Microfoundations of Knowledge-Based Dynamic Capabilities

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Abstract

Although knowledge-based dynamic capabilities literature argues that dynamic capabilities foster knowledge management activities, it does not explain how such fostering occurs. To answer this question, this study focuses on dynamic managerial capabilities, applying microfoundational analysis at the individual level to improve understanding of organizational phenomena. It focuses on three dimensions of dynamic managerial capabilities: the managerial abilities of sensing, seizing, and transforming; the psychological abilities of intuition and emotion; and the managerial characteristics of human capital, social capital, and cognition. The study makes three contributions. First, it shows that the microfoundations of dynamic capabilities generate knowledge management activities. Second, it demonstrates the link between managers' psychological abilities (intuition, emotion) and knowledge management activities. Third, it describes the role of sensing, seizing, and transforming in knowledge management activities.

Keywords: Dynamic managerial capabilities; Knowledge management; Managerial abilities; Psychological abilities; Managerial characteristics

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Because ‘the services rendered by tangible resources depend on how they are combined and applied, which in turn is a function of a firm’s know-how (i.e., knowledge)’ (Alavi & Leidner, 2001, p. 108), and because knowledge is the origin of the quality of tangible resources, it represents a key strategic resource. Firms acquire, manipulate, and apply knowledge to produce superior performance (Denford & Chan, 2011; Nonaka & Takeuchi, 1995; Van Reijzen et al., 2015). Moreover, because knowledge-based resources are difficult to imitate and socially complex (Alavi & Leidner, 2001), they can sustain firms’ superior performance over the long term. The growth of the knowledge-based economy makes knowledge even more important, and organizations increasingly must acquire, integrate, and use new knowledge — that is, become knowledge-integrating (García-Pérez et al., 2020; Teece, 2000). According to Alavi and Leidner (2001, p. 109), knowledge is ‘a justified belief that increases an entity’s capacity for effective action’ that can be considered from several perspectives: a state of mind, object, process, condition for having access to information, or capability.

In this study, we consider knowledge as a process and seek to analyze knowledge management activities, or how companies create and share their knowledge, which is critical to gaining and sustaining competitive advantages (Denford, 2013; Grant, 1996; Nikitina & Lapina, 2019; Von Krogh et al., 2001). Knowledge management is the process of creating value (Liebowitz, 1999) by identifying, developing, and leveraging knowledge in organizations (Alavi & Leidner, 2001; Easterby-Smith & Prieto, 2008). Thus, it comprises processes and practices that enable organizations to obtain stocks of knowledge (Hsu & Sabherwal, 2012; Wang et al., 2016). In turn, the concept of knowledge-based dynamic capabilities (KBDCs) highlights the importance of knowledge in sustaining organizational performance in knowledge-based economies that experience unforeseen and innovative demands (Bindra et al., 2020); it is ‘the ability to acquire, generate, and combine knowledge resources to sense, explore, and address environment dynamics’ (Zheng et al., 2011, p. 1037). To achieve, obtain, and maintain performance, managers also must assume entrepreneurial roles and orchestrate resources to build and transfer both productive and customer knowledge (Teece, 2016). The concept of KBDC emphasizes that dynamic capabilities foster knowledge management activities such as knowledge generation, acquisition, and combination (Denford, 2013; Faccin et al., 2019; Zheng et al., 2011). However, due to the limited number of studies of the concept (Robertson et al., 2023), our...
understanding of precisely how dynamic capabilities foster knowledge management activities is restricted. We propose mobilizing the microfoundations approach to analyze such activities, reflecting the importance of individual actors for creating and managing knowledge (Denford, 2013; Nikitina & Lapina, 2019). Microfoundations analyses enable us to consider organizational phenomenon by focusing on individual actors and their interactions (Felin & Foss, 2005). Accordingly, we investigate dynamic managerial capabilities (Adner & Helfat, 2003; Helfat & Martin, 2015) as they relate to the role of managers/leaders in resource base transformations. By articulating both dynamic capabilities and knowledge management literature and formulating propositions, we highlight relationships between the microfoundations of dynamic capabilities and knowledge management activities, to support tests of them on a larger scale.

By theoretically examining the role of dynamic managerial capabilities in knowledge management activities, we also make three main contributions. First, we provide an analysis of KBDC by focusing on microfoundations. Second, we highlight the role of intuition and emotion in knowledge management. Third, we describe how the sensing, seizing, and transforming framework contributes to knowledge management. Thus, we begin with a review of KBDC and the microfoundations of dynamic capabilities. After we present a series of propositions about microfoundations that foster knowledge management activities, we detail the three contributions to prior literature.

Knowledge-based dynamic capabilities

Research on KBDC is still scarce, and relatively few studies have addressed the subject. According to Robertson et al. (2023), the KBDC concept represents a synthesis of the knowledge-based theory of the firm (Grant, 1996), with its roots in the resource-based view (RBV) (Barney, 1991) and dynamic capabilities theory (Teece et al., 1997). Thus, it combines the views of both theories and highlights the importance of renewing organizational knowledge in a dynamic way. More precisely, KBDC entails acquiring, generating, and combining knowledge resources to sense, explore, and address environmental dynamics (Zheng et al., 2011). Studies show that KBDC can help organizations perform in highly competitive environments (Khaksar et al., 2020) and obtain competitive advantages (Nielsen, 2006; Robertson et al., 2023) through successful innovation, as the result of their acquisition and integration of knowledge (Robertson et al., 2023).

Dynamic capabilities can foster change and renew and exploit firms’ knowledge-based resources (Nielsen, 2006). According to Denford (2013), the management of knowledge through dynamic capabilities also supports the development of new capabilities, depending on the nature of knowledge. If a dynamic capability focuses on externally sourced knowledge, it encourages the development of alliancing capabilities, but if it focuses on internal sources, it supports the development of R&D capabilities. Several studies also highlight the role of dynamic capabilities in knowledge management activities, though each study offers a different conceptualization of KBDC according to different knowledge management activities (see Table 1). Among these various conceptualizations, we focus on Zheng et al.’s (2011) typology of knowledge acquisition, generation, and combination, because it is relevant to our focus on the individual level. This typology illustrates knowledge acquisition and/or generation by individual actors and the combination of knowledge to produce organizational knowledge—that is, the transition from individual to organizational knowledge. All three activities are essential to creating new organizational knowledge and obtaining competitive advantage. According to Zheng et al. (2011), knowledge acquisition consists of identifying and acquiring useful external knowledge. Individual actors also can generate knowledge, by developing and refining activities and processes that facilitate the creation or generation of new knowledge, and by combining knowledge—that is, integrating and applying both internal and external knowledge. Han and Li’s (2015) typology, which mobilizes sensing and seizing of opportunities and transforming of resources, could be tautological with our framework, which uses managerial abilities related to sensing, seizing, and transforming.

According to Han and Li (2015), since the KBDC concept first emerged, authors have explored its typologies, dimensions, and relationship with network embeddedness, knowledge management, and performance. However, even as several studies have focused on the typologies of knowledge

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**Table 1.** Typologies of knowledge management activities (adapted from Robertson et al., 2023)

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<tr>
<th>Authors</th>
<th>Knowledge management activities</th>
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<tr>
<td>Nielsen (2006)</td>
<td>Knowledge creation, acquisition, capturing and articulating, assembly, sharing, integration and recombination, leverage, application, exploitation</td>
</tr>
<tr>
<td>Zheng et al. (2011)</td>
<td>Knowledge acquisition, generation, combination</td>
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<tr>
<td>Denford (2013)</td>
<td>Knowledge creating, integrating, reconfiguring, replicating, developing, assimilating, synthesizing, imitating</td>
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<tr>
<td>Monferrer et al. (2015)</td>
<td>Adaptation capability, absorption capability, innovation capability</td>
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<tr>
<td>Han and Li (2015)</td>
<td>Knowledge sensing capacity, knowledge seizing capacity, knowledge reconfiguring capacity</td>
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management activities, very few have investigated factors that generate these activities. For example, Bindra et al. (2020) cite intellectual capital, R&D intensity, absorptive capacity, and agility; other authors highlight the importance of dynamic capabilities by showing that they can generate knowledge management activities (Denford, 2013; Nielsen, 2006). None of these studies reveal the mechanisms through which dynamic capabilities foster such activities though.

Therefore, we focus on the microfoundations of dynamic capabilities, because understanding organizational phenomena requires understanding them at the individual level (Felin & Foss, 2005). Moreover, studies highlight the importance of managerial competence for creating and managing knowledge (Muhammed & Zaim, 2020; Nikitina & Lapina, 2019; Schiuma, 2009). Knowledge is created by individual actors (Denford, 2013; Nonaka, 1994) and can become embedded within organizations through organizational processes and routines (Denford, 2013). Therefore, if dynamic capabilities foster knowledge management and if knowledge primarily is created and held by individual actors, it seems relevant to study and understand the role of microfoundations of dynamic capabilities in knowledge management. In turn, it is necessary to consider dynamic managerial capabilities that focus on individual and managerial activities (Teece, 2016).

**Microfoundations of dynamic capabilities**

As indicated previously, to explain an organizational phenomenon, it is necessary to begin by understanding the individual actors who make up organizations (Felin & Foss, 2005). According to some authors, understanding collective phenomena such as routines or capabilities requires focusing on individual-level components such as choices, agency, characteristics, abilities, and cognition (Felin et al., 2012). Other authors argue that organizational phenomena are produced by intentional human action and interactions (Abell et al., 2008; Felin & Foss, 2009; Foss, 2009). Barney and Felin (2013) emphasize the importance of interactions, indicating that microfoundations are not only about individual actors or adding individual actors but also about aggregating individual actors to generate emergent outcomes as the result of the knowledge of the constituent parts. Focusing on the individual level also has certain virtues in terms of understanding organizational behaviour and performance (Barney and Felin, 2013); the latter is explained by the talent of certain organizational actors (Foss & Lindenberg, 2013). Felin et al. (2012) define microfoundations with a regression method, such that a baseline microfoundation for level N lies at level N – 1. By moving down one level of analysis, we can identify the N – 1 level of dynamic capabilities. Adner and Helfat (2003) also suggest the notion of dynamic managerial capability, which they define as ‘the capabilities with which managers build, integrate, and reconfigure organizational resources and competences’ (p. 1012). A dynamic managerial capability view is a specific perspective within dynamic capability theory literature; it emphasizes the role of managers/leaders in changing a firm’s resource base, in line with the environment (Adner & Helfat, 2003; Augier & Teece, 2009; King & Tucci, 2002; Zahra et al., 2006). Individual actors constitute microfoundations of capacities in two ways, through their (1) managerial characteristics and abilities and (2) psychological and behavioural characteristics (Felin et al., 2012). More precisely, dynamic managerial capabilities are characterized by three dimensions: managerial abilities, psychological abilities, and managerial characteristics. Managerial abilities refer to asset orchestration, that is, the sensing of new opportunities, the seizing of such opportunities, and the transforming of resource bases (Fainshmidt et al., 2017; Teece, 2007a). Even if some elements of dynamic capabilities are embedded in organizational activities, the ability to assess and prescribe changes in the resource base is a managerial skill. Dynamic capabilities refer to creative managerial and entrepreneurial activities that are strategic and nonroutine, even though there may be underlying principles that guide choices (Teece, 2012). Schilke et al. (2018) give a concrete example related to the development of new products, indicating that though new product development often takes place within a stable framework of recurring organizational processes, this process involves non-routine activities that refer to the exploration of new ideas by individual actors. Furthermore, dynamic managerial capabilities are composed of psychological abilities such as intuition and emotion (Hodgkinson & Healey, 2011; Huy & Zott, 2019). These abilities can improve the implementation of managerial abilities through better recognition of valuable knowledge and faster decision making (Ambrosini & Altintas, 2019). Finally, authors highlight individual-level antecedents such as the managerial characteristics of human capital, social capital, and cognition (Adner & Helfat, 2003; Helfat & Peteraf, 2015; Kor & Mesko, 2013). Human capital relates to the experience of managers, and social capital results from relationships and connections (Kor & Mesko, 2013). Managerial cognition refers to the belief systems and mental models of managers (Prahalad & Bettis, 1986; Walsh 1995).

In summary, KBDCs are dynamic capabilities that foster knowledge management activities, which in turn foster knowledge acquisition, generation, and combination. In this paper, we seek to understand how dynamic capabilities foster knowledge management activities. To do so, we focus on dynamic managerial capabilities at the individual level; specifically, we focus on three dimensions of dynamic managerial capabilities (see Figure 1): managerial abilities, psychological abilities, and managerial characteristics. We analyze how these three dimensions of dynamic managerial capabilities foster knowledge generation, acquisition, and combination.
Microfoundations of dynamic capabilities in knowledge management activities

We next integrate our synthesis of literature and suggest how managerial (sensing, seizing, and transforming) and psychological (emotion and intuition) abilities and managerial characteristics (cognition, human capital, social capital) foster knowledge management activities (see Table 2).

Role of managerial and psychological abilities in knowledge management activities

The concept of dynamic managerial capability emphasizes the entrepreneurial perspective of dynamic capabilities. Beyond managers’ operational activities such as control, supervision, and administration to ensure the coordination of activities, dynamic capabilities theory relates to managers’ strategic and entrepreneurial functions (Teece, 2007b), which are essential in turbulent environments. From this perspective, managers’ roles are entrepreneurial (Augier & Teece, 2008; Teece, 2007a,b, 2016), and firms that have strong dynamic capabilities are those that are intensely entrepreneurial. Such companies not only adapt to their environments but also adopt proactive behaviours to influence the environments they operate in through innovation and collaboration with other firms, entities, or institutions (Teece, 2007a). In this sense, the fundamental strategic function of managers is to orchestrate organizational assets (Augier & Teece, 2008; Teece 2007a).

According to Teece (2007a), such orchestration requires three managerial abilities: (1) sensing new opportunities by scanning the environment to collect information (Kump et al., 2019), (2) seizing these opportunities through the exploitation of market opportunities by bridging external and internal information (Kump et al., 2019), and (3) transforming resource bases, characterized by change. According to Kump et al. (2019), new information represents potential change; some studies indicate that flow of information allows the creation of new knowledge (Nonaka, 1994). The three abilities generate information gathering (Teece, 2007a) and thereby foster knowledge management activities. Furthermore, psychological abilities such as emotion and intuition (Hodgkinson & Healey, 2011, Huy & Zott, 2019) can improve managerial abilities. Because managerial abilities allow information gathering and knowledge creation and psychological abilities improve managerial abilities, we argue:

**Proposition 1**: Managerial and psychological abilities foster knowledge management activities.

**Sensing opportunities**: Managerial sensing capacity is ‘the capacity of an individual manager to identify opportunities for organizational innovation’ (Roberts et al., 2016, p. 48). Two access factors influence a manager’s ability to sense opportunities (Teece, 2007a), namely, access to existing or to new information. Having access to information requires scanning activities; firms survey new technologies and markets to sense opportunities for technological change and customers’ latent demands. Other information access mechanisms include information systems (Roberts et al., 2016), though information alone is not enough to sense opportunities that involve creating, learning, and interpreting activities; the identification of new opportunities also requires managers’ cognitive and creative abilities (Teece, 2007a). Cognitive ability refers to ‘managerial ability in searching, encoding, structuring, and recalling salient information that is used proactively for influencing firms’ strategic directions’ (Pandza & Thorpe, 2009, p. 122), and creative ability consists of searching for opportunities and integration of the knowledge necessary to explore the recognized opportunities (Pandza & Thorpe, 2009; Teece, 2007a). Two cognitive characteristics facilitate the identification of opportunities: perception and attention (Helfat & Peteraf, 2015). Perception is the construction of useful and meaningful information about a specific environment; it promotes the identification of opportunities through the recognition of emerging patterns in the environment.
environment and interpretation of data relating to these patterns. Attention facilitates analyses of the environment by focusing on a relevant stimulus.

Ultimately, when managers' sensing capacities are high, they can continuously and reliably acquire and interpret strategically relevant information in their environments (Kump et al., 2019). Because information is defined as ‘that commodity capable of yielding knowledge, and what information a signal carries is what we can learn from it’ (Nonaka, 1994, p. 15), sensing opportunities can generate knowledge through strategic gathering and interpretation of relevant information that emanates from the environment. According to Nonaka (1994), knowledge is created and organized by the flow of information and is anchored to the commitment and beliefs of its holders; it originates from and is applied in the minds of knowers (Baskerville & Dulipovici, 2006).

Moreover, knowledge resides in the living mind; a person must identify, interpret, and internalize knowledge (Baskerville & Dulipovici, 2006). Therefore, sensing capacity is the origin of individuals’ capacities to absorb, which Lowik et al. (2017) cite as a key microfoundational factor of organizations’ capacities to absorb. Such capacities refer to the identification and acquisition of external knowledge and its integration into internal knowledge through transformation and exploitation (Zahra & George, 2002). Therefore, we argue that sensing capacity can generate new knowledge (Nielsen, 2006; Zheng et al., 2011) through information gathering achieved by scanning activities and information systems, and this information can be

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<th>Table 2. Mechanisms that underlie knowledge management activities</th>
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<td>Managerial and psychological abilities</td>
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<td>Knowledge combination</td>
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transformed into knowledge as a result of interpretation efforts by managers, achieved through their cognitive and creative abilities:

**Proposition 1a:** Managerial capacity to sense opportunity fosters knowledge generation through cognitive and creative abilities.

According to Hodgkinson and Healey (2011), the ability to update mental representations (i.e., mental schemas and cognitive maps) in response to changes in the external environment is essential for identifying opportunities. Managers must be able to incorporate intuition into the process of identifying opportunities. In some strategic situations, they must make decisions about assessing emerging opportunities or threats relatively quickly, such that data recognition and interpretation patterns may prove insufficient, whereas intuition may provide strong, implicit knowledge.

In prior literature, authors defined intuition in different ways. According to Jung (1933, cited in Dane & Pratt, 2007), intuition is a psychological function that transmits perceptions unconsciously. It is not an irrational process but is based on a deep understanding of situations (Khatri & Ng, 2000). Intuition is a complex phenomenon that taps into the store of knowledge found in the subconscious and is rooted in experience (Khatri & Ng, 2000). It relies on an innate ability to synthesize information quickly and efficiently—a ability that can be hampered by more formalized procedures (Dane & Pratt, 2007).

According to Epstein et al. (1996), when managers include intuition in decision making, the process is automatic, preconscious, holistic, associative, mainly nonverbal, and closely linked to affect. Generated by emotional reactions, intuition induces speed in situation assessment (Biswas, 2009), mainly in complex situations (Schul & Mayo, 2003), leading managers to resort to heuristic processing (Epstein et al., 1996). However, Hodgkinson and Healey (2011) point out that relying on intuition is not always right; its use is appropriate only when there is sufficient environmental regularity and recognition of the signs that signal using intuition is the way forward. Because having intuitive ability in complex situations can lead managers to acquire the most relevant knowledge more rapidly, we argue:

**Proposition 1b:** Managerial sensing capacity that includes intuition fosters knowledge generation in complex situations through the rapid acquisition of relevant knowledge.

**Seizing opportunities:** According to Teece (2007a), seizing opportunities requires making investments in development and commercialization activity; there are multiple choices in terms of investment, especially when several innovations appear on the markets. The emergence of dominant models then narrows the scope of strategic choices. Nevertheless, to stay ahead of competitors, managers must be the first to identify the most valuable models; they can do so by acquiring valuable knowledge, because knowledge is a strategic resource (Grant, 1996) that reduces environmental complexity and helps organizations perform in highly competitive environments (Khaksar et al., 2020). Knowledge acquisition represents a flow of knowledge from external stocks of knowledge into organizations (Nielsen, 2006). Acquiring valuable knowledge can be fostered by having a strong capacity for seizing (Kump et al., 2019), characterized by the formulation of responses and implementation of courses of action (Peteraf & Maritan, 2007) to transform opportunities into concrete business activities (Kump et al., 2019). This process involves problem solving, or finding ways around obstacles to achieve goals, and reasoning, which refers to evaluating information, arguments, and beliefs to draw conclusions (Helfat & Peteraf, 2015). The evaluation of information can reveal if it is valuable and can be transformed into concrete business opportunities (Kump et al., 2019; Teece, 2007a).

This process may be fostered by controlled mental processing that is associated with fluid intelligence and rational thinking. Fluid intelligence is characterized by short-term memory and involves the ability to reason without relying heavily on previously learned knowledge or procedure’ (Helfat & Martin, 2015, p. 840). In contrast, rational thinking describes a person’s ‘tendencies to think extensively about a problem before responding … [and] future consequences before taking action’ (Helfat & Martin, 2015, p. 840). Controlled mental processing may regulate thinking and avoid automatic responses; by avoiding cognitive biases, it can foster knowledge acquisition, especially of knowledge that is useful to organizations (Nielsen, 2006; Zheng et al., 2011). Accordingly, we argue:

**Proposition 1c:** Managerial capacity to seize opportunities fosters knowledge acquisition through controlled mental processing.

According to Nielsen (2006), knowledge acquisition is a process that moves from the sender to the receiver; but the receiver can lack a sufficient level of capacity to absorb, which can inhibit the acquisition process; absorption of unrelated knowledge requires more effort when absorptive capacity is lacking. This effort may be favoured by emotional commitment. As Hodgkinson and Healey (2011) argue, seizing opportunities can be enhanced by emotional commitment. Analytical processes or internet technology (IT) mechanisms might prevent organizations from making innovative and risky investment choices, but managers’ emotions can increase such choices and enable them to seize new opportunities. However, if emotional judgment dominates the rational choice process, negative feelings can cause managers to miss opportunities. Therefore, it is important for managers to regulate their emotions (Huy & Zott, 2019) rather than suppress them, so that they can continue to seize opportunities (Hodgkinson & Healey, 2011). Because emotion increases
seizing capacity and seizing capacity is characterized by recognizing and exploiting valuable knowledge, we argue that seizing capacity that includes emotion can foster the absorption of knowledge by facilitating the recognition of knowledge that is valuable:

**Proposition 1d:** Managerial seizing capacity, which includes emotion, fosters knowledge acquisition by improving recognition and exploitation of valuable knowledge.

**Transforming the resource base:** The several modes of resource transformation include integration, reconfiguration, acquisition, and resource release (Eisenhardt & Martin, 2000). According to Teece (2007a), transformation capacity can generate the recombination and reconfiguration of assets and organizational structures as enterprises grow and markets and technologies change. Simon et al. (2007) indicate that resource transformation is characterized by a three-phase process: structuring a resource portfolio, bundling resources to build capabilities, and leveraging capabilities to exploit market opportunities. While these authors focus on resources and capabilities, several other authors highlight the importance of knowledge to organizational transformation; Bindra et al. (2020) emphasize the importance of the effective use of knowledge to strengthen capabilities, and Teece (2007a) highlights the importance of knowledge to transformation capabilities by arguing that mechanisms linked to the creation of learning, knowledge sharing, and knowledge integration are critical to transformation capacity. Other authors argue that resource transformation also generates knowledge transfer. For example, Eisenhardt and Martin (2000, p. 1107) note that ‘transfer processes including routines for replication and brokering are used by managers to copy, transfer, and recombine resources, especially knowledge-based ones, within the firm’. Similarly, Kump et al. (2019) highlight that transformation is characterized by strategic renewal, which requires new knowledge to be integrated into entire organizations, insofar as all members of the organization are concerned with the transformation.

All these studies converge to indicate that transformation can promote new knowledge. Into this context, Helfat and Peteraf (2015) introduce social cognitive skills that underpin the transformation of the resource base. These skills can be used to perceive, assist, remember, think, and give meaning. They also help develop social skills that are essential to understanding organizational members’ viewpoints. These skills offer the opportunity to influence staff behaviour and obtain their buy-in during the transformation of resources. However, to do so, managers must implement ‘decided renewal activities by assigning responsibilities, allocating resources, and ensuring that the workforce possesses the newly required knowledge’ (Kump et al., 2019, p. 5). Transformation capacity can foster knowledge combination, in that it integrates and applies internal and external knowledge and uses it within firms’ value-creating activities (Nielsen, 2006; Zheng et al., 2011). Because transformation capacity can generate new knowledge for organizations overall, we argue:

**Proposition 1g:** Managerial capacity to transform resources fosters knowledge combination through social cognitive skills.

According to Nielsen (2006, p. 64), knowledge combination is ‘the deliberate activities in the firm aimed at locating, evaluating, selecting, and activating the knowledge resources necessary for developing and delivering a new product, service or developing an organizational capability’. That is, knowledge combination requires the involvement of all organizational members, and such involvement may be favoured by the psychological abilities of managers. Hodgkinson and Healey (2011) take a psychological stance to highlight the role of managerial skills in reducing employees’ fear and anxiety that is triggered by the launch of new strategic directions; managers must be able to build employees’ emotional commitment to new strategies. Huy and Zott (2019) indicate that regulating stakeholders’ emotions, maintaining open dialogue, and showing consideration and support of key stakeholders can create benefits such as greater stakeholder/leader buy-in of change and legitimacy, thereby allowing greater involvement of organizational members in knowledge integration. When managerial transformation capacity includes the ability to regulate stakeholders’ emotions, it may be easier to integrate knowledge within their organizations:

**Proposition 1f:** Managerial capacity to transform resources that includes the ability to regulate stakeholders’ emotions fosters knowledge combination by improving knowledge integration.

**Role of managerial characteristics in knowledge management activities**

As previously argued, managerial and psychological abilities can foster knowledge management activities. However, these abilities are fostered by managerial characteristics such as human capital, social capital, and managerial cognition (Adner & Helfat, 2003). Thus, it is crucial to understand which characteristics may favour knowledge management activities. Regarding managerial human capital, authors argue that managerial experiences in specific contexts allow managers to acquire and develop specialized knowledge and skills (Kor & Mesko, 2013), and managerial social capital helps them obtain critical information for decision making from network ties (Adner & Helfat,
Managerial characteristics foster knowledge

Managerial cognition can foster knowledge

Managerial perceptions of situations depend on combinations of managers’ limited fields of vision, selective perceptions, and interpretations filtered by their cognitive bases and value systems (Adner & Helfat, 2003). Some managers are better than others at interpreting situations correctly and acting accordingly. As previously discussed, managerial beliefs and mental models influence organizational variables (Adner & Helfat, 2003). For example, Hambrick and Mason (1984) indicate that managerial cognition affects how decisions are made. Both Prahalad and Bettis (1986) and Bettis and Prahalad (1995) argue that managerial cognition forms the dominant logic within an organization. Thus, we argue that managers can influence information processing at the organizational level. If their information processing manners allow them to understand their environments correctly and act accordingly, managerial cognition can generate sensing and seizing of opportunities, transforming of resource bases, and knowledge management activities. If managers transpose their skills about information processing to the organizational level, the organization can correctly process information and create organizational knowledge, given that organizations are information processing and communication systems. Therefore, we argue that managerial cognition influences knowledge management through the creation of organizational knowledge if managers share their information processing skills to the organizational level.

Managerial social capital: Formal and informal network ties favour managers’ and leaders’ abilities to access resources through relationships and connections (Kor & Mesko, 2013). Managerial social capital emerges from the transposition of individual knowledge at the organizational level. If managers can effectively manage their networks, they can access valuable information and resources. However, managers must be able to integrate and apply this information effectively. Managers with strong social capital can leverage their networks to gain insights and knowledge that may not be accessible to others. This can provide a competitive advantage, as managers can make more informed decisions and act more effectively.

Managerial cognition: This characteristic refers to managerial beliefs and mental models that serve as a basis for decision making (Adner & Helfat, 2003; Walsh, 1995). Usually, managerial beliefs are based on historical experience (Vecchiato, 2017) and mental models that represent the stored knowledge a person has acquired over time (Maitland & Sammartino, 2015). Mental models act as both knowledge and filters for taking in new information; they identify the important elements in situations and show how they fit together. However, because of bounded rationality, managers may not consider all information (Adner & Helfat, 2003); their mental models may be based on imperfect representations (Vecchiato, 2017). Thus, they may tend to simplify complexity and uncertainty and assign information cues to a framework for understanding and action (Maitland & Sammartino, 2015). Mental models influence how managers interpret external changes and how they seek to adapt their organizations to these changes (Vecchiato, 2017). Managers’ responses may vary because each manager has a unique mental model (Maitland & Sammartino, 2015). In turn, managerial beliefs and mental models affect firm-level strategic choices, growth, and performance (Maitland & Sammartino, 2015). Managerial cognition must allow for strategy adjustments, according to changes in external environments (Adner & Helfat, 2003).

However, not all managers have the same cognitive frame. Managerial perceptions of situations depend on combinations of managers’ limited fields of vision, selective perceptions, and interpretations filtered by their cognitive bases and value systems (Adner & Helfat, 2003). Some managers are better than others at interpreting situations correctly and acting accordingly. As previously discussed, managerial beliefs and mental models influence organizational variables (Adner & Helfat, 2003). For example, Hambrick and Mason (1984) indicate that managerial cognition affects how decisions are made. Both Prahalad and Bettis (1986) and Bettis and Prahalad (1995) argue that managerial cognition forms the dominant logic within an organization. Thus, we argue that managers can influence information processing at the organizational level. If their information processing manners allow them to understand their environments correctly and act accordingly, managerial cognition can generate sensing and seizing of opportunities, transforming of resource bases, and knowledge management activities. If managers transpose their skills about information processing to the organizational level, the organization can correctly process information and create organizational knowledge, given that organizations are information processing and communication systems. Therefore, we argue that managerial cognition influences knowledge management through the creation of organizational knowledge if managers share their information processing skills to the organizational level.

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Managerial cognition: This characteristic refers to managerial beliefs and mental models that serve as a basis for decision making (Adner & Helfat, 2003; Walsh, 1995). Usually, managerial beliefs are based on historical experience (Vecchiato, 2017) and mental models that represent the stored knowledge a person has acquired over time (Maitland & Sammartino, 2015). Mental models act as both knowledge and filters for taking in new information; they identify the important elements in situations and show how they fit together. However, because of bounded rationality, managers may not consider all information (Adner & Helfat, 2003); their mental models may be based on imperfect representations (Vecchiato, 2017). Thus, they may tend to simplify complexity and uncertainty and assign information cues to a framework for understanding and action (Maitland & Sammartino, 2015). Mental models influence how managers interpret external changes and how they seek to adapt their organizations to these changes (Vecchiato, 2017). Managers’ responses may vary because each manager has a unique mental model (Maitland & Sammartino, 2015). In turn, managerial beliefs and mental models affect firm-level strategic choices, growth, and performance (Maitland & Sammartino, 2015). Managerial cognition must allow for strategy adjustments, according to changes in external environments (Adner & Helfat, 2003).

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Mesko, 2013). They give managers/leaders some degree of influence, control, and power (Adner & Helfat, 2003). According to Adler and Kwon (2002), social capital can be of two types: internal and external. While internal social capital confers influence and allows managers to obtain information from different levels of the organizations (Adner & Helfat, 2003), external social capital provides information about the practices of different firms (Gelatkanycz & Hambrick, 1997). Therefore, managers’ network ties help them acquire essential resources and provide them with critical information for decision making (Kor & Mesko, 2013). Managers who have access to this information can create new knowledge and integrate it at the organizational level; this integration of knowledge favours relational capital through internal relationships between managers and employees. Managers with strong external ties also can share their networks with all organizational members. Network sharing can favour relational capital by encouraging external relationships between employees and stakeholders.

Relational capital refers to the relationships between organizations and their external stakeholders, such as customers, suppliers (Huang & Huang, 2020), competitors, investors, or partners (Cabrilo & Dahms, 2018). It creates organizational value by connecting intellectual resources with external stakehold­ers (Wang et al., 2016). Albertini and Berger-Remy (2019) argue that stronger relationships allow for continuous improvement in new product development through knowledge sharing among suppliers, customers, and firms; they maintain that stronger relationships with customers can provide competitive advantages because external relationships with stakeholders provide access to new information that allows them to sense and seize new opportunities. Seizing opportunities requires acquiring or developing new resources, including knowledge (Teece, 2007a). Therefore, we argue that strong managerial social capital can increase organizational relational capital (Wang et al., 2016) and knowledge combination if managers share their social capital with their organizations:

**Proposition 2b:** Managerial social capital can foster knowledge combination if managers share their social capital with their organizations.

**Managerial human capital:** This characteristic relates to the skills and knowledge managers develop during their education or through their personal and professional experiences (Kor & Mesko, 2013). Managers’ prior work experiences allow them to acquire knowledge, develop expertise, and perfect their abilities (Adner & Helfat, 2003). Managerial human capital is an important factor for all the three phases of managerial dynamic capabilities (sensing, seizing, and transforming). However, heterogeneity exists among managerial skills (Helfat & Peteraf, 2015). Adner and Helfat (2003) argue that managers differ according to both their mixture of skills and level of ability for each skill. Not all managers have the same capacity to sense and seize opportunities and transform resource bases. Hambrick and Mason (1984) emphasize the importance of other career experiences for developing new perspectives; new perspectives are crucial for creating new knowledge, so managers who have spent their entire careers in single firms may have relatively limited perspectives.

The transformation of resource bases also requires change implementation (Helfat & Winter, 2011), such that managers must make their knowledge accessible throughout their organizations, including sharing it with lower-level employees. They can do so through various dimensions of structural capital, such as organizational processes, information systems, organizational culture, structure, routines, and administrative systems; such organizational support is needed to transform individual knowledge to the organizational level (Cabrilo & Dahms, 2018). Therefore, we argue that managerial human capital may influence knowledge management, as a result of organization-wide integration of knowledge that generates new competencies, knowledge, and skills, if knowledge is made accessible to all organizational members:

**Proposition 2c:** Managerial human capital can foster knowledge combination if managers make their knowledge accessible to their organizations.

**Discussion and conclusion**

Our research emphasizes the role of dynamic managerial capability in knowledge management activities (see Figure 2). Our propositions issue three contributions to knowledge-based dynamic capabilities literature. First, they describe the role of the microfoundations of dynamic capabilities in knowledge management activities, that is, the microfoundations of KBDC. Second, they emphasize the role of intuition and emotion in knowledge management activities. Third, they add to literature in knowledge management by revealing the asset orchestration managerial capacities of sensing and seizing of opportunities and transforming of resource bases.

**Theoretical implications**

**Role of dynamic capability microfoundations in knowledge management activities**

Our first contribution is a microfoundational analysis of the relationship between dynamic capabilities and knowledge management. As indicated previously, KBDC literature is poorly
Dynamic managerial capabilities

Knowledge management activities

- Knowledge generation, acquisition, combination
- Cognitive and creative abilities, controlled mental processing, social cognitive skills
- Sensing, seizing, transforming
- Managerial abilities

Dynamic managerial capabilities

Managerial characteristics
- Managerial cognition, human capital, social capital

Psychological abilities
- Intuition, emotion

Managerial abilities
- Cognitive and creative abilities, controlled mental processing, social cognitive skills
- Sensing, seizing, transforming

Psychological abilities
- Intuition, emotion

Managerial characteristics
- Managerial cognition, human capital, social capital

Figure 2. Microfoundations of knowledge-based dynamic capabilities.

developed; the few studies of the topic indicate only that dy-
namic capabilities generate knowledge management activities
such as generation, acquisition, combination, and use (Denford,
2013; Nielsen, 2006; Zheng et al., 2011). We contribute by
highlighting the underlying mechanisms that allow dynamic ca-
pabilities to generate knowledge management activities. We
study and understand how the microfoundations of dynamic
capabilities foster knowledge management activities. Because
authors of microfoundations literature recognize the impor-
tance of understanding individual characteristics and be-
haviours in explaining organizational phenomena (Felin & Foss,
2005), we focus on dynamic managerial capabilities and specif-
ically on the three managerial abilities of sensing and seizing of
opportunities and transforming of resource bases (Teece,
2007a). Our literature analysis identifies the underlying mech-
nisms that emanate from each managerial ability. It shows that
sensing opportunities fosters knowledge management as a re-
sult of information gathering and interpretation activities that
are fostered by cognitive and creative abilities. The seizing of
opportunities also enables knowledge management by identi-
fying information/knowledge that is valuable. This ability is fos-
tered by controlled mental processing. Finally, it shows that the
transformation of resource bases fosters knowledge manage-
ment through knowledge combination and the involvement of
all employees, as a result of the social and cognitive skills of
managers.

Microfoundations literature also indicates that collective
concepts emanate from the individual level and are rooted in delibe-
rate and intentional action (Felin & Foss, 2005). Moreover,
it assumes that individual actors and their interactions are es-
sential for understanding organizations and systems (Barney &
Felin, 2013). This approach is in line with studies that indicate
that knowledge is created and held by individual actors
(Denford, 2013; Nonaka, 1994) and can become embedded
within organizations through organizational processes and
routines (Denford, 2013). Accordingly, we show that the three
managerial characteristics of cognition, human capital, and so-
cial capital can foster knowledge management if managers
share their individual characteristics with their organizations.

By focusing on microfoundations, we can perceive the
passage from the individual level to the organizational level.
We show that dynamic managerial capabilities influence
knowledge management through the transformation of in-
dividual knowledge into organizational knowledge. We use
upper echelon theory (Hambrick, 2007; Hambrick & Mason,
1984) and the dominant logic perspective (Bettis & Prahalad,
1995; Kor & Mesko, 2013; Prahalad & Bettis, 1986) to illus-
trate the transposition of knowledge at the organiza-
tional level. According to upper echelon theory, organiza-
tional outcomes can be predicted by managerial back-
grounds, including managers’ cognitive bases, if manage-
ers have sufficient power to transpose their values and
cognitive bases at the organizational level (Hambrick & Mason,
1984). In line with this theory, we argue that mana-
gerial social capital can foster knowledge management if
managers share their networks with organizational mem-
bers. Relationships with stakeholders can create new orga-
nizational knowledge.
We also argue that managerial cognition can foster knowledge management if managers transpose their information processing skills to the organizational level. Therefore, we highlight the importance of interactions among individual actors (Barney & Felin, 2013). Through good information processing, organizations can generate new knowledge. Managerial human capital can influence knowledge management when managers render their knowledge accessible to their entire organizations as the result of various dimensions of structural capital, such as organizational processes, information systems, organizational culture, structure, routines, and administrative systems (Cabrilo & Dahms, 2018). While prior literature indicates that organizational phenomena such as routines and capabilities can be understood according to individual-level components such as choices, agency, and cognition (Felin et al., 2012), our study contributes by emphasizing the role of the microfoundations of dynamic capabilities in organizational knowledge creation.

Role of intuition and emotion in knowledge management activities

Our second contribution relies on the relationship between managers’ psychological abilities and knowledge management activities. While a microfoundations perspective highlights that understanding individual actors’ behavioural and psychological foundations is crucial to understanding organizational phenomena (Felin et al., 2012), the KBDC literature stream – as well as dynamic capabilities literature overall – insufficiently studies the psychological dimension. Moreover, microfoundations literature largely neglects the psychological perspective, focusing mainly on cognition (Felin et al., 2012; Gavetti, 2005). Our study fills this gap by explicating how intuition and emotion improve knowledge management activities. We show that intuition improves sensing capacity (Hodgkinson & Healey, 2011) to rapidly generate relevant knowledge, and emotion facilitates seizing capacity (Hodgkinson & Healey, 2011; Huy & Zott, 2019) to improve the recognition and exploitation of valuable knowledge. We also show that emotional commitment that regulates stakeholders’ emotions (Huy & Zott, 2019) improves the integration of knowledge into organizations. Organizations have an interest in integrating members who have analytical reasoning modes and those who follow intuitive reasoning modes into decision-making teams, to identify opportunities and facilitate decision making (Hodgkinson & Healey, 2011). Our study corroborates this assertion by adding that intuition and emotion enable the acquisition and integration of relevant and valuable knowledge in a manner that favours rapid, efficient decision making.

Integration of the sensing, seizing, and transforming framework in knowledge-based dynamic capabilities

Our third contribution relates to integration of the sensing, seizing, and transforming framework into KBDC literature. While Schiuma (2009) emphasizes the role of some managerial competencies, such as knowledge asset identification, mapping, and flow, we contribute by illustrating the role of managerial abilities that are linked to sensing, seizing, and transforming. Prior KBDC literature scarcely uses these capacities, with the exception of Han and Li (2015), who highlight that sensing, seizing, and transforming capacities form KBDC. Nevertheless, these authors do not explain how these abilities foster KBDC. Our research clarifies how sensing and seizing opportunities and transforming of resource bases (Teece, 2007a) fosters knowledge management activities. Beyond the general argument that dynamic capabilities enable knowledge management activities (Denford, 2013; Nielsen, 2006; Zheng et al., 2011), we provide a more microlevel analysis and identify which managerial ability, linked to asset orchestration, fosters which knowledge management activities. Sensing capacity enables knowledge generation through information gathering (Kump et al., 2019), because information is capable of yielding knowledge (Nonaka, 1994). We also show that seizing opportunities allows knowledge acquisition because it requires the recognition of valuable knowledge and transforming it into concrete business opportunities (Kump et al., 2019). Finally, transforming capacity that enables strategic change favours knowledge combination; this capacity requires knowledge management activities (Eisenhardt & Martin, 2000; Kump et al., 2019; Teece, 2007a,b) such as knowledge creation (Teece, 2007a,b) to implement strategic changes. Managers need to integrate and share knowledge with everyone in their organization associated with the transformation.

Managerial implications

Our study also contributes to managerial practice. First, we highlight the importance of knowledge in the current economy; to obtain or maintain performance, it is necessary to develop KBDC to reconfigure firms’ knowledge-based resources according to the evolution of the environment. We emphasize the importance of dynamic managerial capabilities to develop knowledge management activities. We also argue that dynamic managerial capabilities comprise three dimensions: managerial abilities, psychological abilities, and managerial characteristics. In light of the importance of these three dimensions to knowledge management, we suggest it is essential for executives to learn how to develop and harness each dimension so they can mobilize all of them, as needed and required by their environments. Regarding managerial abilities, we highlight the importance of interpreting
which information creates new knowledge. Firms can develop tools for information gathering, such as effective information systems. We also emphasize the role of psychological abilities in improving managerial abilities, suggesting that executives should use their intuition and emotions to sense and seize opportunities. Finally, we emphasize the role of managerial characteristics and the need for managers to share their experience, knowledge, social capital, and information processing skills with their organizations. From this perspective, firms can develop organizational processes such as collective discussions, debriefing sessions, and training sessions to transfer individual knowledge-based resources to the organizational level.

Research avenues

Our research offers interesting ideas for empirical studies of the propositions. Empirical studies of the link between dynamic managerial capabilities and knowledge management are lacking, and studies that seek to investigate this link are welcomed. These studies could be qualitative or quantitative; qualitative research would allow deep analyses of the propositions, such as with a case study design, whereas quantitative research could test the propositions on a larger scale to identify whether the relationship between dynamic managerial capabilities and knowledge management activities remains valid for organizations with different characteristics. In a continuation of this study, research efforts also could attempt to deepen the relationship between psychological dimensions (intuition, emotion) and knowledge management activities. In particular, researchers could analyze the relationship between dynamic managerial capability and intellectual capital. Knowledge management and intellectual capital are similar: knowledge management and knowledge management systems: Conceptual foundations and research issues. MIS Quarterly, 25(1), 107–136. doi: 10.2307/3250961


