CONFIRMATION BIAS: A BOUNDARY CONDITION FOR DYNAMIC MANAGERIAL CAPABILITIES IN THE CONTEXT OF STRATEGIC CHANGE

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INTRODUCTION

The rapid pace of change in business environments has compelled managers to create, extend, modify, and capture sustainable competitive advantage under changing conditions. This phenomenon is encapsulated by the concept of dynamic managerial capabilities, which have become a central topic in management research in recent years (see Helfat & Martin, 2015). Adner and Helfat (2003, p. 1012) defined dynamic managerial capabilities as "the capabilities with which managers build, integrate, and reconfigure organizational resources and competences" in order to explain the relationship between managerial decisions and actions on the one hand, and strategic change under conditions of change on the other. In particular, Helfat and Peteraf (2015, p. 10) note that managerial cognitive capability, which is "the capacity of an individual manager to perform one or more of the mental activities that comprise cognition," is fundamental to dynamic managerial capabilities. Scholars have explained that managerial cognitive capabilities manifest in the "sensing," "seizing," and "reconfiguring" components of dynamic managerial capabilities, emphasizing managerial impact on strategic change (Helfat & Peteraf, 2015)

The literature on managerial cognitive capabilities emphasizing managerial impact on strategic change offers important insight into the relationship between managerial cognition and strategic change efforts (see Helfat & Martin, 2015). One of the most prominent findings is that mental processes such as managerial perception can lead to biases in interpretation and decision-making (Balogun, 2003; Baum & Bird, 2010; Sharma, 2000), and such biases are influenced by prior knowledge, expectations, and beliefs (Helfat & Peteraf, 2015). This finding suggests that managers' subjective prior knowledge, expectations, or beliefs may distort their perceptions and thus affect managerial impact on strategic change.

Despite the increasing number of studies on managerial cognitive capabilities as a core factor of dynamic managerial capabillities, research is yet to offer diverse perspectives on the specific managerial biases that can affect managerial impact on strategic change. One of them is the confirmation bias, which is defined as "the seeking or interpreting of evidence in ways that are partial to existing beliefs, expectations, or a hypothesis in hand" Nickerson (1998, p. 175). If managers have subjective beliefs that may distort perceptions, they may effect strategic change by seeking information that confirms this beief and reject information that counters their belief. This may have a potential negative consequence on managers' ability to effectively implement strategic change. As such, confirmation bias can provide insights into how perception affects managerial impact on strategic change. It may also explain why managers may not be able to effectively implement strategic change. However, research on how confirmation bias underpins dynamic managerial capabilities and its negative impact on managerial impact on strategic change remains largely unexplored.

Therefore, this chapter attempts to analyze an important aspect of managerial perception—confirmation bias—and the mechanism through which it impedes strategic change. More specifically, we draw on cognitive psychology research to systematically examine and develop coherent propositions on the negative effects of confirmation bias on managers' ability to "sense," "seize," and "reconfigure" components of dynamic managerial capabilities under strategic change. This chapter, thus, contributes to the literature on dynamic managerial capabilities and managerial cognitive capabilities in two important ways. First, it identifies the central role of confirmation bias on strategic change, which has not been fully explored to date. Essentially, the current chapter deepens one's understanding of the microfoundations of dynamic managerial capabilities and their links with confirmation bias. Second, we respond to calls for better understanding the negative impact of managerial cognition on strategic change (Helfat & Martin, 2015). Thus, we add to the growing theory base of managerial cognitive capabilities and the dynamic capabilities framework by examining the mechanisms through which managers may not be able to effect strategic change.

The current chapter is organized as follows. We first review evidence from dynamic managerial capabilities research documenting the impact of managerial cognition on strategic change and then discuss the role of confirmation bias in managerial cognition. Building on this discussion, we present our research model and discuss ways in which confirmation bias may underpin sensing, seizing, and reconfiguring under conditions of change. We further derive propositions on how confirmation bias can negatively impact sensing, seizing, and reconfiguring which can, in turn, lead to ineffective strategic change.

THEORETICAL FRAMEWORK

Confirmation Bias

Research on strategic management has most commonly analyzed cognition, including heterogeneity of cognition among managers, in terms of knowledge structures and mental maps (Gary & Wood, 2011). Scholars have proposed that human reasoning is subject to *confirmation bias* (Jones & Sugden, 2001; Nickerson, 1998). In fact, Nickerson (1998, p. 175) states, "if one were to attempt to identify a single problematic aspect of human reasoning that deserves attention above all others, the *confirmation bias* would have to be among the candidates for consideration." Confirmation bias is commonly conceptualized as a mental shortcut that simplifies complex analyses by relying on personal beliefs (Borrero & Henao, 2017; Friedrich, 1993; MacCoun, 1998). In a decision-making process, these beliefs serve as a heuristic aid to assess relevant information.

Studies in psychology show that people's cognitive bias leads them to seek information that confirms their previous beliefs. Previous research (e.g., Bacon, 1939; Evans, 1989) has argued that this cognitive disposition constitutes an important determinant of human behavior. The processes for seeking information are biased in favor of the information seeker's previously held expectations (Nickerson, 1998). For instance Jonas, Schulz-Hardt, Frey, and Thelen (2001) reported that people favor information that supports their social stereotypes (Johnston (1996), attitudes (Lundgren & Prislin, 1998), expectations in negotiations (Pinkley, Griffith, & Northcraft, 1995), and self-serving conclusions (Frey, 1981; Holton & Pyszczynski, 1989).

Confirmation bias occurs when individuals selectively collect evidence (Rabin & Schrag, 1999). Rabin and Schrag (1999) advance that confirmation bias depends on the degree of abstraction presented in the evidence. For example, people tend to rely stereotypes to interpret ambiguous behavior. Confirmation bias also occurs when people must interpret statistical evidence to assess the correlation between phenomena that are separated by time. They often perceive illusory correlation amongst confirmatory-like phenomenon (see Hamilton & Rose, 1980). That is, they tend to exaggerate correlations for which they have preconceived theory but underestimate correlations that not supported by such theory (Jennings, Amabile, & Ross, 1982). Finally, confirmation bias can arise when people are inclined to ask questions that confirm their hypothesis, regardless of the fact that these questions can remain true even if the hypothesis is false (Hogarth & Einhorn, 1992).

Strategic Change and Managerial Cognition

Strategic change refers to "a difference in the form, quality, or state over time in an organisation's alignment with its external environment" (Rajagopalan & Spreitzer, 1997 p. 49). Rajagopalan and Spreitzer (1997) divided research on strategic change into three theoretical perspectives: (1) rational, (2) learning, and (3) cognitive. The rational perspective argues that managers address environmental challenges by elaborating a set of plan and actions to find optimal solutions for well-defined problems (Minzberg, 1990a). According to the learning school of thought, managers lead changes through a series of small initiatives (Rajagopalan &

Spreitzer, 1997). In contrast to both these perspectives, the cognitive perspective emphasizes managerial cognition such as knowledge structures and core beliefs. Rajagopalan and Spreitzer (1997) note that these three theoretical perspectives reflect the underlying theoretical models embedded in empirical research on strategic change and are also consistent with well-established theoretical models in the broader strategy literature (Allison & Zelikow, 1971; Chaffee, 1985; Mintzberg, 1990b).

The literature on strategic change also highlights some antecedents and outcomes of strategic change. Typically, such studies emphasize the role of managers in initiating strategic change (Webb & Dawson, 1991) and suggest that differences in strategic change are underpinned by differences in managerial cognition (Eggers & Kaplan, 2009; Laamanen & Wallin, 2009). In this regard, some studies link strategic change to stable attributes or non-random decisions and actions of managers (Helfat & Martin, 2015). For example, Bertrand and Schoar (2003) reported that manager fixed effects were important determinants of corporate investment policies, cost-cutting policies, R&D expenditure, diversification, and acquisitions—antecedents of strategic change. Similarly, scholars have also examined the impact of managers on particular aspects of strategic change such as asset orchestration (Eggers, 2012). For example, Maritan (2001) found that guidance from the top for initiating investments in new assets and capabilities, combined with extensive interaction with business unit managers, was critical to strategic change. In sum, the literature suggests that managers can systematically impact strategic change through asset orchestration.

Managerial cognition is probably one of the most important factors influencing strategic change. A major assumption underlying this perspective is that the environment is enacted by managers and represented through cognition instead of being objectively determined. This implies that the attention and interpretive processes through which managers enact the environmental/organizational context are mainly reflected in their cognition (Helfat & Peteraf, 2015). Management research has long regarded cognition as an important attribute of managers at the top of the organizational structure (Finkelstein, Cannella, Hambrick, & Cannella, 2009). More recently, research on managerial cognition specifically related to strategic change has witnessed a surge. The majority of the studies on the cognitive perspective attempt to document the role of managerial knowledge structure, mental processes, and emotions in strategic change. For example, with respect to managerial knowledge structure, Rosenbloom (2000) showed that the inertial mindset of National Cash Register Company's (NCR) long-tenured managers impeded strategic change, but eventually a new CEO with a different mindset was instrumental in the company's late but successful entry into computing. Such findings show that differences in managerial knowledge structures are linked to differences in strategic change (Helfat & Peteraf, 2015). In another study that attempted to examine the role of mental processes in strategic change, Nadkarni and Barr (2008) found that managerial attention toward organizational task and general environment positively affected the speed of the firm's response to changes in the external environment. A study that examined the relationship between managerial emotions and strategic change found that differences in emotion regulation by founders of six early-stage firms led to differences in seizing of business opportunities through the shaping of human and social capital resources within the firms (Zott and Huy (2012).

Recent empirical work suggests that managerial cognition shapes strategic decisions, including responses to changes in the external environment. This stream of research argues that the cognitive ability of managers to anticipate and seize opportunities plays an important role in determining organizational competitiveness. For example, Holbrook, Cohen, Hounshell, and Klepper (2000) found that different cognitive beliefs of the top management in early U.S. semiconductor firms affected firm survival as the industry evolved. Kaplan, Murray, and Henderson (2003) showed that the top management at pharmaceutical companies recognized the importance of biotechnology at different times, and their strategic responses varied accordingly. Furthermore, prominent studies (Tushman & Romanelli, 1985) have proposed that the initiation of strategic change is based on managers' perception of opportunities. As Wiersema and Bantel (1992) argued, the effectiveness of organizational response to pressures for change depends on how the top management interprets strategic issues. Such interpretation that can be influenced by managers' cognitive ability.

These studies confirm that managerial cognition—in the form of managerial knowledge structures, mental processes, and emotion—has an impact on strategic change (Helfat & Peteraf, 2015). However, most studies from the cognitive perspective contend that the effect of managerial cognition on strategic change is minimal except when it is manifested through managerial actions (Helfat & Peteraf, 2015).

Confirmation Bias and Strategic Change

To understand the impact of confirmation bias on strategic change, it is essential to explore its role in sensing, seizing, and reconfiguring. Accordingly, we present a conceptual framework in Fig 1. The central contention of the framework is that the concept of dynamic managerial capabilities is limited when considering the potential negative impact of managers' confirmation bias. Drawing on the managerial cognition literature (Pamela Barr & Huff, 1997; Chakravarthy, 1982; Cho & Hambrick, 2006), we argue that confirmation bias may prevent managers from changing their initial beliefs even in the face of significant disconfirming evidence. While one of the current conceptions of managerial cognitive capabilities is the ability to sense (and shape), seize opportunities, and reconfigure assets (Teece, 2007), there are several reasons to assume that these capabilities may be weakened by managers' inclination to not ask questions or accept evidence that disconfirm prior beliefs.

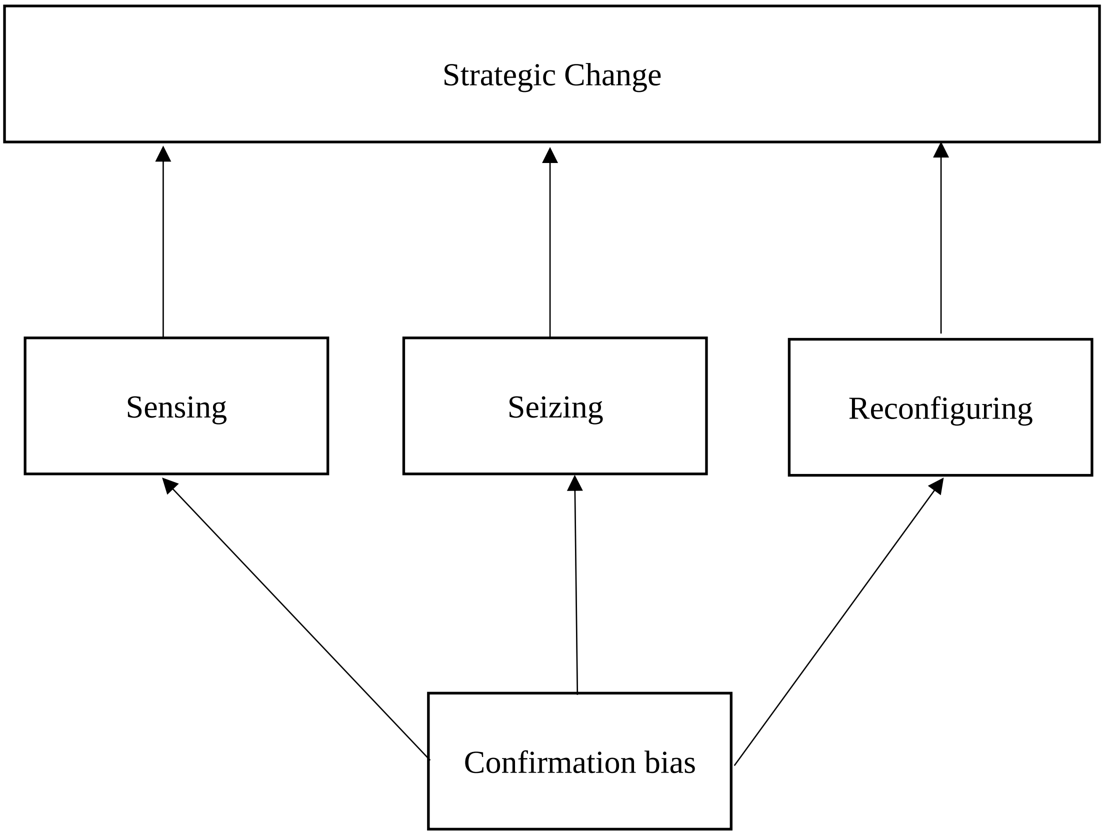

Figure 1: Conceptual Framework

Sensing and Shaping. While scoping some emerging marketplace trajectories is easy, other can be hard to discern (Teece, Pisano, & Shuen, 1997). It is crucial for managers to quickly identify and take advantage of new market opportunities. Teece (2007) refers to these capabilities as sensing and shaping, which including scanning, creation, learning, and interpretative activities. In other words, to sense and shape new opportunities, managers should be able to constantly scan and explore across both local and distant marketplaces (March & Simon, 1958; Teece, 2007). According to Teece (2007), managers detect new opportunities because of two types of factors: the belief that managers have differential access to existing information, and new information has the potential to create opportunities (Teece, 2007). Information thus plays an crucial role in managers' mapping of emerging marketplace trajectories. When new opportunities emerge, it is important for managers to determine how to interpret information relating to technology adoption and the target market segment. Intepreting such information enables them to assess the evolution of technologies and the response of crucial stakeholders such as customers, competitors, and suppliers.

Confirmation bias affects the ability of managers to detect new opportunities through new information. That is because confirmation bias results from the interpretation of ambiguous evidence (Rabin & Schrag, 1999) and within an unstable environment where the information tends to be unreliable (Wilson, 2011). In such settings, managers may pay less attention to any new information that contradicts their prior beliefs. Information processing and interpretation thus play a substantial role in sensing. For instance, managers have to deal with a large amount of information (Walsh, 1995) coming from their social network or other sources. To process and interpret such information, they should effectively utilize their mental patterns (Helfat & Peteraf, 2015). Further, studies in neuroeconomics suggest that people tend to protect themselves from information that causes psychological discomfort, which is known as the "ostrich effect" because of the bird's tendency to bury its head in the sand (Karlsson, Loewenstein, & Seppi, 2009). Nadkarni and Barr (2008) in their study of four industries found that managerial beliefs regarding the cause-effect relationship between the environment and firm strategy (termed "causal logics") completely mediated the relationship between industry velocity and the speed of the firm's response to shifts in the external environment. Thus, managers' inability to absorb information against their existing beliefs limits their sensing capabilities for opportunities (Hodgkinson & Healey, 2011; Lieberman, 2000). Therefore, we propose the following:

Proposition 1: Confirmation bias will have a negative impact on managers' sensing capabilities, leading to ineffective strategic change.

Seizing. On sensing a new opportunity, a manager should have the capability to address it by offering new products and services. Referred to as seizing, the capability involves "maintaining and improving technological competences and complementary assets and then, when the opportunity is ripe, investing heavily in the particular technologies and designs most likely to achieve marketplace acceptance" (Teece (2007, p. 1326). For instance, IBM has succeeded in leveraging its existing resources (e.g., intellectual capital) into businesses as diverse as automotives and education and achieved profitable growth (Harreld, O'Reilly III, & Tushman, 2007). At the most basic level, seizing opportunities is about making quality decisions. These decisions can result in the adoption of new business models and/or lead to new market entry. The capacity to make unbiased decisions is crucial for the effectiveness of the seizing dimension of dynamic capabilities.

Baack, Dow, Parente, and Bacon (2015) explored the role of confirmation bias in decision-making in an international business (IB) setting and thus in the formation of managers' perceptions of psychological distance. Distance, measured as an individual-level perception, can explain when, how, and why individual-level perceptions might diverge. Research in this tradition considers confirmation bias as an individual-level process that explains how managers process new information about foreign markets, which shapes their perceptions of the distance of each market and in turn influences their preferences for particular business decisions. Using individual-level experiments, Baack et al. (2015) showed that the information biases of employees influence their decision-making processes and that managers eventually overlook opportunities in more distant markets. This issue, though, may be addressed with short-term training courses to prepare employees for international postings. Further studies suggest that confirmation bias also poses a problem in decision-making. Borrero and Henao (2017) suggest that confirmation bias has the potential to influence the effectiveness of multi-criteria decision analysis tools in management practice. They found that managers are inclined to make intuitive decisions that are consistent with their motivational orientation and then tend to adhere to such intuitive decisions despite countering evidence. Further, numerous studies have shown that people interpret ambiguous information in ways that are partial toward existing beliefs or support their expectations regarding a number of issues, including other people's personalities (Snyder & Swann Jr, 1978), competency (Darley & Gross, 1983), their own health (Pennebaker & Skelton, 1978), and relationships between naturally occurring attributes (Nisbett & Ross, 1980). Because people hold on to their beliefs strongly, it is possibly easier for them to disregard alternative perspectives rather than to adapt to existing beliefs. This preference for existing beliefs underlies our confirmation bias argument (Wason, 1960), where people seek and interpret information that is consistent with their expectations (Koriat, Lichtenstein, & Fischhoff, 1980; Nickerson, 1998). We argue that such biased interpretation presents a potential hazard for managers in seizing opportunities during strategic change. Because managers presume that their existing beliefs are true, the beliefs serve as a heuristic for evaluating new information. However, confirmation bias may also lead to poorer decisions because the available evidence is not considered fully. In fact, by taking a piece of evidence to support their initial beliefs, managers may fail to realize that the very same evidence could limit their ability to seize new opportunities. More importantly, they may fail to abandon false information in the face of objectively disconfirming evidence. Therefore, we propose the following:

Proposition 2: Confirmation bias will negatively impact managers' seizing capabilities, leading to ineffective strategic change.

Reconfiguring. In addition to sensing and seizing opportunities, the ability to orchestrate and reconfigure resources and organizational structures is necessary for strategic change. Teece (2007) refers to this ability as reconfiguring capability. According to Helfat and Peteraf (2015), this capability calls for the selection and alignment of both tangible and intangible resources. The authors reckon that this capability is crucial for maintaining evolutionary fitness and avoiding path-dependencies as the company grows. For instance, IBM has been able to reconfigure its existing competences in ways that enable the company to build sustainable competitive advantage in diverse industries (e.g., medical, banking). The reconfiguration of strategic assets involves managerial choice. With strategic adaptation, managers may need to adopt a more open-minded attitude toward changes. This is crucial since resistance to change constitutes a major management problem, apart from a rigid cognitive frame (Pamela Barr, Stimpert, & Huff, 1992; Kaplan & Henderson, 2005).

Confirmation bias impedes the mental flexibility of managers. Managers with high confirmation bias may fail to reconfigure resources in ways that fit the competitive environment. These ideas explain the notion of "competitive blind spots," suggested by Ng, Westgren, and Sonka (2009). Building on the definition of (McNamara, Luce, & Tompson, 2002), competitive blind spots are flaws in the top management's interpretation of rivals' attributes and groupings and are defined by the team's inability to account for the various competitive perceptions of its value chain customers. Blind spots have been largely attributed to overconfidence, which limits managers' ability to question their assumptions and beliefs and leads to a restrictive interpretation of their competitive environment (Audia, Locke, & Smith, 2000; Klayman, Soll, González-Vallejo, & Barlas, 1999). Confirmation bias reduces the managers' need to adjust their beliefs to other competing views and can eventually lead heightened commitment to managers' prior beliefs (Audia et al., 2000). Managers' confirmation bias can not only validate or reinforce their salience and availability biases[1] by allowing them to compare their firm to those of rivals who share similar beliefs but also help them build competitive groups from these identified attributes. Building the confidence of managers typically involves focusing on internal judgements and perceptions over other/external interpretations; this tends to introduce differences between managers'

[1] Availability bias: the notion that "people assess… the probability of an event by the ease with which instances or occurrences can be brought to mind" (Tversky & Kahneman, 1974).
Salience bias: When managers interpret their competition and successes through past experiences and beliefs (Walsh, 1995).

perceptions and those of their value chain customers. Such overconfidence affects the managers' ability to reconfigure resources according to the environmental demand. In the context of strategic change, biased managers may overly rely on the prior experience they have with asset orchestration, which may not be appropriate to the current market condition. Finally, research on social and logical hypothesis testing shows compelling evidence for challenging and/or accepting information disconfirming prior knowledge (Snyder & Swann Jr, 1978). Research shows that when testing whether a particular instance (i.e. person, object, event) is consistent with a given hypothesis, people tend to request information that is likely to confirm than disconfirm the hypothesis (Klayman & Ha, 1987). In the context managerial cognitive capabilities under strategic change, managers' preference for such "positive testing strategies" can have serious implications. Specifically, there is a clear risk that managerial actions may become too focused on finding confirming evidence for prior beliefs, while no efforts are made to ask questions or accept disconfirming information when necessary (Ask & Granhag, 2005). As such, managers' biased interpretation of evidence and reluctance to abandon prior beliefs may affect their ability to reconfigure assets in ways that contradict prior beliefs. Therefore, we have the following proposition:

Proposition 3: Confirmation bias will have a negative impact on managers' capabilities to reconfigure resources, leading to ineffective strategic change.

CONCLUSION

This chapter has analyzed the concepts of confirmation bias and strategic change. Drawing on cognitive psychology research, we advanced that confirmation bias negatively affects strategic change through the dimensions of sensing, seizing, and reconfiguring. The conceptual link between confirmation bias and strategic change deepens our understanding of the microfoundations of dynamic managerial capabilities.

We analyzed the central role of confirmation bias in strategic change. While prior research has informed our understanding of the link between managerial cognitive capabilities and strategic change (Helfat & Peteraf, 2015), the negative impact of confirmation bias—as a cognitive pattern—on the effectiveness of strategic change through the impairment of managers' abilities to sense, seize opportunities, and reconfigure assets has remained largely unexplored. We argued that confirmation bias limits managers' sensing capabilities as it impairs their ability to handle information that is in conflict with their prior beliefs. This implies that managers with confirmation bias will struggle to discern new market opportunities through new information. This struggle is more pronounced when managers deal with unstable business environments where new information may be perceived as unreliable. In addition, we proposed that confirmation bias affects managers' abilities to seize new opportunities because it constitutes a major problem in decision making. In a fast changing environment, managers need to adopt multi-criteria decision analysis tools for making well-informed decisions. Confirmation bias influences the effectiveness of these tools by leading managers to seek and interpret information that is consistent with their expectations. Finally, we argued that confirmation bias can impede the mental flexibility of managers and thus prevent them from reconfiguring resoures in ways that contradict their prior beliefs but are needed. Managers with confirmation bias may develop competitive blind sports, which may make the strategic change ineffective. In a nutshell, although managerial cognitive capabilities play a crucial role in the success of strategic change, one should remain mindful that confirmation bias—as a cognitive pattern—may well impair managers' abilities to execute strategic changes within the organization.

Overall, this chapter provides theoretical foundation for future empirical research in testing our propositions on the role of confirmation bias in effecting strategic change. Future research can also consider the interaction of confirmation bias of individual managers and how they aggregate up to the team level, where they affect strategic change. Another promising area of future research is whether or not managers can, through certain practices, successfully mitigate the negative impact of confirmation bias in sensing, seizing and reconfiguring capabilities.

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