suited for studying new theories on which little knowledge exists. While qualitative methods are indeed powerful for exploring nascent areas, we believe they also offer substantial value in more established fields like dynamic capabilities. However, in such cases, it is the study author's responsibility to provide an argument for this position and connect it to the specific qualitative approach being adopted (Bettis et al., 2015). This often entails (1) a strong pitch regarding the lack of knowledge on a specific research question central to the dynamic capabilities framework and (2) a description why the research question calls for a specific qualitative approach, such as a single (Danneels, 2011) vs. multiple case study (Martin, 2011) or a decidedly inductive design (Salvato, 2009) vs. one that emphasizes theory elaboration (Schulze & Brusoni, 2022). This brings us to our next recommendation.

Consider abductive approaches. While qualitative scholarship has traditionally adopted a strongly inductive approach to develop new theory from the ground up (Glaser & Strauss, 1967), recent developments have highlighted the value of qualitative research that takes as its starting point the current state of theoretical knowledge. In this regard, we see great promise for abductive research that involves juxtaposing existing theories with fresh qualitative data (Krishnan et al., 2023; Suddaby, 2006). This approach allows researchers to seek out unexpected themes that diverge from existing theory and then pursue those themes further through new data-gathering rounds (Tavory & Timmermans, 2014). Despite their scarcity in dynamic capabilities scholarship, such studies hold immense potential for uncovering emergent themes and patterns that can significantly extend or revise current theories on dynamic capabilities.<sup>1</sup> One notable example of abductive dynamic capabilities research is the study by Wilden et al. (2019). The abductive approach led to the identification of key temporal qualities—frequency, timeliness, and speed—of dynamic capability deployment that may be crucial for firm growth. Furthermore, the method facilitated a deeper understanding of how these temporal qualities vary with a firm's market orientation.

Among other objectives, abductive inquiry may also help with theory pruning (Köhler & Cortina, 2021; Leavitt et al., 2010) to enhance precision, alleviate theoretical complexity and fragmentation, identify critical scope conditions, and refocus dynamic capabilities scholarship on its core propositions. Overall, continued emphasis on qualitative research will deepen our comprehension of dynamic capabilities and unearth valuable insights that quantitative methods alone might overlook.

*Mixed methods.* As Wellman et al. (2023, p. 1007) poetically note, "the siren song of a multimethod approach seems to be growing ever stronger"—and probably rightly so, because their empirical analysis finds that "multimethod research is more impactful than work that relies on only a single methodology." We believe this may be especially true for research on dynamic capabilities. Embracing multimethod research can enable dynamic capabilities scholars to triangulate findings, enhance the validity of their insights, and uncover novel patterns, ultimately enriching the field of dynamic capabilities. For example, scholars

Method	Recommendation	Selected references
General	Provide an adequate definition of dynamic capabilities	Eisenhardt and Martin (2000); Helfat et al. (2007); Teece et al. (1997)
	Zoom in on a specific dimension of dynamic capabilities	Helfat and Winter (2011); Winter (2003)
	Focus on one or a few sectors	Macher and Mowery (2009); Schilke (2014)
	Avoid contemporaneous designs	Danneels (2008); Stadler et al. (2013)
	Investigate more proximate performance outcomes	Ray et al. (2004); Schilke and Goerzen (2010)
	Probe mechanisms through which dynamic capabilities affect performance outcomes	Helfat (2022); Zahra et al. (2006)
Survey	Cross-validate your survey measures	Laaksonen and Peltoniemi (2018)
	Adopt established measures	Arend and Bromiley (2009)
Archival	Opt for close proxies	Henderson and Cockburn (1994); Lovallo et al. (2020)
	Leverage recent advances in large language models	Helfat et al. (2023)
Experiment	Examine dynamic managerial capabilities	Wollersheim and Heimeriks (2016)
	Study experimental organizations to shed light on firm-level dynamic capabilities	Piezunka and Schilke (2023)
Qualitative	Explicitly justify your approach	Danneels (2011); Salvato (2009)
	Consider abductive approaches	Wilden et al. (2019)
Mixed	Triangulate to enhance validity	Homburg et al. (2012)
	Explore mechanisms more deeply	Engelen et al. (forthcoming)

 Table 1

 Summary of methodological recommendations for empirical research on dynamic capabilities

can combine survey methods for capturing dynamic capabilities at one point in time with archival measures for outcomes or antecedents at another point in time, in an effort to avoid contemporaneous designs we previously highlighted as problematic. Moreover, scholars may combine quantitative with qualitative methods for a deeper exploration of the processes and mechanisms through which dynamic capabilities are developed and enacted. They could even endeavor to embark on a full-circle approach that combines the phases of (1) CONjecture, (2) Validation, and (3) EXplanation (Ody-Brasier & Vermeulen, 2020) with one another to develop, test, and elaborate dynamic capabilities theory (e.g., Engelen et al., forthcoming). In this and other ways, multimethod research offers a robust framework to address the inherent complexity and dynamic nature of this field, thereby overcoming some of its most persistent limitations.

# Conclusion

From its predominantly conceptual beginnings to its current empirical orientation, dynamic capabilities research has come a long way in tackling the complexity and organizational specificity that make these capabilities so challenging yet crucial to study. By enhancing construct validity and study design while embracing a range of empirical methods, researchers can better address these challenges and unlock deeper insights. Multimethod research in particular offers a robust framework for capturing the nuanced and dynamic nature of these capabilities, combining the strengths of both qualitative and quantitative approaches. As we look to the future, the rich array of empirical methodologies and the potential to leverage new data sources promise to further enrich the study of dynamic capabilities (see summary in Table 1), enhancing our theoretical understanding and providing actionable insights for practice. The future for empirical research in this field is indeed bright, with the potential for innovative approaches to continue to advance and refine existing frameworks.

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## Note

1. An abductive approach can also be used to analyze quantitative data (Graebner et al., 2023), including with respect to dynamic capabilities.

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