Received: 12 August 2020 | Revised: 22 December 2023 | Accepted: 28 December 2023

DOI: 10.1002/smj.3589

RESEARCH ARTICLE

SMS | Strategic Management Journal

WILEY

Overcoming strategic persistence: Effects of multiple scenario analysis on strategic reorientation

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Abstract

Research Summary: To thrive in an unpredictable world, managers must adapt their decision-making to changing events. However, a major impediment to adaptation is strategic persistence, that is, the tendency to stick with previously successful strategies. We examined whether multiple scenario analysis can help to overcome the dysfunctional effects of strategic persistence. In a laboratory study using a multi-round strategy simulation that required players to change strategies to succeed, we found that multiple scenario analysis alleviated the effects of strategic persistence by stimulating strategic reorientation, that is, adaptive shifts in patterns of strategic choice. Multiple scenario analysis influenced strategic reorientation indirectly, by fostering belief in a new strategy, and its effectiveness depended on prior performance. We discuss implications for research on the cognitive microfoundations of strategic adaptation.

Managerial Summary: What can managers do when their previously successful strategy stops working? We found that using multiple scenario analysis, a common strategic planning technique can help decision makers switch to a new strategy. In our study, using a business

simulation game that required players to change strategies to succeed, we found that those players who imagined different industry futures as part of a multiple scenario analysis exercise were more likely to believe in new strategies and as a result more likely to switch to the winning strategy. However, this intervention was less effective for players who had high levels of success with the old strategy. We discuss how scenario-based intervention techniques can be used to assist managers with reorientating to a new strategy.

KEYWORDS

behavioral strategy, dynamic managerial capabilities, managerial cognitive capabilities, scenario planning, strategic decision-making

1 | INTRODUCTION

Recent global events such as the 2008 financial crisis, the climate crisis, and the COVID-19 pandemic, have refocused attention on the managerial imperative of adapting strategies to changing circumstances (Wenzel et al., 2020). A major impediment to such adaptation is that decision makers have a propensity for strategic persistence, i.e., a tendency to stick with previously successful strategies (Audia et al., 2000; Lant et al., 1992; Miller & Chen, 1994; Teece, 2007). In times of stability, strategic persistence can be beneficial to efficiency, helping organizations to augment and refine their competencies (March, 1991). Moreover, persisting with a strategy can sometimes be an effective means of coping with external change, such as when change is of a low magnitude (Stieglitz et al., 2016). However, when facing fundamental changes in competition, markets, and/or technology that undermine the effectiveness of a firm's current strategy, sustaining organizational performance and safeguarding the survival of the enterprise requires strategic reorientation, that is, shifting patterns of strategic choice to new bases of alignment (Romanelli & Tushman, 1994; Tushman & Romanelli, 1985). Given the prevalence of strategic persistence and the evidence that sustaining the performance of firms in dynamic conditions typically requires changes in patterns of strategic choice (Lovallo et al., 2020; Wenzel et al., 2020), understanding how to stimulate strategic reorientation is a priority for strategy researchers.

Early studies of strategic reorientation focused on organizational factors, including company age and size (Miller & Chen, 1994) and changes to the top management team (Lant et al., 1992). The individual level mechanisms of strategic persistence and strategic reorientation remained relatively unexplored (for exceptions, see Audia et al., 2000; Hiller & Hambrick, 2005). More recently, however, the dynamic capabilities project has focused attention on the psychological drivers of strategic adaptation—in particular, the cognitive processes through which decision makers adjust their thinking and behavior in response to changing conditions (Helfat et al., 2009; Hodgkinson & Healey, 2011; Teece, 2007). This work highlights the dynamic managerial cognitive capabilities (Helfat & Peteraf, 2015; Levine et al., 2017) required

to break free from the shackles of past choices, a fundamental prerequisite for overcoming strategic persistence. The cognitive flexibility required to achieve this objective is of central concern to behavioral strategy researchers (Gavetti, 2012; Gavetti & Porac, 2018; Healey & Hodgkinson, 2017; Hodgkinson & Healey, 2011; Laureiro-Martínez et al., 2015; Laureiro-Martínez & Brusoni, 2018).

To help decision makers think flexibly about strategic problems, behavioral strategy researchers have posited a key role for "mental interventions" (Gavetti, 2012: 2), i.e., structured techniques designed to challenge and, where appropriate, change strategic thinking and behavior (Hodgkinson & Healey, 2011; Powell et al., 2011). Studies show that stimulating causal reasoning can help decision makers break free from preexisting cognitive frames (Hodgkinson et al., 1999), that analogical reasoning can aid the discovery of novel competitive positions (Gavetti et al., 2005) and increase the accuracy of investment predictions (Lovallo et al., 2012), and that associative thinking can help managers detect opportunities (Gavetti, 2012).

The present study extends this interventionist approach to the problem of strategic persistence, focusing on the potential benefits of multiple scenario analysis, a set of techniques with a long history in strategic management (for reviews, see Bradfield et al., 2005; Healey & Hodgkinson, 2008; Schoemaker, 1993). For more than five decades, organizations ranging from small and medium-sized enterprises to large corporations and national and international governmental bodies have used multiple scenario analysis to inform and guide their strategizing (Schwartz, 1991; van der Heijden, 2005; van der Heijden et al., 2002). At the height of the coronavirus pandemic, business leaders turned to these techniques to help navigate the uncertainties unfolding (McKibbin & Fernando, 2021). The Boston Consulting Group even claimed that scenarios could help companies win the COVID-19 battle by promoting proactive decision-making (Candelon et al., 2020).

Despite studies showing that multiple scenario analysis can stretch managers' beliefs about future events (Schoemaker, 1993), there is little direct evidence that it ultimately changes patterns of choice behavior. To address this shortfall, we adopt a self-regulatory perspective (Carver & Scheier, 2000; Taylor et al., 1998) on multiple scenario analysis to examine if it can stimulate such behavioral changes, as required for strategic reorientation. Focusing on conditions where decision makers must switch strategies to succeed, we show that multiple scenario analysis not only fosters their belief in the potential of new strategies but also helps them reorientate to a new strategy, rather than persisting with an outmoded one. Our findings have important implications for research and practice.

2 | THEORY AND HYPOTHESES

Studies of management practice show that multiple scenario analysis is one of the most commonly used strategy tools (Grant, 2003; Hodgkinson et al., 2006; Jarzabkowski & Kaplan, 2014). The basic idea behind using these techniques is to bound uncertainty in a range of plausible scenarios that managers can use to generate strategic options and evaluate their robustness. In this context, scenarios are described as "script-like narratives that paint in vivid detail how the future might unfold in one direction or another" (Russo & Schoemaker, 1992, p. 13). According to advocates, one of the benefits of multiple scenario analysis is that it can help managers 'think the unthinkable' (Bradfield et al., 2005) and thereby counter cognitive biases such as status quo bias, availability bias, and overconfidence (Schoemaker, 1993). Practitioners claim that scenarios function as "cognitive devices" (van der Heijden, 2005, p. 49) that inform and challenge

decision makers' beliefs about future events, thereby fostering organizational learning (van der Heijden et al., 2002).

Research on the cognitive effects of scenarios grew following Kahneman and Tversky's (1982) pioneering studies of judgment under uncertainty. Kahneman and Tversky observed that people judge the likelihood of future events based on how easily they can develop a scenario that proceeds from starting conditions to a plausible causal sequence of events. Developing scenarios helps people plan and predict but can also lead to biased judgments, such as believing in plausible but statistically unlikely combinations of events (Tversky & Kahneman, 1983). Most pertinently, due to bounded rationality constraints (Simon, 1979), when people think about the future they tend to focus on a single, preferred scenario that aligns with their existing knowledge (Evans, 2007). It is for this reason that strategy scholars often promote the use of *multiple,* contrasting scenarios as a means of sensitizing decision makers to a broader range of events than they might otherwise consider and enabling them to update their mental models (Hodgkinson & Wright, 2002).

However, evidence suggests that the cognitive effects of scenario techniques are complex, sometimes alleviating biases and sometimes exacerbating them, depending on how they are used (Healey & Hodgkinson, 2008). Schoemaker (1993) demonstrated that analyzing multiple plausible scenarios widened the confidence intervals managers placed around a range of economic forecasts, in effect stretching their thinking. In contrast, Phadnis et al. (2015) found that considering multiple scenarios did not change experts' confidence in their judgments but did lead them to prefer solutions with greater flexibility relative to less flexible ones.

A more important question for strategists is whether multiple scenario analysis can change behavior as well as beliefs and preferences. For multiple scenario analysis to assist with strategic reorientation, it must engage mechanisms that can contribute to shifts in patterns of strategic choice. To examine this possibility, we take a different perspective on multiple scenario analysis, building on research that views scenario thinking as a form of mental simulation that serves important self-regulatory functions. Integrating evidence from cognitive and social psychology, Taylor et al. (1998, p. 430) noted that mental simulation—defined here as the process of imagining and generating alternative hypothetical future events and exploring their consequences (Markman et al., 2012, p. vii)—has intrinsic psychological characteristics that make it useful not only for envisioning the future but also "for engaging the problem-solving and emotion regulation skills so vital to effective self-regulation." Self-regulation entails controlling inner states and adapting responses to goals, a set of skills that constitute an important dynamic managerial capability (Hodgkinson & Healey, 2011).

According to Taylor et al. (1998), the self-regulatory characteristics of mental simulation include the ability to make hypothetical events seem real, with a view to stimulating problem-solving activity, evoking emotional states, and engendering the sense of a need to control those states and form mental links to action. For instance, managers thinking about a competitor potentially entering one of their company's key markets might visualize the competitor's motives and moves, making the possibility of such an action seem more real. Imagining this scenario would naturally lead managers to envisage potential difficulties it might create and identify solutions that they could develop to counter those difficulties. Part of such an exercise might entail preempting the discomfort and anxiety competitive moves of this sort would inevitably create for incumbent firms. Finally, imagining their own potential responses to the events envisaged could enable decision makers to form links to action, through the act of rehearsing mentally how they would deal with the competitor in question, perhaps considering a variety of defensive and offensive responses.

Although some research emphasizes individual differences in self-regulation (Kruglanski et al., 2000) and related traits such as flexible thinking (Stanovich & West, 1997), we focus on the mental simulation of alternative hypothetical futures as a fundamental psychological process. Our focus is consistent with research on self-regulation that highlights the action-oriented function of mental simulation. For instance, Carver and Scheier's (2000) model of behavioral self-regulation posits mental simulation as a means of engaging the actual mechanisms that regulate affect and confidence levels in the accomplishment of everyday tasks. Research in cognitive science suggests that when decision makers think through alternative scenarios, they not only mentally simulate properties of the events and outcomes depicted but also simulate actions that could be taken in response to those events and potential feelings and emotions that might arise, which helps them respond to the events envisaged (Barsalou, 2009). This logic is the foundation of behavior change interventions such as cognitive behavioral therapy (Taylor et al., 1998) and a recent meta-analysis confirmed that mentally simulating potential future scenarios has positive and robust effects on behavior change across a wide range of domains (Cole et al., 2021).

Building on this body of evidence, we propose that analyzing multiple scenarios that depict how the future might variously unfold triggers the mental simulation of alternative futures, encouraging decision makers to reflect on the causal effects of the varied courses of action envisaged as a means of addressing those alternative futures. In so doing, it triggers the self-regulatory mechanisms outlined above. In other words, multiple scenario analysis equips decision makers to think flexibly about potential events and think proactively about what actions to take if the varied circumstances envisaged actually unfold. Mentally simulating alternative futures in this way enables decision makers to assign motivational priorities to the varied courses of action elaborated and prepare accordingly for potential changes (Sweeny et al., 2006). Based on this logic, we predict:

> **Hypothesis 1.** Multiple scenario analysis increases the likelihood of strategic reorientation.

From an interventionist perspective, it is not only important to examine whether multiple scenario analysis can alleviate strategic persistence but also to shed light on the potential mechanisms responsible for these effects. We identify two such mechanisms.

First, multiple scenario analysis might reduce confidence in the current strategy, easing the shift to a new one. When decision makers fail to envisage scenarios beyond the status quo, it reaffirms their faith in previously effective courses of action and breeds overconfidence in the status quo (Russo & Schoemaker, 1992). Audia et al. (2000, p. 840) note that such (misplaced) faith is particularly debilitating in a changing environment, where "efficacy beliefs based exclusively on past performance may become an inaccurate guide to the future." Conversely, imagining alternative futures can bring to light plausible reasons why a strategy might fail and/or draw attention to conditions under which it might be ineffective. Koehler (1991, p. 512) reviewed evidence in behavioral decision research showing that considering alternative hypotheticals "reduces the inertia" caused by a person's initially preferred, default scenario. In so doing, it can reduce belief in the efficacy of a previously successful strategy and ease the reorientation to a new one. Anecdotal evidence similarly points to the importance of reducing confidence in incumbent ideas. For instance, the founder of Salesforce.com, Mark Benioff, imaged a divergent view of the future of the enterprise software industry based not on installing discrete software packages within a business's systems but based instead on online, network-based services (Hagel et al., 2008). This alternative view dissolved confidence in the incumbent business

model and helped to precipitate an industry-wide shift to a service-based business model. Hence, we predict:

> **Hypothesis 2a.** Multiple scenario analysis influences strategic reorientation indirectly by reducing confidence in a previously successful strategy.

The second potential mechanism through which multiple scenario analysis can stimulate strategic reorientation is by building belief in a new strategy. Reducing confidence in an existing strategy is a necessary but insufficient basis for strategic reorientation. Although it might reduce the pressure for persistence, it does not, by itself, foster belief in a new course of action. We suggest that developing such belief is another key function of mentally simulating multiple scenarios. From a self-regulatory perspective, when decision makers analyze scenarios they are projecting themselves into a range of hypothetical futures. Cognitive psychologists describe this process as one of testing relevant new mental models (Evans, 2007), whereby decision makers mentally simulate how their ideas might fare in varied imagined worlds. Research in strategy and entrepreneurship posits similar effects. In his examination of entrepreneurial alertness, Gaglio (2004, p. 538) suggests that mental simulation serves a preparatory function that "enables us to anticipate physical and social environments and to imagine strategies and tactics that would lead to the achievement of our goals, motives, or purpose." This process entails developing alternative means-ends chains, or causal schemas, whereby people use scenarios to test alternative hypotheses by imagining sequences of events in which alternative courses of action lead logically to desired end states. Relatedly, Gavetti (2012) describes the cognitive basis of superior performance as imagining new mental models that map novel courses of action onto desired outcomes. Mentally simulating scenarios can help to identify and test new causal theories that make courses of action that were previously unconsidered seem plausible and make ones that were previously considered implausible seem more plausible.

We maintain that when decision makers analyze multiple scenarios that challenge their current strategy, they will be more inclined to consider alternative strategies that might be viable in the circumstances envisaged. Mentally simulating the effects of these alternatives fosters the belief that they can provide a credible model for achieving one's goals in the circumstances anticipated, and incline decision makers to reorient to a new course of action. This is not to say that the alternatives imagined will ultimately prove effective; rather, our supposition is that analyzing multiple scenarios helps foster belief in the viability of the events and strategies considered. Hence, we predict:

> **Hypothesis 2b.** Multiple scenario analysis influences strategic reorientation indirectly by fostering belief in potential new strategies.

It is unlikely that multiple scenario analysis is efficacious in all situations. Research shows that the pressure for strategic persistence is particularly strong when the extant strategy has proven successful (Audia et al., 2000; Lant et al., 1992). When feedback on the efficacy of current strategies is unequivocally positive, decision makers have a strong incentive to continue believing in them. Additional research shows that decision makers develop strong emotional attachments to courses of action that have proved successful in the past (Brusoni et al., 2020; Hodgkinson & Healey, 2011), a mechanism which is likely to increase the propensity for persistence and constrain the effects of interventions designed to stimulate reorientation away from the strategic status quo. We anticipate that in these circumstances decision makers will be less receptive to hypothetical futures that challenge their belief in the current strategy and will have

less motivation to consider alternative strategies, making strategic reorientation less likely, even after multiple scenario analysis interventions. Conversely, when current strategies have not been so effective, decision makers will be more willing to consider alternative courses of action. Accordingly, we predict:

> **Hypothesis 3.** Past performance moderates the effects of multiple scenario analysis on strategic reorientation. Specifically, when past performance is high (low), multiple scenario analysis will be less (more) likely to stimulate strategic reorientation.

3 | METHODS

Randomized controlled experiments enable robust causal inferences that a given treatment truly causes change in the focal dependent variable(s) (Shadish et al., 2002). Hence, to test our hypotheses, we designed a laboratory experiment involving a business simulation.

3.1 | Participants and procedure

One hundred and sixty-five students at the business school of a large UK University participated in the study. Data from five participants were not recorded due to a software failure, leaving a final sample of $N = 160$. The participants' ages ranged from 20 to 42 ($M = 23.4$, $SD = 3.9$), 50% of whom were female and 50% of whom were male. The participants were recruited via email and received £10 ($12) for participating. They completed the experimental task on an individual basis, administered in laboratory sessions that accommodated up to 20 participants at a time. Participants received all instructions, including background information, and completed all tasks and measures by computer. We incentivized task performance by informing the participants that the top scorer in each session would receive a cash prize of £35 ($43).

3.2 | Experimental task

The data were gathered using the business simulation game Celcom21, which simulates the evolution of the cellular telecoms industry. Audia et al. (2000) developed this interactive, computer-based simulation to investigate the phenomenon of strategic persistence. The simulation possesses a high degree of psychological realism, thereby addressing ecological validity concerns (Colquitt, 2008). Specifically, it demands that participants engage in decision processes that bear close resemblance to the ones that underpin strategic persistence (i.e., learning the efficacy of a particular strategy through repeated decisions and performance feedback) and strategic reorientation (i.e., shifting learned patterns of choice to a new course of action).

The Celcom21 simulation mimics several core features of strategic decision-making, namely, interdependence among choice options, a changing task environment, and uncertainty over payoffs (Csaszar, 2018). The simulation requires participants to act as the CEO of a cellular communications company and control the activities of the business by making various strategic choices. The goal is to become the market share leader of the industry, from a starting position of 7% market share. The simulation runs over 13 decision rounds, with each round corresponding to 1 year of activity of the business. We informed participants that there would

be 15 rounds but we stopped the simulation after round 13, in order to eliminate potential end-game effects.

The algorithms of the simulation link the choices made in each round to the performance of the business. Participants make choices regarding 10 areas of activity, such as pricing, research and development, and advertising and sales. The decisions made in the simulation are strategic in the sense that they concern strategic issues, including competitive moves (Hambrick et al., 1996) such as price cuts, investing in R&D, and marketing spend. At the end of each round, participants receive feedback on the performance of the business in the current year, including its current market share, number of customers (i.e., cell phone subscribers), and operating profit.

The key feature of the Celcom21 simulation of relevance for the present study is that sudden changes in the task environment render previously successful strategies ineffective. Crucially, previous studies using this simulation show that participants tend to persist with the previously successful strategies, even though the environmental changes in later rounds render them ineffective (Audia et al., 2000).

Success in the post-change period requires participants to switch strategies. In the first phase of the game (rounds one to eight), the effective strategies are to invest heavily both in the sales force and in advertising, to enable the firm to recruit new customers quickly and grow at rates faster than the industry average. The more these two strategies are used, the greater the increase in market share. At the end of the eighth decision period, the industry environment changes markedly. The government de-regulates the industry, which eliminates regional barriers to growth and enables firms to compete across geographical regions. However, the growth rate in new customers slows considerably, consistent with industry maturation. Following these changes, strategies successful in the previous decision periods cease to be as effective. Specifically, increasing sales force and advertising in later rounds (i.e., years 8–13) results in smaller increases in subscribers, loss of market share, and reduced operating profit. In contrast, the strategies that become effective following the significant changes are cutting call prices and forming interfirm alliances. Price cuts, ineffective in previous rounds, enable the firm to "steal" customers from competitors in the maturing market, thereby increasing market share. Alliances enable the firm to provide roaming services to customers, thus affording access to subscribers in new geographical markets.

3.3 | Experimental design, treatments, and manipulation checks

3.3.1 | Design

We employed a 2 (information: low, high) × 4 (intervention: control, strategic review, reading scenarios, creating scenarios) between-subjects experimental design, assigning participants at random to one each of the eight treatment groups.

3.3.2 | Treatments

Consistent with previous research using the Celcom21simulation (Audia et al., 2000), we varied task information to manipulate initial task performance. The greater the amount of task information presented to participants, the more quickly they were able to learn the rules and, in

consequence, the higher their performance levels. Manipulating levels of performance in this way enabled us to examine the moderating effects of past performance on the efficacy of a multiple scenario analysis intervention, as set out in Hypothesis 3. Participants in the *low information* group received five basic tips on making effective strategic choices in five areas of the business. Participants in the *high information* group received the same information as their low information counterparts; however, key information was highlighted in bold and the instructions were more specific, enabling them to attain higher levels of performance in the early rounds.

We also assigned participants to one of four strategic interventions: a no-treatment control condition, or a strategic review, reading scenarios, or creating scenarios condition. Participants in the *control group* received no treatment intervention; that is, they completed all 13 rounds of the task consecutively, with no additional task requirements imposed. The remaining participants received one of three interventions, which were administered at the start of year 7, after six rounds of decision-making, but prior to the environmental shift. Below we outline the main features of the interventions. Table A1 in the online appendix providing Supporting Information for this article presents further details of our instructions to participants and associated materials in respect of our interventions.

Participants in the *strategic review* group were required to write a short report on the firm's strategic situation. This intervention was designed to stimulate cognitively effortful reflection on the task, while avoiding triggering the analysis of multiple hypothetical futures and associated mental simulations. The purpose of this intervention was to provide a more challenging baseline for evaluating the effects of multiple scenario analysis than the no treatment control condition. If multiple scenario analysis facilitates strategic reorientation but another intervention that stimulates a similar degree of cognitive effort and analytical thinking does not, then we can reliably infer that the effects of multiple scenario analysis are not due solely to "thinking harder" (cf. Hodgkinson et al., 2002; Wright & Goodwin, 2002) but rather to the unique effects of multiple scenario analysis. We based this additional intervention on experimental studies of accountability (Lerner & Tetlock, 1999; Tetlock, 1992), which show that telling people that they will be required to explain their decisions and actions to significant others increases involvement and leads to more elaborate information processing in respect of the task at hand. Following standard procedure in accountability experiments, we asked participants to pause the game and write a report explaining their performance to date. Specifically, at the start of round seven, we instructed them that as part of a regular strategic review they should "summarize the company's progress so far and explain the reasons for the decisions [they had] made, outlining what strategic direction the company will be taking over the coming years." To increase the sense of accountability, we told them that this report would be sent to a third party for review. To proceed, they had to click a button, but before doing so they encountered a statement to the effect that that once they had submitted their report, the board might ask them to explain it. Then they were asked if they wanted to submit their report to the Board. Table A2 in the online appendix shows examples of reports the participants wrote.

The remaining participants received one of two multiple scenario analysis interventions designed to stimulate the mental simulation of alternative possible futures. The design of both interventions was based on procedures used in prior laboratory studies of multiple scenario analysis (Schoemaker, 1993) and on scenario procedures used in strategic management practice (van der Heijden, 2005; van der Heijden et al., 2002).

Participants in the *reading scenarios* group read two short, pre-written industry scenarios. Each scenario described how the cellphone industry might develop over the coming 5 years.

Participants each read one negative and one positive scenario. We counterbalanced the order of presentation (i.e., positive–negative, negative–positive) to control for potential order effects. The pair of scenarios depicted contradictory versions of the future in which a common set of events unfolded in opposing directions, favorably for the firm in the positive scenario, and unfavorably for the firm in the negative scenario. The events described in the scenarios concerned competitor activity, technological developments, and customer behavior. The scenarios depicted possible environmental changes in general rather than accurately predicting the industry changes that would occur in subsequent rounds of the game. Table A3 in the online appendix reproduces these scenarios.

Although multiple scenario interventions often rely on pre-written scenarios (Bradfield et al., 2005), a self-regulatory perspective suggests that generating one's own scenarios might be a more effective means of stimulating behavior change (Healey & Hodgkinson, 2008; Taylor et al., 1998). Mentally simulating alternative events and outcomes that are perceived as most salient by the individual and generating alternative viable courses of action from a first-person perspective are key components of behavioral self-regulation (Carver & Scheier, 2000). Accordingly, participants in the *creating scenarios* group created and wrote their own industry scenarios. We instructed participants to: (i) identify two to three key factors in the telecoms industry that influenced the focal firm's ability to grow market share, (ii) briefly describe how each factor they identified might develop in a positive and negative manner for the focal firm over the next 5 years, and (iii) write two short narrative scenarios pertaining to the contingencies envisaged, by placing the positive events in one scenario and the negative events in the other scenario. Participants thus generated one positive scenario in which a set of factors changed favorably and one negative scenario in which the same set of factors changed unfavorably. We again counterbalanced the order to control for potential response-order effects. We instructed participants to name their scenarios and make them plausible. Table A4 in the online appendix provides examples of the resulting scenarios.

3.3.3 | Manipulation checks: Supplemental

It was important to ascertain whether our multiple scenario interventions stimulated the psychological processes we theorized as important to self-regulation, i.e., the mental simulation of plausible alternative hypothetical futures. To do so, we followed recommendations in experimental psychology (Hauser et al., 2018) and ran a separate experiment to establish whether our treatments successfully stimulated the intended psychological processes. The online appendix provides details of the manipulation check study, including our procedures, measures, and results. In brief, we used CloudResearch (formerly known as Turk Prime; see Litman et al., 2017) to recruit 203 participants (mean age = 38.81, SD = 11.87), of whom 58% were male and 42% were female (mean work experience = 16.73 years, SD = 11.26). Consistent with the main study, the experimental task focused on the evolution of the mobile phone industry. We provided participants with background information on developments in markets, technology, and competition in the mobile phone industry, and then instructed them to complete one of the same three interventions employed in the main study, that is, write a review of the strategic situation, read two industry scenarios, or create two scenarios of their own, following the same procedures we adopted in the main study. Participants then completed a series of dependent measures designed to assess the extent of mental simulation triggered by the various interventions. We selected six measures that tapped various dimensions of mental simulation,

concerning respectively the extent to which participants experienced: (i) mental imagery; (ii) causal thinking; self-regulatory activity, in the form of (iii) locomotion (i.e., processes involved in moving from state to state) and (iv) assessment (i.e., critically evaluating states and goals), (v) flexible thinking; and (vi) overall mental simulation. The online appendix provides details of the measures, including item wording and scale reliabilities. Table A5 in the online appendix shows the means broken down by intervention type.

As shown in Figure A1 in the online appendix, a multivariate analysis of variance (MANOVA) with intervention type (strategic review, reading scenarios, creating scenarios) as the independent variable and the six mental simulation measures as dependent variables confirmed that the three interventions led to different levels of mental simulation (Pillai's trace $F\ (12,\ 392) = 6.13$, $p = .0000000007$, $\eta_p^2 = 0.16$). Univariate analyses of variance revealed that intervention type affected all six dependent variables (all Fs ≥ 8.00, all ps $< .001$, see Table A6 in the online appendix). Planned comparisons showed that participants who either read *or* created scenarios reported higher levels of flexible thinking, assessment and overall mental simulation than those who undertook a strategic review (see Table A7 in the online appendix). Moreover, participants who created scenarios reported higher levels of mental imagery, locomotion, and causal thinking than those who completed a strategic review. These results confirm that our scenario interventions did indeed trigger the mental simulation of alternative futures.

3.3.4 | Manipulation checks: Main study

We undertook two further checks in the main study to ascertain that the experimental manipulations had worked as planned.

First, we performed a comparative content analysis of the texts considered by participants allocated to each treatment group, comparing the scenarios created by participants in the creating scenarios group with the scenarios provided to participants allocated to the reading scenarios condition and the strategic reviews produced by participants allocated to the strategic review condition. To perform this analysis, we employed the Linguistic Inquiry and Word Count (LIWC) program (Pennebaker et al., 2015). Using this program, we focused on the five variables that were most relevant to our manipulation of the mental simulation of alternative futures, namely, analytical thinking, causal thinking, past focus, and future focus, and the basic word count. Details of the measures, analyses, and results are reported in the online appendix. In outline, a one-way MANOVA with the five LIWC variables as the dependent variables and intervention type as the independent variable revealed that treatment type affected the dependent variables (Pillai's trace $F\ (4,\ 75) = 24.31$, $p = .0000000000006$, $\eta_p^2 = 0.56$). As shown in Table A8 in the online appendix, pairwise comparisons revealed that the outputs generated by participants in the creating scenarios and strategic review conditions did not differ in word count, although both of these sets of scenarios were shorter than the standardized scenarios given to the participants in the reading scenarios condition. Moreover, there was no difference in terms of the degree of analytical thinking across the three experimental conditions, that is, strategic review versus reading scenarios versus creating scenarios. However, as expected, the scenarios in the reading scenarios and creating scenarios conditions both scored higher on causal thinking, compared to the reports participants generated in the strategic review condition. Also as predicted, the scenarios created were more future focused than the strategic reviews, while the strategic reviews were more past focused than the scenarios read and created. These findings further confirm that our manipulations stimulated future focused, causal mental

simulation. They also enable us to infer with greater confidence that any differential effects of multiple scenario analysis are due to the effects of this particular technique on mental simulation, and not merely due to it triggering analytical thinking per se, because participants undertaking the strategic review displayed a similar degree of analytical thinking to those who undertook multiple scenario analysis.

Second, for those main study participants assigned to the reading and creating scenarios conditions we measured the plausibility and perceived significance of the scenarios they variously read or created. Although plausible scenarios can broaden decision makers' beliefs regarding what is possible, implausible ones can narrow such beliefs (Schoemaker, 1993), suggesting that implausible scenarios are less likely to stimulate changes in decision-making. Accordingly, we employed two items that measured respectively the extent to which participants considered the industry scenarios they read or created to be plausible and how impactful they considered the scenarios to be, in terms of the potential of the events they imagined to disrupt their firms' activities. We assessed plausibility with an 11-item scale, ranging from 0% = "impossible" to 100% = "certain," and assessed the degree to which the scenarios were considered impactful using a 7-point scale, ranging from 1 = "no impact" to 7 = "massive impact." As expected, participants considered the scenarios to be both plausible (mean likelihood = 52.89%, SD = 19.84) and impactful (mean impact = 5.11, SD = 0.97).

3.4 | Measures

3.4.1 | Strategic reorientation

The central outcome of interest was strategic reorientation after intervention and environmental change. Accordingly, our chosen indicator of strategic reorientation was change in pricing strategy in years 7–13; specifically, the adoption of a price cutting strategy over this 7-year period. As noted above, it was predetermined in the simulation that price cuts and forming interfirm alliances were the most efficacious strategies following the major environmental changes introduced at the end of round six. However, we observed that alliance formation was a common strategy in the early rounds (i.e., before environmental change) but price-cutting was rare. Hence, adopting a price cutting strategy after the environmental change provided a clearer indication of strategic reorientation. To form our measure of strategic reorientation, we calculated the number of price cuts made between years 7 and 13. The greater the number of price cuts made, the greater the incidence of strategic reorientation. As an additional indicator of strategic reorientation, we measured the annual price change, which we calculated as the mean annual price change per year over years 7–13 inclusive. This measure of the extent of price cutting behavior (or, conversely, price increases) indicates the magnitude of strategic reorientation.

3.4.2 | Change in performance after environmental change

We also recorded four indicators of performance in the post-change period (i.e., between years 8 and 13), namely: (1) the annual change in subscribers, which indicated the number of new customers recruited; (2) the annual change in market share; (3) the annual change in revenues; and (4) the annual change in operating profit.

3.4.3 | Confidence in the previous strategy

To examine our first proposed mediator, at year 9 we measured confidence in the strategy that was dominant before the environmental change. To do so, we computed the average of two items assessing participants' belief that "increasing advertising expenditure" and "increasing the sales force" would have a positive impact on their market share in future, using a percentage scale anchored at 0% = "no confidence" and 100% = "certain" ($\alpha = .70$).

3.4.4 | Belief in a new strategy

To examine our second proposed mediator, we measured causal beliefs, also at year 9, by asking participants to rate the effectiveness of the four main strategies for increasing market share, namely, increasing the sales force, increasing advertising, cutting call prices, and forming alliances (using a 7-point scale, ranging from 1 = "not effective" to 7 = "very effective"). We used belief in the effectiveness of cutting call prices to indicate belief in the new strategy because, as noted above, adopting this strategy was the most accurate indicator of strategic reorientation.

3.4.5 | Past performance

To measure past performance, we used the level of market share (in percentage points) attained at the end of year six, that is, immediately prior to our experimental interventions. Although this variable reflects performance in the early rounds, the label past performance reflects our interest in how performance up to this point might moderate the effects of the various interventions in subsequent rounds.

4 | RESULTS

Table 1 reports descriptive statistics and intercorrelations. We first checked the predictive validity of our measure of strategic reorientation by examining its relationship with performance in the period following the significant environmental change (i.e., years 8–13). As expected, strategic reorientation correlated positively with the annual change in market share (mean $r = .32$, $p = .000037$) and annual change in customer numbers (mean $r = .33$, $p = .00002$). As a further check, we regressed change in revenues and change in operating profit on our measure of the magnitude of strategic reorientation, that is, mean annual price change. The magnitude of strategic reorientation was positively related to both change in revenues ($B = -126.19$, $R^2 = .05$, $F\ (1, 159) = 8.08$, $p = .005$) and change in operating profit ($B = -36.62$, $R^2 = .05$, $F\ (1, 159) = 8.86$, $p = .003$).

Hypothesis 1 predicted that multiple scenario analysis increases the likelihood of strategic reorientation. Since we were initially interested in the overall effect of any type of multiple scenario analysis—either reading or creating scenarios—we recoded intervention type into a dummy variable representing multiple scenario analysis versus no multiple scenario analysis (0 = no multiple scenario analysis, 1 = multiple scenario analysis), thus combining participants in the control and strategic review conditions into one group and combining participants in the reading scenarios and creating scenarios conditions into a second group. We then ran an

TABLE 1 Means, standard deviations, and intercorrelations ($n = 160$).

Variables	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Information	0.49	0.50												
2. Multiple scenario analysis	0.52	0.50	−0.02											
3. Scenario plausibility	12.07	3.56	−0.01	-										
4. Scenario impact	5.11	0.97	0.07	-	−0.16									
5. Confidence in previous strategy	12.62	3.74	0.12	0.00	0.11	−0.13								
6. Belief in new strategy	4.04	1.67	0.04	0.31	0.01	−0.07	−0.08							
7. Past performance	11.88	10.21	0.22	0.11	−0.05	0.20	0.13	0.02						
8. Strategic reorientation	2.59	2.37	−0.07	0.25	0.00	−0.05	−0.08	0.38	−0.16					
9. Magnitude strategic reorientation	0.00	0.03	−0.06	0.27	0.15	−0.14	−0.02	0.29	0.02	0.43				
10. Change in subscribers	23.24	23.46	0.19	0.16	−0.17	0.28	0.19	0.11	0.71	0.08	0.06			
11. Change in market share	0.18	0.97	0.03	0.10	−0.21	0.20	0.13	0.13	−0.04	0.05	0.06	0.68		
12. Change in revenue	155.53	192.85	0.16	0.07	−0.17	0.27	0.20	0.00	0.52	0.08	0.02	0.86	0.68	
13. Change in profit	20.81	53.59	0.06	0.05	−0.1	0.13	0.06	−0.01	0.18	0.19	0.01	0.33	0.29	0.53

Note: For information, 0 = low task information and 1 = high task information. For multiple scenario analysis, 0 = no scenario analysis and 1 = scenario analysis. Changes in subscribers, market share, revenue and profit are averaged across the 6-year post-change period.

analysis of variance with the new dummy variable as the independent variable and strategic reorientation as the dependent variable. The results showed that decision makers who undertook multiple scenario analysis were more likely to reorientate their strategy (F (1, 158) = 10.98, p = .001, η^2 = 0.06). Participants who engaged in multiple scenario analysis chose to cut prices on an average of 3.17 (SD = 2.55) times, whereas those who did not engage in multiple scenario analysis chose to cut prices on an average of 1.96 (SD = 2.01) times, thus supporting Hypothesis 1. Multiple scenario analysis also positively affected the magnitude of strategic reorientation (F (1, 158) = 7.86, p = .006, η^2 = 0.05). Specifically, participants who engaged in multiple scenario analysis cut prices to a much greater extent (M = −.10, SD = .19) than participants who did not engage in multiple scenario analysis (M = .04, SD = .43). The contrasting signs of the means indicate that participants who did not undertake multiple scenario analysis actually increased prices overall, thereby shifting their strategy in a maladaptive direction, again supporting Hypothesis 1.

Hypotheses 2a and 2b predicted, respectively, that multiple scenario analysis influences strategic reorientation indirectly through confidence in the previous strategy and belief in a new strategy. To test these predictions, we followed Hayes's (2017) PROCESS procedure for testing mediation with multiple parallel mediators, which uses bootstrapping to construct confidence intervals for indirect effects. We calculated confidence intervals using bias-corrected bootstrap confidence intervals at the 95% level, based on 5000 bootstrap samples. Mediation is present when the 95% confidence interval of the indirect effect excludes 0. Table 2 shows the results. The confidence interval of the indirect effect of multiple scenario analysis via confidence in the previously successful strategy included zero, indicating that there was no indirect effect through this route. Hence, the results do not support Hypothesis 2a. In contrast, the confidence interval for belief in the new strategy did not contain zero, indicating that multiple scenario analysis had a positive indirect effect on strategic reorientation through belief in the new strategy.

TABLE 2 Total, direct, and indirect effects of multiple scenario analysis on strategic reorientation.

Predictors	*B*	*SE*	*t*	*p*	95% *CI* [LL, UL]	*F* (*df*)	R^2
Model: Strategic reorientation						12.02 (3, 154) p = .000	.16
Confidence in the previous strategy	−0.03	0.05	−0.72	.4749	[−0.12, 0.06]		
Belief in the new strategy	0.46	0.10	4.71	.0000	[0.27, 0.66]		
Multiple scenario analysis	0.70	0.36	1.95	.0533	[−0.01, 1.42]		
Total, direct, and indirect effects[a]							
Total effect	1.18	0.37	3.22	.0015	[0.46, 1.91]		
Direct effect	0 .71	0.36	1.95	.0533	[−0.01, 1.42]		
Indirect effect via confidence in the previous strategy	0.00	0.03	-	-	[−0.06, 0.09]		
Indirect effect via belief in the new strategy	0.47	0.14	-	-	[0.24, 0.79]		

Note: *B* = unstandardized regression coefficient; *SE* = standard error; *CI* = confidence interval at lower limit (LL) and upper limit (UL).

[a]Coefficients quantify the total, direct, and indirect effects. For the indirect effect, SE and CI are bootstrapped, following Hayes (2017).

Hence, the results support Hypothesis 2b. Taken together, these results suggest that multiple scenario analysis influences strategic reorientation indirectly by fostering belief in the new strategy, rather than reducing confidence in the previous strategy.

Hypothesis 3 predicted that past performance moderates the effects of multiple scenario analysis on strategic reorientation. To test this hypothesis, we used Hayes's (2017) conditional PROCESS analysis technique. To examine the moderating effect directly, we calculated the effects of multiple scenario analysis on strategic reorientation at low, average, and high levels of past performance. The results showed that multiple scenario analysis led to greater strategic reorientation when past performance was low ($B = 1.99$, $SE = 0.50$, $p = .0001$, 95% CI [0.99, 2.98]) and average ($B = 1.30$, $SE = 0.36$, $p = .004$, 95% CI [0.59, 2.01]). In contrast, when past performance was high multiple scenario analysis had no effect on strategic reorientation ($B = 0.61$, $SE = 0.43$, $p = .153$, 95% CI [−0.23, 1.45]).[1] These results support Hypothesis 3. Figure 1 contrasts the effects of multiple scenario analysis at low and high levels of past performance.

In supplementary analyses, we conducted an analysis of covariance (ANCOVA) with intervention type (control, strategic review, reading scenarios, and creating scenarios) as the independent variable and past performance as the covariate. The dependent variable was strategic reorientation. The results showed that intervention type influenced strategic reorientation (F (3, 155) = 4.41, $p = .005$, $\eta^2 = 0.08$). Planned contrasts of the estimated marginal means, shown in Table 3, revealed that both types of multiple scenario analysis, reading scenarios and creating scenarios, led to greater strategic reorientation than did either the no-treatment control or the strategic review. There was no difference between the effects of the no-treatment control and the strategic review on strategic reorientation. Moreover, there was no difference between the effects of reading scenarios and creating scenarios.

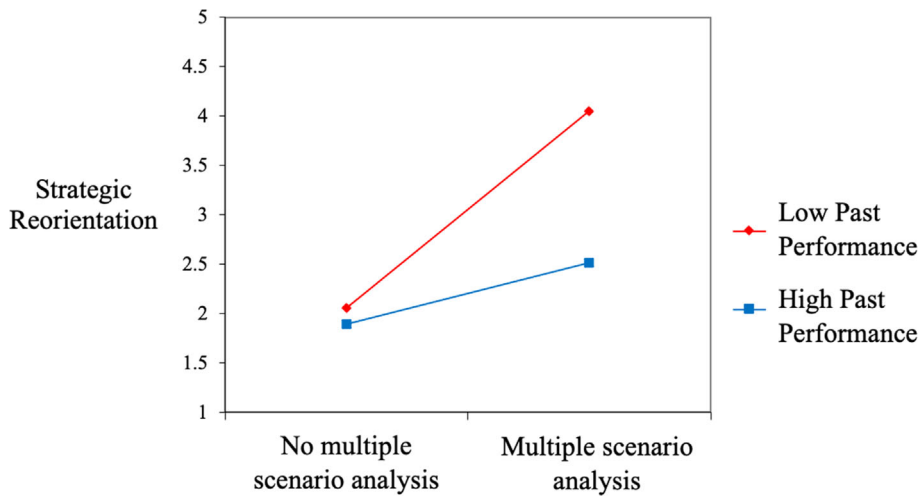

FIGURE 1 Past performance moderating the effects of multiple scenario analysis on strategic reorientation.

[1]We also examined the conditional indirect effect of multiple scenario analysis, finding that the indirect effect through belief in the new strategy decreased as past performance increased. Consistent with the conditional direct effects, multiple scenario analysis had a positive indirect effect on strategic reorientation via belief in the new strategy when past performance was low ($B = 0.58$, $SE = 0.20$, 95% $CI = 0.27$–1.06) and average ($B = 0.45$, $SE = 0.14$, 95% $CI = 0.22$–0.77) but not when past performance was high ($B = 0.32$, $SE = 0.21$, 95% $CI = -0.03$ to 0.82).

TABLE 3 Estimated marginal means of the ANCOVA model of strategic reorientation, controlling for past performance.

Intervention	*M*	*SE*	Comparison	*MD*	$SE_{\bar{d}}$	*p*	95% *CI* [LL, UL]
Control ($n = 39$)	1.78	(0.37)	Control vs. strategic review	−0.26	(0.52)	.6186	[−1.29, 0.77]
			Control vs. reading scenarios	−1.44	(0.51)	.0054	[−2.45, −0.43]
			Control vs. creating scenarios	−1.43	(0.51)	.0057	[−2.44, −0.42]
Strategic review ($n = 38$)	2.04	(0.37)	Strategic review vs. reading scenarios	−1.18	(0.51)	.0229	[−2.20, −0.17]
			Strategic review vs. creating scenarios	−1.17	(0.51)	.0244	[−2.19, −0.15]
Reading scenarios ($n = 41$)	3.22	(0.36)	Reading scenarios vs. creating scenarios	0.01	(0.50)	.9813	[−0.98, 1.00]
Creating scenarios ($n = 42$)	3.21	(0.35)					

Note: *M* = mean, *SE* = standard error, *MD* = mean difference, $SE_{\bar{d}}$ = standard error of mean difference, *CI* = confidence interval of mean difference at lower limit (LL) and upper limit (LL).

5 | DISCUSSION

We set out to examine under controlled laboratory conditions whether multiple scenario analysis could overcome the dysfunctional effects of strategic persistence in a changing task environment. Our results indicate that it can. The findings extend research in behavioral strategy that posits a key role for intervention techniques that can change strategic thinking and action (Gavetti, 2012; Healey & Hodgkinson, 2017; Hodgkinson et al., 1999; Hodgkinson & Healey, 2011; Laureiro-Martínez et al., 2015; Lovallo et al., 2012; Rahmandad et al., 2021). In this section, we discuss implications of our findings for research on dynamic managerial capabilities, the individual level mechanisms of strategic adaptation, and the design of strategic interventions.

Our findings support the idea that imagination is at the heart of dynamic managerial capabilities (Gavetti & Porac, 2018; Helfat & Peteraf, 2015; Schoemaker et al., 2018; Teece et al., 2016). It is well known that managers face significant cognitive barriers when circumstances require strategic adaptation (Helfat & Martin, 2015; Teece, 2007). While it is important to delineate these barriers, our work draws attention to the cognitive *enablers* of strategic adaptation (see also Healey & Hodgkinson, 2017; Hodgkinson & Healey, 2011; Laureiro-Martínez & Brusoni, 2018). Our results add to a recent line of behavioral strategy research suggesting that prospective and imaginative forms of cognition—including cognitive exploration (Laureiro-Martínez et al., 2015) and anticipation (Levine et al., 2017)—are important for overcoming the limits of extant knowledge and stimulating novel courses of action (see also Gavetti & Porac, 2018). Whereas some research highlights the importance of anticipating competitors' actual behaviors (Levine et al., 2017), our findings show that imagining external change is important not necessarily for preempting changes to the specific events imagined but rather to foster responsiveness and self-regulation, however events subsequently unfold. In uncertain conditions, strategists must foster the art of imagining alternative futures, not as a pathway for attaining a particular future imagined but rather to ingrain the habit of identifying contingent

responses to alternative possible futures. Used in this way, imagination can help build new, flexible models of the world that stimulate experimentation and change.

Our findings also shed light on the individual level mechanisms of strategic persistence and strategic reorientation. Studies of the mechanisms that mitigate the effects of dysfunctional persistence are still rare (Audia et al., 2000) but our findings demonstrate that strategic interventions such as multiple scenario analysis might constitute one such mechanism. Interesting questions surround the potential of such interventions. To what extent can multiple scenario analysis alleviate the documented causes of persistence such as prolonged executive tenure (Finkelstein & Hambrick, 1990) and hubris (Hiller & Hambrick, 2005)? Can executives foster skills in multiple scenario analysis that counteract the persistence-inducing effects of tenure, hubris and complacency? Might individual differences, such as future orientation (Zimbardo & Boyd, 1999), affect managers' ability to utilize scenario interventions effectively and thus capitalize on the potential benefits of mentally simulating alternative futures? These are important questions for future research.

Another important research question is whether the effects we obtained in the laboratory extend to managers in organizational settings. Our participants were relatively young and it is possible that older, more experienced managers are less likely to change strategies (Wiersema & Bantel, 1992). Future research that attempts to replicate and extend the present study will be important not only for validating the causal effects of scenario analysis on strategic reorientation but also for establishing the boundary conditions of these effects. One useful replication with extension would be to use samples of managers with significant prior knowledge relevant to the task, to see if such strong priors militate against the potential adaptive effects of multiple scenario analysis.

Extending the present line of inquiry from the laboratory into field experiments (Chatterji et al., 2016) would enable researchers to examine the effects of interventions on strategic reorientation in actual organizational settings. On one hand, the effects of strategic persistence might be stronger in these settings, due to motivational and cognitive factors such as identification with existing strategies and the high stakes associated with choosing reorientation over persistence (Hodgkinson & Healey, 2011). On the other hand, the effects of multiple scenario analysis might also be stronger in real-world settings, where decision makers can ruminate on possible futures over days and weeks, thereby exploring their implications in greater detail. Supporting this conjecture, Brown and Eisenhardt (1997, p. 17) found that the management teams of dynamic firms frequently met with futurists to create "possible visions of the future." Researchers should next examine how organizations can routinize multiple scenario analysis and the mental simulation of alternative futures (Healey et al., 2015) as a cognitive foundation for developing dynamic managerial capabilities (see also Healey & Hodgkinson, 2017; Hodgkinson & Healey, 2011; Schoemaker et al., 2018).

While multiple scenario analysis can be a powerful tool, it seems unlikely that it can serve as a direct and immediate trigger of strategic reorientation in an enterprise's activities, not least because strategic reorientation is typically a collective and protracted process (Tushman & Romanelli, 1985). For this reason, it would be fruitful for researchers to examine the proximal mechanisms through which multiple scenario analysis can help to stimulate strategic change in organizations. In addition to examining how it helps foster belief in new strategies and the associated development of new mental models, researchers might also consider its effects on information search and experimentation, among other exploratory activities. However, our findings should not be interpreted as proof that multiple scenario analysis is a panacea. As Taylor et al. (1998, p. 431) note, "the imagination is not intrinsically beneficial for self-regulation but

must be actively harnessed to be effective for this purpose." Indeed, ruminating on negative futures for a business can trigger dysfunctional behaviors (Hodgkinson & Wright, 2002) and focusing excessively on positive futures can lead to over-optimism (Lovallo et al., 2012). Designing strategic interventions to influence cognitive and affective processes is a delicate affair (Dong et al., 2016; Hodgkinson & Healey, 2008). It requires carefully designed processes that are sufficiently affective in nature to stimulate fresh thinking, without triggering defensiveness or other dysfunctional behaviors (Healey & Hodgkinson, 2017; Hodgkinson & Healey, 2011; Hodgkinson & Wright, 2002).

More generally, our study raises questions about the benefits of strategic reorientation over strategic persistence. Some researchers suggest that strategic persistence leads to better performance overall because it strikes an effective balance between exploring when the environment changes and exploiting when extant solutions are satisfactory (Laureiro-Martinez, 2014). A related view is that over time managers who show high levels of persistence should outperform those who persist less, as suggested by studies of grit (Duckworth et al., 2007). We offer two caveats to these ideas.

First, it is important to distinguish goal persistence from strategic persistence; the latter involves sticking with courses of action for achieving goals. It is possible to show grit in sticking to goals but reorient one's strategy for achieving those goals, as demonstrated in the present study when participants strove to win market share but needed to change their strategies for doing so.

Second, researchers must account for environmental dynamism (see also Stieglitz et al., 2016; Wenzel et al., 2020). In the present study, once change in the task environment had rendered the originally winning strategies less effective, persisting with those strategies over a longer period yielded lower levels of performance. This dynamic was built into the simulation we employed, but it is also a common feature of changing industries (Teece, 2007). Although there are times when strategic persistence can yield rewards (March, 1991; Stieglitz et al., 2016), field studies show that it is not beneficial when external events such as technological or market shifts supersede the current strategy (Gilbert, 2005; Hodgkinson, 1997, 2005; König et al., 2021; Tripsas & Gavetti, 2000).

A limitation of our study is that we examined strategic reorientation following one sudden change in the task environment. Future research could investigate how to facilitate strategic reorientation when change varies both in its frequency and in its severity. A further opportunity is to examine the role of emotion and motivation in strategic reorientation. Hodgkinson and Healey (2011) argued that the key psychological requirements for successful strategic adaptation are being able to weaken emotional attachment to the status quo and foster emotional commitment to the new strategy. More generally, Brusoni et al. (2020) proposed that changing to new strategies requires an assortment of motivational mechanisms, depending on how attached managers are to the current strategy and how proximal or distal they perceive alternatives. It would be valuable to examine the extent to which and under what conditions multiple scenario analysis and other intervention techniques designed to foster mental simulation can help to address these significant challenges.

Notwithstanding the present limitations, our findings suggest that multiple scenario analysis can be an effective tool for helping decision makers adapt to changing circumstances. We hope they inspire further examination of the potential adaptive benefits of this tool and, indeed, other forms of strategic intervention.

DATA AVAILABILITY STATEMENT

Data available on reasonable request from the corresponding author.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Healey, M. P., & Hodgkinson, G. P. (2024). Overcoming strategic persistence: Effects of multiple scenario analysis on strategic reorientation. *Strategic Management Journal*, *45*(8), 1423–1445. https://doi.org/10.1002/smj.3589