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DYNAMIC DECISION MAKING: A MODEL OF SENIOR LEADERS MANAGING STRATEGIC PARADOXES

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Senior leaders increasingly embed paradoxes into their organization's strategy, but struggle to manage them effectively. To better understand how they do so, I compared in-depth qualitative data from six top management teams exploring and exploiting simultaneously. The results informed a model of dynamic decision making in which strategic paradoxes can be effectively engaged. The details of this dynamic decision-making model extend and complicate our understanding of managing paradoxes by depicting dilemmas and paradoxes as interwoven, explicating a consistently inconsistent pattern of addressing tensions, and framing both differentiating and integrating practices as necessary for engaging paradox.

> The senior leaders say it is a bitch to manage these two types of businesses. It takes a great deal of time, and they know there will be great outcomes, but they will not see them for 12–24 months. They say it's like brushing your teeth—you've got to do it every night, but you only know when you go to the dentist whether it was worth the effort.
>
> (General manager, IT Services strategic business unit)

Organizations are rife with competing demands. At an organization's highest level, senior leaders face such pressures as exploring and exploiting (March, 1991), integrating globally and adapting locally (Marquis & Battilana, 2009), or maximizing profits and improving social welfare (Margolis & Walsh, 2003). Early organizational scholars acknowledged these competing strategic demands, but argued that success depended on leaders making choices and maintaining a consistent commitment to these decisions (Barnard, 1938; Thompson, 1967). Now, in the context of more complex and global environments, organizations and their leaders face pressures to address multiple, competing strategic demands simultaneously (Jarzabkowski & Sillince, 2007; Kraatz & Block, 2008; Smith, Binns, & Tushman, 2010). Rather than choosing between alternatives, long-term performance depends on engaging them both. Yet, as the epigraph suggests, doing so challenges and frustrates senior leaders.

Paradox theory offers insight into these challenges (Quinn & Cameron, 1988; Smith & Lewis, 2011). Paradoxes denote tensions that coexist and persist over time, posing competing demands that require ongoing responses rather than one-time resolutions (Lewis, 2000). Studies describe approaches to managing paradoxes in general that include accepting paradoxes as vital and learning to work through them (Luscher & Lewis, 2008), accommodating contradictions into novel synergies (Eisenhardt & Westcott, 1988; Rothenberg, 1979), or differentiating and integrating to understand alternatives (Andriopoulos & Lewis, 2009; Smith & Tushman, 2005). More recently, Smith and Lewis (2011) have theorized a model incorporating these various approaches that involves managing paradox by accepting tensions as inherent, and shifting between choosing and accommodating alternatives over time. However, we still know little about the specific nature and management of strategic paradoxes, which—drawing from Lewis (2000)—I define as contradictory, yet interrelated, demands embedded in an organization's goals. Managing strategic paradoxes is particularly challenging for top management teams, because even as they might seek to maximize both

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strategies simultaneously, these leaders face ongoing pressure to make clear and consistent decisions between alternative strategies in order to allocate resources and to provide guidance for the rest of the organization. How senior leaders address strategic paradoxes critically impacts an organization's success, yet remains relatively unexamined.

This gap in the literature motivated the study's key research question: *How do senior leaders sustain strategic paradoxes?* To investigate this question, I compared in-depth data from the top management teams of six strategic business units as they made decisions in response to strategic paradoxes—specifically, exploring and exploiting simultaneously (Raisch, Birkinshaw, Probst, & Tushman, 2009; Smith & Tushman, 2005). Integrating insights from these data with existing literature informed a model of dynamic decision making that depicts how top management teams engage strategic paradoxes through a pattern of iteratively choosing between domains over time. The details of this model advance and complicate our understanding of the nature and management of paradox by depicting dilemmas and paradoxes as interwoven, understanding paradoxical management as a pattern of decisions over time rather than reactions to individual issues, and describing the critical role of both differentiating and integrating practices together to manage paradox.

NATURE AND MANAGEMENT OF ORGANIZATIONAL PARADOXES

Paradoxes are "contradictory yet interrelated elements that exist simultaneously and persist over time" (Smith & Lewis, 2011: 382).[1] Scholars typically distinguish paradoxes from dilemmas. While paradoxes persist and are impervious to resolution, dilemmas involve tradeoffs that are resolved with "either/or" decisions (Cameron & Quinn, 1988; Clegg, 2002). Strategic paradoxes describe organization-level performing tensions that "stem from the plurality of stakeholders and result in competing strategies and goals" (Smith & Lewis, 2011: 384). Even as there are multiple types of paradox that exist at multiple levels of analysis, strategic paradoxes are particularly prevalent, challenging, and consequential to an organization's fate.

Strategic paradoxes pervade organizations, increasingly garnering attention from both practitioners and scholars. Research is replete with examples of strategic paradoxes, including tensions between global integration and local adaptation, financial profitability and social missions, or high commitment and high performance (i.e., Beer, 2009; Clegg, 2002; Gittell, 2004; Nonaka & Toyama, 2002). Moreover, as the complexity, plurality, and competitiveness of environments grows, senior leaders experience increased pressures to simultaneously embed multiple competing demands within organizations (Besharov & Smith, 2014; Greenwood, Raynard, Kodeih, Micelotta, & Lounsbury, 2011; Kraatz & Block, 2008).

In this study, I focus on exploring and exploiting as a key example of strategic paradoxes. As March (1991: 101) noted in his early conceptualization, demands to explore and exploit exist across organizations and remain "a central concern of studies of adaptive processes." *Exploring* introduces novel innovations to achieve long-term sustainability, while *exploiting* finds operational efficiencies in existing products for short-term performance. Ambidexterity studies investigate how organizations explore and exploit simultaneously (Raisch & Birkinshaw, 2008; Tushman & O'Reilly, 1996). Yet these strategic demands are paradoxical, involving contradictory, self-referential, and persistent tensions (Hughes & Brecht, 1975). They are *contradictory* because they are associated with inconsistent senior leadership demographics (Beckman, 2006), cultures (Ghoshal & Bartlett, 1994), processes (Benner & Tushman, 2003), and knowledge management practices (Sheremata, 2000). Efforts to explore and exploit are also *self-referential*. Exploiting involves stability and efficiency that effectively enable exploration. Exploring engenders change and renewal, reducing risk and improving execution for exploitation (Farjoun, 2010). Finally, these tensions *persist*, because engaging one domain triggers demands on the other and fuels cycles over time (Andriopoulos & Lewis, 2009).

[1] Researchers use various terms to describe oppositional elements, including "paradox," "dualities," and "dialectics" (i.e., Farjoun, 2010; Seo & Creed, 2002; Smith & Graetz, 2006). A key distinction lies in the persistent nature of tensions. Dialectics and dualities imply resolving tensions by identifying a novel synergy. In contrast, paradoxical tensions persist and cannot be resolved (see Smith & Lewis, 2011). Conceptual confusion between these constructs remains, and scholars often use these terms interchangeably. Following other ambidexterity studies (i.e., Andriopoulos & Lewis, 2009; Raisch & Birkinshaw, 2008; Smith & Tushman, 2005), I adopt the term "paradox" to highlight the simultaneity and persistence of tensions between exploring and exploiting.

Effectively managing strategic paradoxes consequentially impacts an organization's fate (Cameron, 1986; Jay, 2013; Smith, Lewis, & Tushman, 2011). In particular, ambidexterity studies emphasize that long-term organizational performance depends on successfully exploring and exploiting simultaneously (He & Wong, 2004; Tushman, Smith, Wood, Westerman, & O'Reilly, 2010). Senior leaders play a critical role: Their actions, rhetoric, and decisions in response to tensions create organizational contexts (Jarzabkowski, 2008), influence middle-manager responses (Floyd & Lane, 2000), and ultimately impact performance (He & Wong, 2004). Yet simultaneously engaging paradoxical strategies challenges and frustrates senior leaders. Even as paradoxes elude resolution, senior leaders frequently face pressures to make decisions in order for the organization to move forward. Moreover, leaders experience both internal and external pressure for consistency, rather than encouragement to embrace inconsistent strategies simultaneously. Internally, commitments to multiple strategic goals can foster ambivalence among employees (Merton & Barber, 1976; Pradies & Pratt, 2010) or contestation between subgroups with distinct alignments (Glynn, 2000). These conflicts become particularly intractable when the goals reinforce competing identity claims (Besharov, 2013; Fiol, Pratt, & O'Connor, 2009). Efforts to manage ambiguity and conflict can result in choosing one strategic alternative (Thornton, 2002). Leaders further face inertial pressures, in which structures (Henderson & Clark, 1990), cognitive frames (Tripsas & Gavetti, 2000), routines (Gilbert, 2005), and competencies (Leonard-Barton, 1992; Tripsas, 2009) support existing products over innovations. In addition, embedding conflicting demands creates legitimacy challenges with divergent external stakeholders (Kraatz & Block, 2008). These pressures to minimize internal conflict and to address external legitimacy drive leaders to choose a single strategy.

Paradox research depicts various approaches for managing these tensions. First, research stresses reframing tensions to bring to the surface their paradoxical nature. Paradoxes defy rational, linear logic, and in so doing create uncertainty and ambiguity that are both emotionally and cognitively threatening (Lewis, 2000). Individuals often respond defensively, repressing paradoxes by framing tensions as dilemmas and "either/or" options, and ultimately choosing one alternative (Vince & Broussine, 1996). These choices can fuel vicious cycles as emphasizing one option resurfaces demand for the other and thwarts the creative energy embedded within (Lewis, 2000; Sundaramurthy & Lewis, 2003). Individuals and groups can ultimately be paralyzed by a choice between alternatives (Frankl, 1960; Smith & Berg, 1987). To avoid these paralyzing cycles, scholars emphasize paradoxical thinking (Smith & Tushman, 2005), reframing the tensions of "either/or" as the possibilities of "both/and" (Bartunek, 1988).

Studies also point to specific management approaches to responding to paradoxes. Recognizing that paradoxes defy resolution, scholars depict strategies for managing competing demands simultaneously that include (1) accepting, (2) accommodating, and (3) differentiating/integrating. *Accepting* involves "learning to live with the paradox" (Lewis, 2000: 764). Doing so includes "working through" the paradox to recognize and embrace the conflicting tensions (Murnighan & Conlon, 1991; Smith & Berg, 1987). Luscher and Lewis (2008) describe developing a "workable certainty"—a negotiated understanding to move forward without resolutions. To do so, they stress the value of paradoxical inquiry as a practice to surface tensions and to enable sensemaking. Others emphasize using communication or humor to embrace paradox (Hatch, 1997; Hatch & Erhlich, 1993; Jarzabkowski & Sillince, 2007).

Accommodating involves defining a novel, creative synergy that addresses both oppositional elements together. Rothenberg (1979) suggested that geniuses such as Mozart, Einstein, and Picasso developed breakthrough ideas by cognitively juxtaposing contradictions and seeking a solution to accommodate both alternatives—a capability that he labeled "Janusian thinking." Eisenhardt and Westcott (1988) describe how adopting a paradoxical frame enabled Toyota's senior leaders to generate new strategic solutions—e.g., juxtaposing goals to carry no inventory while having access to any necessary component at the right time, which resulted in their "just in time" processes.

Other research identifies differentiating and integrating as complementary approaches for addressing paradox. Building on the early conceptualizations of Lawrence and Lorsch (1967), these studies describe differentiation and integration in organizational designs (Tushman & O'Reilly, 1996), leadership cognition (Smith & Tushman, 2005), or organizational practices (Andriopoulos & Lewis, 2009). *Differentiating* involves separating distinct elements and honoring the unique aspects of each, while *integrating* stresses synergies and linkages

(Smith & Tushman, 2005). For example, Andriopoulos and Lewis (2009) suggest differentiating practices that include building diversified portfolios, debating project demands, and temporally and spatially splitting practices, and integrating practices that include cultivating a paradoxical vision, purposefully improvising, and identifying integrative roles. More recent studies proposed attending to various approaches over time. Jarzabkowski, Le, and Van de Ven (2013) depict cycles of tensions and responses. As individuals responded to paradoxical tensions, new tensions emerged, fueling different responses. Smith and Lewis (2011) theorized a "dynamic equilibrium" model that proposes managing tensions by accepting inherent paradoxes, then vacillating between choosing and accommodating strategies.

Taken together, these studies posit strategic paradoxes as increasingly prevalent, challenging, and consequential. Yet while research offers approaches to managing paradox in general, we still know little about how senior leaders address the intense demands of strategic paradoxes under which they seek to engage competing demands simultaneously, but face pressures to make decisions in response to critical issues. This study therefore seeks to expand and build upon our understanding of the nature and management of paradoxes, by exploring the central research question: *How do senior leaders make decisions that can sustain commitments to strategic paradoxes?*

METHODS

I compared six case studies to investigate how senior leaders made decisions that enabled them to explore and exploit simultaneously (Eisenhardt & Graebner, 2007; Yin, 1984). I observed each of these cases for a year. Analyzing in-depth data over the course of a year allowed me to generate novel insights into the patterns of decision making in each case. In addition, comparing across six distinct cases surfaced differential patterns of decision making.

Research Context and Case Selection

I observed top management teams of six strategic business units from one Fortune 500 corporation. Following ambidexterity research (i.e., Jansen, Simsek, & Cao, 2012), I focused on such units because industry competition often occurs at this level (Porter, 1985), and the leaders of the strategic business units have responsibility for exploratory and exploitative strategic domains (Gatignon, Tushman, Smith, & Anderson, 2002). In addition, studying multiple strategic business units in one organization allowed me to compare cases within the same corporate context (Gibson & Birkinshaw, 2004) and to minimize extraneous variability (Eisenhardt, 1989). This Fortune 500 firm adopted a strategy requiring its strategic business units to "develop products across multiple horizons" (see Baghai, Coley, & White, 2000), resulting in a broad population of strategic business units. Following existing research (Finkelstein & Hambrick, 1996), I defined the top management team as the general manager and his or her direct reports. Table 1 summarizes these six cases.

I worked with an executive in corporate strategy to sample cases theoretically based on three criteria. First, each strategic business unit made a

TABLE 1
Case Selection

Case	Existing Products	Innovations	Age (yrs)	Industry	Existing Product Performance	Existing Product Strategic Commitment	Innovation Strategic Commitment
Software 1	Database software	Web-based database software	18	Software	Growth #2 in market	#1 in market Increase revenue 35%	#1 in market Three-digit growth in 3 years
Software 2	Enterprise software	Web-based enterprise software	14	Software	Stable #1 in market	#1 in market Stable revenue	#1 in market Three-digit growth in 5 years
IT Services	Strategic outsourcing; business integration	Application management services	10	IT; Consulting services	Decline #1 in market	#1 in market Increase revenue 20%	#1 in market $1bn in 2 years
Life Sciences	Back-office technology solutions	Life science research and delivery technology solutions	10	Hardware	Stable #2 in market	#1 in marke Stable revenue	#1 in market $1bn in 3 years
Semiconductor	ASIC chips	Transport and network chips	8	Hardware	Decline #2 in market	#1 in market Increase revenue 35%	#1 in market $2bn in 3 years
Software 3	Collaboration software	Web-based collaboration tools	20	Software	Decline #2 in market	#1 in market Increase revenue 11%	#1/#2 in market $0.5bn in 2 years

commitment in its annual budget plan to exploit and explore. Following extant research, I defined "exploiting" as incrementally improving an existing product's technology and/or marketing strategies in order to increase efficiencies to the same target market, and "exploring" as developing and commercializing nonincremental innovations (Gatignon et al., 2002; Tushman & Smith, 2002).

Second, I sought to minimize variance in the contexts of the strategic business units. All six strategic business units were in high-tech industries. Their existing products had been in the marketplace between eight and 20 years, and had earned between US$1 billion and $3.7 billion in revenues. Innovations were introduced to the market less than a year prior to the study.

Third, to expedite data collection, I included three real-time cases and three retrospective cases (Leonard-Barton, 1990). To minimize bias from these different types of data, I focused interviews on specific events, corroborated across multiple data sources, and asked key informants to assess comprehensiveness (Eisenhardt & Graebner, 2007). The time frame did not seem to impact the findings, with both real-time and retrospective cases demonstrating the differences that emerge from my data analysis.

Data Collection

Data collection lasted for more than two years, including interviews, observations, and archival materials (Eisenhardt, 1989; Jick, 1979). Table 2 summarizes the data.

Interviews. I conducted 96 interviews with 65 distinct informants. To triangulate insights from different sources, I interviewed informants at various levels in the company, including (1) the strategic business unit's general manager, (2) the strategic business unit senior leaders, (3) division managers, (4) internal organizational consultants working with the unit, and (5) corporate executives (Eisenhardt, 1989). I first interviewed the general managers, and they identified additional interviewees. Interviews lasted between 45 minutes and two hours. Guided by extant research, I started with structured interviewing to understand the strategic business unit's strategic context, exploratory products or services, and exploitative products or services. I asked informants to describe the challenges of managing multiple strategic domains and how they responded to these challenges (Miles & Huberman, 1994). As each interview progressed, I began focusing on the nature of specific strategic challenges and issues, and how the informant responded. I adopted a "courtroom" style of interviewing, pushing for concrete illustrations to increase the data's trustworthiness (Eisenhardt & Graebner, 2007). Because of the strategic and interpersonal sensitivity of the issues, I did not record the interviews, but took extensive notes, which conveyed trust and motivated accuracy (Miller, Cardinal, & Glick, 1997). I recorded verbatim quotes and typed the notes up as soon as possible (Miles & Huberman, 1994). To increase data reliability, an internal corporate organizational consultant accompanied me for 10% of the interviews. The similarities in our independent notes reinforce confidence in the data quality.

Observation. I observed 16 senior leadership meetings, including monthly board meetings and special offsite strategy sessions. I sat in the back of

TABLE 2
Data Collected

		Interviews							Meetings	
Case	Time Frame	Strategic Business Unit General Manager	Strategic Business Unit Senior Leaders	Division Manager	Internal Organization Consultant	Corporate Executives	Total Interviews	Total Interviewees	Total Meetings Observed	Meeting Type
Software 1	Real time	2	5	1	1		9	7	2	Board meeting Offsite
Software 2	Retrospective	5	16	2	1		24	13	1	Offsite
IT Services	Retrospective	2	7	1	1		11	9	1	Offsite
Life Sciences	Real time	2	7	0	3		12	7	4	Board meeting Offsite
Semiconductor	Retrospective	3	10	1	0		14	11	1	Board meeting
Software 3	Real time	2	16	1	1		20	14	7	Board meeting
						6	6	4		Offsite
Total							*96*	*65*	*16*	

the room for these meetings, taking notes about their content and processes, including verbatim quotes, and typed up these notes as soon as possible. I spoke with executives during breaks to ask questions and to check my inferences. In the three real-time cases, I observed multiple meetings. In retrospective cases, I observed at least one meeting and used these data to support interview narratives.

Archival information. Forty archival documents—including internal strategic business unit documents such as business plans, strategic progress reports, and meeting agendas, as well as information from the company websites and industry analyses—allowed me to triangulate my understanding of each strategic business unit's context, strategy, practices, and outcomes.

Data Analysis

I adopted analytical techniques to generate insights within each case and then compared across cases (Eisenhardt, 1989; Yin, 1984). I describe four stages that systematically move from raw data to theoretical interpretations (Gioia, Corley, & Hamilton, 2013). Even as I delineate stages, the process was iterative to improve insights and generalizability (Langley, 1999; Locke, Golden-Biddle, & Feldman, 2008). Table 3 summarizes the stages of the analytical process.

Stage I: Develop thick descriptions. I developed a rich case study for each strategic business unit, which incorporated various types of data (Langley, 1999) to describe the organizational context, exploratory and exploitative strategies, and a chronology of senior leadership challenges and responses. I interspersed case writing with data collection, allowing insights and questions from the cases to inform future data collection (Yin, 1984). I shared cases with key informants to assess reliability and comprehensiveness.

Three critical insights emerged from the case studies and guided my subsequent analyses. First, leaders identified a number of specific issues that involved tensions between exploration and exploitation. They described the issues as complex, challenging, and frustrating. This insight led me to focus on specific issues as a primary unit of analysis (Maitlis, 2005).

Second, these issues persisted over time. As leaders made decisions on one issue, new issues emerged. Informants experienced issues as "ongoing tensions" and said that they are "constantly grappling." This insight guided my focus on patterns of responses over time, rather than responses to individual issues.

Finally, early insights suggested three different approaches to managing tensions between exploration and exploitation—only exploring, only exploiting, and both exploring and exploiting. These distinctions helped to guide future analyses, in which I systematically coded raw data to develop theoretical constructs (Gioia et al., 2013) and ultimately to verify the distinct approaches (Eisenhardt, 1989).

Stage II: Identify key issues. I identified specific issues between exploring and exploiting. To do so, I generated a list of emerging issues, which I defined as conflicts facing senior leaders involving both the existing product and the innovation. I included issues that fit four criteria. First, the issue was salient and challenging. Leaders described these issues using words such as "difficult," "very hard," "uncertain," "unclear," "challenging," "tensions," or "problem." Second, the issue involved tensions between existing product and innovation, and were not problems facing only one product domain. Third, the senior leaders had responsibility to address the issue. For example, I did not include issues of leaders' compensation that required corporate policy changes. Finally, multiple informants raised an issue, ensuring its importance and salience.

I coded issues using short descriptions or in vivo codes. Grouping thematically and incorporating existing literature resulted in eight types of issue, which I clustered into three categories that emerged from the literature:

(1) *resource allocation* (i.e., Bower & Gilbert, 2005) including issues of allocating (a) financial resources, (b) human resources, such as engineers and sales people, and (c) time such as the senior leaders' time in meetings;
(2) *organizational design* (i.e., Nadler & Tushman, 1992) including issues around (d) organizational structure, (e) processes, and (f) metrics; and
(3) *product design* (i.e., Gatignon et al., 2002) including issues around (g) product technology, and (h) target markets.

I returned to each case to ensure that I had captured all of the issues, from which 47 issues resulted. To identify how leaders understood issues, I explored their descriptive words (Huff, 1990), which suggested two different experi-

TABLE 3
Data Analysis: Stages of Analytical Process

Stage	Analytical Activities	Output
1. Develop thick descriptions to generate initial insights	1. Generate thick descriptions of each case 2. Share descriptions with informants to increase reliability and comprehensiveness	• Six thick case studies, one for each SBU
2. Identify key issues in each case	1. Generate a list of issues based on four criteria: (a) salience; (b) tension between exploring and exploiting; (c) senior leaders' span of responsibility; and (d) multiple informants 2. Code issues using in vivo codes or short phrases 3. Cluster and incorporate literature to identify eight types of issue in three categories 4. Return to raw data to confirm all instances of issues 5. Identify language that leaders use to describe their understanding of issues	• 47 issues across all cases (approx. eight per case) • Eight types of issues in three categories (resource allocation, organizational design, product design) • Two themes describing leaders' experience of issues
3. Identify leadership practices, decision contexts, and decisions		
(a) Code data to elicit leadership practices and decision contexts	1. Code data to identify responses to tensions (315 instances) 2. Cluster codes into meaningful groups (six practices, two contexts) 3. Check coding reliability with external researchers 4. Incorporate existing literature to aggregate into dimensions	• Six leadership practices, aggregated into dimensions of differentiating and integrating • Two themes of decision contexts
(b) Classify decisions in response to issues	1. Identify decisions in response to issues 2. Classify decisions as (a) supporting exploration, (b) supporting exploitation, or (c) supporting both	• Classification of decisions in response to each tension
(c) Aggregate each case over multiple issues to define patterns over time	1. Create tables by case with responses to each issue to describe patterns over time 2. Code data to identify how leaders understand decision patterns	• Three decision patterns: (1) exploring and exploiting (three cases), (2) only exploring (two cases), and (3) only exploiting (one case) • Two themes describing decision patterns to explore and exploit
4. Incorporate data and literature to build a theoretical model	1. Combine data on leadership practices, decision contexts, and decision patterns to describe overall approaches 2. Integrate existing literature to inform an overall model of dynamic decision making	• Model of dynamic decision making to sustain strategic paradox

ences. Their language included words that indicated paradoxical tensions, such as "tensions," "yet," "but," "balance," and "on one hand/on the other hand" (Andriopoulos & Lewis, 2009). They identified contradictions, both noting how they had to address them simultaneously and recognizing that tensions persisted over time, impervious to resolution. Yet they also described issues as dilemmas, using language such as "tradeoffs," "choice," "resolve," and "either/or" (Smith & Lewis, 2011).

Stage III: Identify patterns of leadership practices, leadership focus, and decisions. To investigate my research question about how senior leaders make decisions to sustain commitments to strategic paradoxes, I read through the raw data, asking: *How are senior leaders responding to issues?* Three types of code emerged: (1) practices or leaders' everyday activities (Feldman & Orlikowski, 2011; Jarzabkowski, 2005); (2) decision contexts describing how practices impacted the leaders' understanding of exploring and exploiting (Corley &

Gioia, 2004; Huff, 1990); and (3) decisions. To code for leaders' practices and decision contexts, I read through the raw data and created in vivo codes or short phrases for critical passages, which I clustered into meaningful groups. This process resulted in six themes describing leadership practices and two themes describing the decision context. I shared these themes with two researchers not involved with this study, and used their feedback to clarify and distinguish emergent themes. Noting similarities and differences, I clustered the leadership practices into two dimensions. Adopting labels from existing literature, I labeled these "differentiating" and "integrating" (Andriopoulos & Lewis, 2009; Smith & Tushman, 2005). I further noted the distinct context for the decision making, in which the leaders stressed either the distinct strategic domains or the interconnections between domains.

I then identified leaders' decisions in response to each issue. For example, they reallocated resources, changed organizational structures, or reconsidered leaders' roles and responsibilities. I also noted instances in which leaders did nothing in response to critical issues (i.e., Greenwood & Hinings, 1993; Tversky & Shafir, 1992). I categorized decisions based on whether they supported exploration, exploitation, or both. In the cases in which leaders made no decisions, I coded these cases as either exploring or exploiting, depending on the nature of the status quo. For example, in one case, the senior leaders noted that they needed to decide on organizational design. The existing design benefited only the existing product and was limiting the innovation's success. Yet the leaders did nothing in response.

In order to understand how leaders attended to persistent issues, I identified patterns of responses over time. I created a table for each case, which listed leadership practices and decisions in response to each specific issue, and aggregated these for each strategic business unit (Miles & Huberman, 1994). Three decision patterns emerged, supporting my initial insight into the three different approaches to managing exploration and exploitation simultaneously. In three cases, leaders' decisions shifted support between the existing product and innovation, with a small number of decisions supporting both domains simultaneously. In the other cases, leaders supported one domain while avoiding the other. Two cases only explored, while one case only exploited. Based on my research question aiming to understand how senior leaders managed strategic paradoxes, I focused on the three cases that supported both exploration and exploitation simultaneously, using the other three for comparison. I returned to the data to investigate how leaders in these three cases described their decisions. Using a similar coding process to that already described, I identified two key themes. Leaders in these cases described approaches to managing competing demands as inconsistent, flexible, and dynamic. Following Smith and Lewis (2011), I label this pattern "consistently inconsistent."

Stage IV: Incorporate findings to build a theoretical model. I integrated data about leadership practices, decision contexts, and decision patterns to describe overall approaches. Finally, I embedded existing theory to help inform relationships between constructs. These data and literature result in a model of dynamic decision making to manage strategic paradoxes. I shared the emergent model with two peer researchers to clarify theoretical insights.

Overall, I adopted prescribed methods for data collection and analysis that sought to increase the trustworthiness of the findings, including:

(1) a prolonged engagement with the research site to become enmeshed in the context and data (Lincoln & Guba, 1985);
(2) multiple sources of data and multiple levels of informants to triangulate perspectives (Eisenhardt, 1989; Jick, 1979);
(3) retrospective and real-time cases to expedite data collection, while minimizing bias (Eisenhardt & Graebner, 2007; Leonard-Barton, 1990);
(4) thick descriptions and informant feedback to capture the rich context, and to ensure the quality and validity of interpretations (Langley, 2007); and
(5) outside researchers reviewing the emergent constructs and models to vet ideas, and to increase the reliability and validity of interpretations (Lincoln & Guba, 1985).

The output of these analyses describes a model of dynamic decision making to manage strategic paradoxes.

FINDINGS

Three Approaches to Managing Strategic Paradoxes

The top management teams in all six cases committed to both exploratory and exploitative success, but only three senior leadership teams sustained these commitments. In the other three

cases, the senior leaders focused only on exploring or only on exploiting. In this section, I briefly describe the three cases that only explored or only exploited to throw into sharp relief the remaining narrative, which describes my findings that the other three cases could support both exploration and exploitation.

The "Life Sciences" and "Semiconductor" strategic business units focused only on exploring, but avoided or ignored the needs of the existing product. Life Sciences created IT services for the life science industry. Its existing business provided back-office hardware and software primarily for big pharmaceutical companies. At the same time, its new business offered IT solutions for biological and medical research and delivery. Semiconductor made ASIC chips primarily for computing hardware and was launching a new business developing chips for network technologies. In both strategic business units, the general managers focused predominantly on developing the innovations, seeking to grow them quickly into billion-dollar businesses. To ensure that they provided the resources for the innovation businesses to success and were not burdened by the existing product, the managers created new senior team roles with responsibilities for only the innovation, held offsite meetings to ensure the success of these businesses, and focused almost all of their monthly senior team agendas on the innovation. I describe these practices as "differentiating": They enable the senior leaders to distinguish the innovation needs from those of the existing product. Doing so helped them to avoid inertial pressures that could keep them bound to the past. Yet they engaged in few practices that engaged the existing product or linked the existing product with the innovation. As the Life Sciences general manager noted: "I have gotten pressure from others to expend the money on helping us shore up solutions that are more traditional conventional areas. It's not very difficult to say no . . . It's not strategic, not where the puck is moving." As a result, the strategic business unit spent no time focused on the existing product. The manager's strategic decisions reflect this pattern; all decisions made were in favor of the innovation. One frustrated Life Science leader noted "[The senior team] is only focused on this futuristic stuff," then asserted that he had nothing to sell today to achieve the revenue targets for the existing product. Similarly, Semiconductor's vice president of business development said: "We don't work on the existing products. We are only looking for new opportunities."

The "Software 3" strategic business unit produced enterprise-wide collaboration software (e-mail, calendaring, etc.), while building new businesses for online collaboration tools. To manage both of these strategic domains, the senior leaders engaged practices linking the existing product to the innovation. For example, they articulated an overarching vision that encompassed both the existing product and innovation, and then promoted this vision to the whole organization by speaking about it frequently, hanging signs on office walls, creating wallpaper for each employees' computer, etc. As one senior leader noted: "We get it that we are supposed to be ambidextrous." They also asked each of the senior leaders to take responsibility for both the existing product and innovation. They structured senior leadership meeting discussions around functional responsibilities, which meant that they addressed issues associated with both the existing product and the innovation together. I describe these practices as "integrating"—practices that seek to create linkages and synergies between the different strategic domains. Software 3 adopted integrating practices, but unlike Life Sciences or Semiconductor, none of its practices created distinctions between the existing product and innovation. As a result, inertia led the leadership to focus all of their time, resources, and decisions only on the existing product. As one Software 3 leader summarized: "We keep treating [the innovation] just like the [existing product] and as a result do damage to the innovation." Leaders reported feeling frustrated and stalled.

Comparing these three cases with the three cases that both explored and exploited revealed several critical differences around how the strategic business units manage exploration and exploitation. In particular, Life Sciences and Semiconductor adopted only differentiating practices, which were associated with only exploring. Software 3 adopted only integrating practices, which were associated with only exploiting. The other three cases engage both differentiating *and* integrating practices, which were associated with supporting exploratory and exploitative businesses. Table 4 highlights this comparison.

In the narrative that follows, I describe how these last three cases adopted both differentiating and integrating practices, and how these practices were associated with both exploration and exploitation. To support this narrative, I include a data structure display (Figure 1), a data table supporting emergent constructs (Table 5), and a list of key issues and

TABLE 4
Comparing Approaches to Managing Strategic Paradoxes

Cases	Leadership Practices	Decision Pattern
Software 1 Software 2 IT Services	Differentiating and integrating	Exploring and exploiting
Life Sciences Semiconductor	Differentiating	Only exploring
Software 3	Integrating	Only exploiting

decisions for each of the three cases (Table 6). I then integrate these findings with existing literature to build an overall model of dynamic decision making (Figure 2).

Key Issues and Experienced Tensions

The "Software 1," "Software 2," and "IT Services" strategic business units all committed to both explore and exploit, and by doing so raised critical tensions between these different strategic domains. Softwares 1 and 2 were both growing existing billion-dollar enterprise-wide software systems, while developing new software for online support. IT Services had several IT consulting businesses that created long-term contracts allowing clients to outsource their hardware servicing or to integrate corporate information technology systems, while building a new business that created shorter-term contracts to manage software applications for clients.

Managing both existing businesses and innovations surfaced a number of competitive issues between the two businesses. In particular, I categorized three types of issues.

(1) *Resource allocation* included competition for financial resources, human resources, and time resources. For example, leaders grappled with how to allocate engineering headcount between strategic domains depending on short-term client needs or long-term demands to build the business.
(2) *Organizational design* included differential needs for structure and leadership roles, processes, and metrics. For example, leaders debated whether to create a new subunit for the innovation and, if so, whether its leader should be from inside the organization or outside.
(3) *Product design* involved competition for the technological development or target markets of the existing product or innovation. For example, leaders discussed whether the innovation should leverage technology and/or existing customers from the existing product.

Leaders experienced and described these competitive issues as both (1) "either/or" dilemmas that required resolutions and choices, and (2) paradoxical tensions in which contradictory, yet interrelated, elements defy resolutions.

"Either/or" dilemmas. Senior leaders experienced issues between the existing product and innovation as tradeoffs that needed a clear decision one way or another. As one IT Services leader noted, the process was "a lot about making tradeoffs." IT Services' general manager further reflected: "The tradeoff is short-term, quarterly and annual achievement of targets versus having to manage our innovation with a very different type of model." Resource issues surfaced as dilemmas when leaders felt pulled between allocating financial resources, human resources, and their own time to either the existing product or innovation. As Software 1's general manager noted, "The trick was always how to allocate money," while another leader said, "The tradeoffs were fairly headcount based." Leaders also described organizational design decisions as tradeoffs between strategic domains, including issues around structures, processes, and metrics. For example, an IT Services leader noted that the strategic business unit would have to "make a clear decision" about whether to create a distinct subunit for the innovation or not. A Software 1 leader grappled with designing the innovation team to include people who were committed to the past or people who had skills for the future: "Are you better off breaking with the past and going with something different in development and marketing or not?" Finally, product design issues surfaced as dilemmas when leaders felt under pressure to choose technological design elements or to make "either/or" choices around customers and target markets. For example, leaders in Softwares 1 and 2 described debates about whether to adopt the technology platform for the innovation that aligned with the existing product or the one that took advantage of novel software in the marketplace.

Paradoxical tensions. Beyond describing "either/or" tradeoffs, senior leaders also depicted issues as paradoxical—that is, they recognized the

FIGURE 1
Data Structure

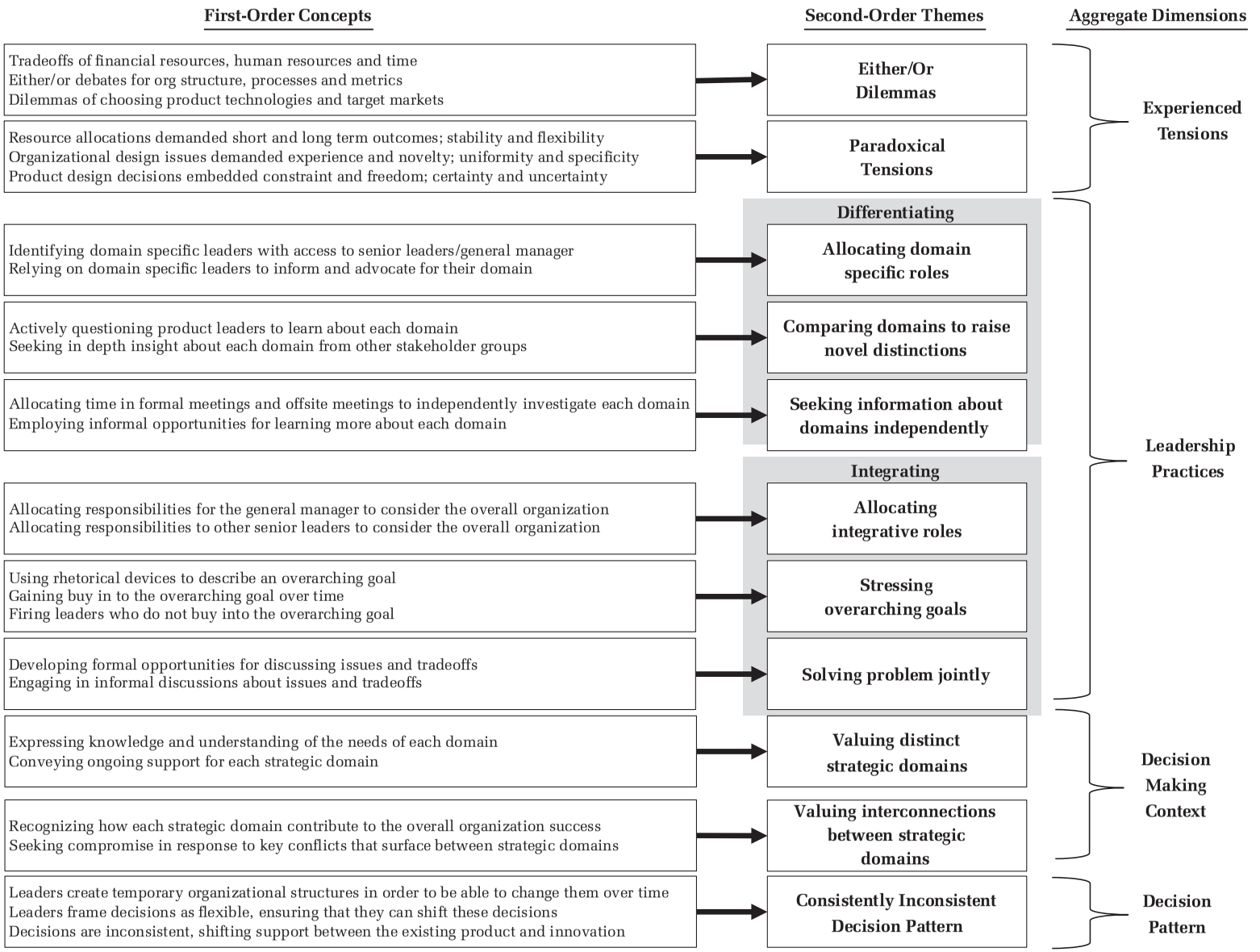


TABLE 5
Data Supporting Interpretations of Second Order Themes

Dimension	Themes	Representative Quotes
Experienced tensions	"Either/or" dilemmas	"We needed to make a decision of whether or not to separate this out from the rest of the division." (VP Innovation, Software 1) "Much of the decisions were fairly headcount based. There was a lot of culture of how to track line items and input. We effectively moved key thinkers over to the new product. I would make the decision to pull people back." (VP Innovation, Software 2) "We are always pointing fingers at each other, all trying to cut costs. We are touching them equally." (VP Innovation, Software 1) "She with her management team agreed—how do you look at a product portfolio and shift from what you are investing in to something new? There is no incremental money during times like these, so it's all about tradeoffs." (VP Innovation, Software 1)
	Paradoxical tensions	"We were trying to leverage the existing sales channels for growth, and it was determined that to keep the momentum, and also we needed to jump start it by adding our own sales force." (VP Innovation, IT Services) "We can change the financial results of this operation by slashing costs—the sunbeam approach. We could get the quarterly results that everyone was looking for. Or . . . we could build a strategy for the long term that does both." (General manager, IT Services) "If you want to try to cut something that is on [the general manager's] level it's off limits. Can't save expenses for products that are that strategic. It shows people that we need this— yet, we are always shifting resources." (VP Business Development, IT Services) "The biggest challenge was that we needed to help [the engineers] get motivated to build [the innovation], because we just killed what they were doing." (VP Innovation, Software 1) "The challenge is that as [the innovation] grew, it created growth for [the existing product]. But it also challenged [the existing product's] value proposition and forced them to grow and change. So [the innovation] needed to add value to [the existing product], even as it depended on the [existing product]." (VP Innovation, IT Services)
Differentiating leadership practices	Allocating domain-specific roles	"Our investment strategy around the [existing product] is to keep the customer happy, protect the revenue stream and spend the least amount of money. So you need the kind of person in those jobs who can go in and figure out how to do just enough with little and give the customers enough for well-being and security. The [innovations not yet in the marketplace] is the entrepreneur, folks have to figure out how to scale and build processes that are going to build efficiency." (General manager, Software 1) "We had different champions for different products." (VP Innovation, Software 2)
	Comparing domains to raise novel distinctions	"I told the team that we had to start talking about the innovation and the future in our meetings in a different way than we dealt with the existing products." (General manager, IT Services) "They have a different business plan, have different financial metrics . . . The [IT Services] team has actually done a reasonably good job of looking at the businesses differently to say that there are two different models. I would say before, we didn't even do that." (VP Innovation, IT Services)
	Seeking information about domains independently	"I went off and assessed the innovation, and how we should manage this business, and reported back." (VP Innovation; Software 1) "I'm getting input from all my peers. Then I have a half day booked for a one on one meeting with the general manager to make sure that we are heading in the right direction." (VP Innovation, Software 1) "At our meetings, each business leader reports on the products progress." (VP Existing Product, Software 2) "I've added one metric to their personal business commitments, and told them that their participation in developing future strategy and their thoughts on the future of the business will help us evaluate them." (General manager, IT Services) "We brought this to [the general manager]. He said I should figure it out. So I wrote a paper proposing what to do." (VP Innovation, Software 2)
Integrating leadership practices	Allocating integrative roles	"We created my role in order to look across the organization." (VP Business Development, IT Services) "We had a number of different champions for different products. [The general manager's] role was to look across the entire organization and weave his way across each of those decisions and differences." (VP Innovation, Software 2)
	Stressing overarching goals	"The right answer is for us to rally behind common goals, and just do well enough as we can in the midst of all that. If our personal goals get in the way of all that, we just don't do well together. I think that part of that has to do with the kinds of people that [the general manager] has chosen for her board." (VP Research and Development; Software 1) "What happens on the team? Each of them wants to see their team contribute to the bottom line, and their bottom line is the success of the entire business." (Executive assistant, Software 1) "I told the managers that our decisions have to be cross-business. It means that an individual who runs a particular line of business might have to give us some of their budget to invest in opportunities in someone else's [lines of business]." (General manager, IT Services) "The general manager is slowly getting people who were on multiple paths to be on one path." (VP Innovation, Software 2)
	Solving problems jointly	"Each fall, we have discussions where we look across the organization. We think of it as a portfolio, and make any major adjustments at that time." (VP Innovation, Software 1) "The [senior leadership] meeting was used to get people all on the same page. [The general manager] would help talk about the overall strategy for everyone to understand." (VP Innovation, Software 1) "We committed to each other that if someone needed to contact one of us, we would respond with immediacy. We wanted to show mutual respect." (VP Innovation, Software 1) "The people who are actually working on the deals are seeing the appropriate cross-[lines-of-business] assistance." (VP Innovation, IT Services)

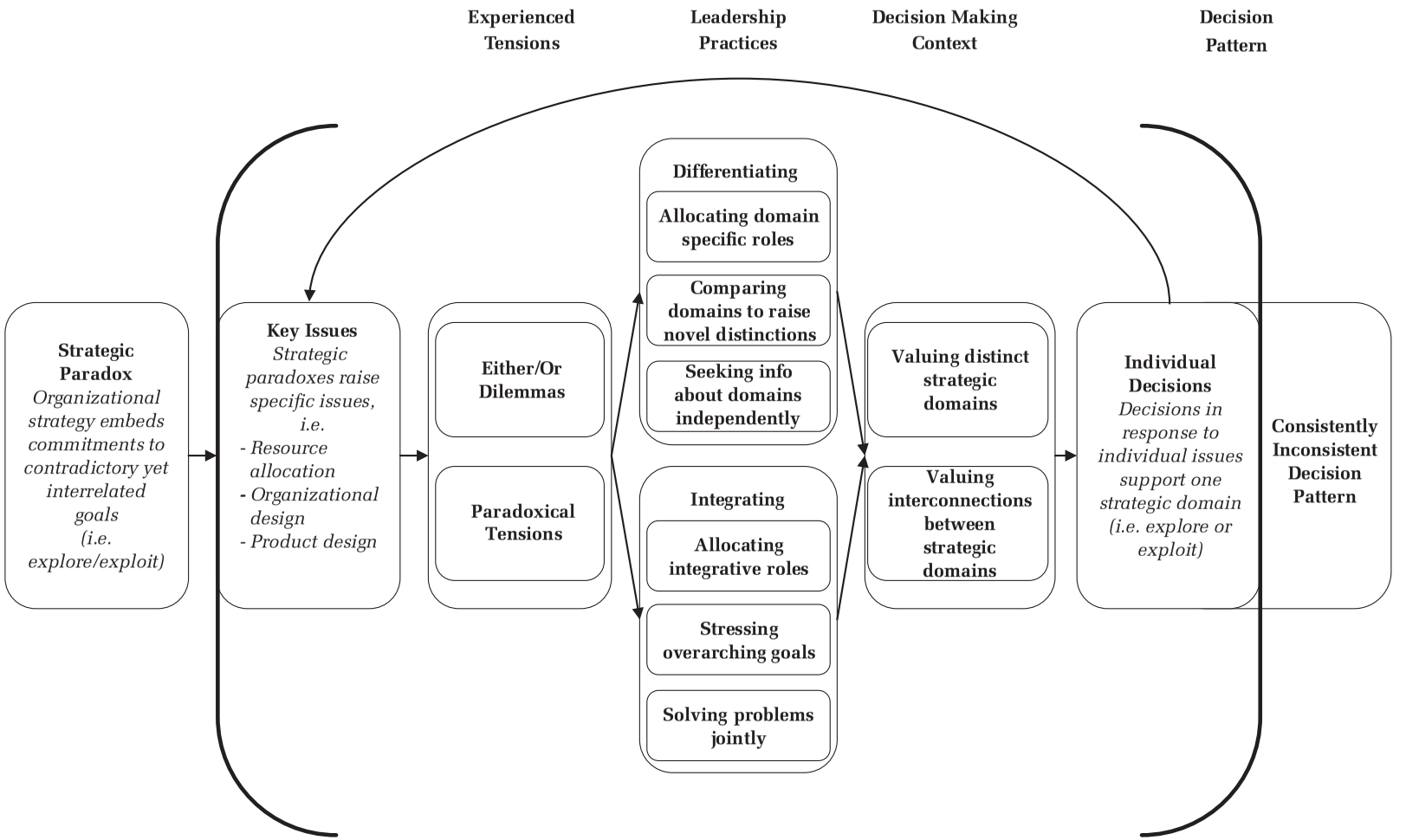
TABLE 5
(Continued)

Dimension	Themes	Representative Quotes
Decision-making context	Valuing distinct strategic domains	"The H1 and the H2 products were both important." (VP Business Development, IT Services) "I know that they needed the existing products, even though I wasn't as focused on it, others were." (VP Innovation, Software 2) "We knew it was important to preserve the investment in [the existing product] for the current customers." (VP Research and Development, Software 2) "I think the management team has gotten the message. They have invested the strategy for the innovation, and now it's to trickle it down to the organization." (VP Innovation, Software 1) "I came to [the general manager] and said that [the innovation] is really important and that we want to move faster on it than we already are. So we ran an offsite session applied to the [innovation's] strategic investment and it picked up the speed. We also have flagged it as a pretty big deal." (VP Innovation, IT Services)
	Valuing interconnections between strategic domains	"The right answer is for us to rally behind common goals, and just do well enough as we can in the midst of all that. If our personal goals get in the way of all that, we just don't do well together." (VP Innovation, Software 1) "The person running outsourcing, thinks about outsourcing. But together, we think about the larger picture." (General manager, IT Services) "The [existing product vice president] started the meeting by saying before we begin talking about the client, we need to make sure that as a team, we are motivated to work together to satisfy the client's requirement." (VP Innovation, IT Services) "The [general manager] airs out the conflict, and by the process of his own willingness to listen, his ability to refine it, refocus it, he gets people who were on multiple paths to be on one path." (VP Innovation, Software 2) "The [general manager] has an integrated strategy, that he has built over a long period of time." (Chief technical officer, Software 2) "Our emphasis was on portfolio management." (General manager, Software 2) "The senior team is more risk taking, more collaborative, because we believe that the success or failure of the innovation is not my success or failure, but is the whole teams." (VP Innovation, Software 1)
Decision pattern	Consistently inconsistent decision pattern	"There was a lot of culture of how to track line items and input. We effectively moved key thinkers over to the new product. I would make the decision to pull people back." (VP Innovation, Software 2) "We are constantly allocating and reallocating resources." (VP Innovation, Software 1) "We have to make sure that the resources are allocated effectively. We are always looking at where the resources are being utilized, and how we can allocate them more effectively." (VP Research and Development, Software 1) "[The general manager] is making decisions . . . It's a lot of moving resources around." (VP Existing Product, IT Services) "We need more experiments [with our resources]." (VP Business Development, IT Services) "Until we can demonstrate that these [innovations] are successful, we need to temporarily define a person driving a solution, and then connect all of the participants of the decision, rather than create a bunch of new roles." (General manager, Software 1) "We developed SWAT teams for everyone to be talking about [the innovation]." (General Manager, Software 1) "The innovation is currently a shadow [profit and loss statement], inside an exploitative business . . . We may spin them out from the current [lines of business] when they reach a certain stage of growth." (General manager, IT Services)

TABLE 6
Individual Decisions in Response to Key Issues

Case	Key Issue		Individual Decisions in Response to Key Issues
Software 1			
1	Resource allocation: HR	*Allocate sales people to existing product or innovation?*	**Exploit**: Move sales team members to existing
2	Organizational design: Structure	*Integrated or distinct innovation unit?*	**Explore**: Create innovation subunit with designated leaders
3	Organizational design: Skill	*Existing engineering skills or new skills?*	**Explore**: Hire engineers with innovation skills
4	Organizational design: Structure	*Integrated or targeted sales team?*	**Explore**: Create temporary sales team for innovation
5	Resource allocation: Finance	*Budget cuts to existing product or innovation?*	**Explore**: Minimize resource cuts for innovation
6	Resource allocation: HR	*R&D resources for explore or exploit?*	**Explore**: Move engineers to develop innovation
7	Resource allocation: HR	*R&D resources for explore or exploit?*	**Exploit**: Move engineers to existing product
8	Organizational design: Structure	*Integrated or targeted sales team?*	**Both**: Unify sales team to cross sell both existing product and innovation
9	Product design: Technology/target markets	*Expand to new innovation?*	**Explore**: Expand innovation to accommodate new technology
			Decision pattern: **Exploit** = 2; **Explore** = 6; **Both** = 1
Software 2			
1	Product design: Technology	*Innovation uses same or different competencies?*	**Explore**: Create innovation with new technology/competencies
2	Organizational design: Structure	*Integrated or distinct innovation unit?*	**Explore**: Create distinct innovation unit
3	Organizational design: Skills	*Use existing skills or hire new skills?*	**Explore**: Hire engineers with innovation skills
4	Resource allocation: HR	*R&D resources for explore or exploit?*	**Exploit**: Move engineers to update existing product
5	Organizational design: Skills	*Hire for existing product or innovation skills?*	**Exploit**: Hire engineers with existing product skills
6	Organizational design: Structure	*Integrated or dedicated research labs?*	**Explore**: Dedicate R&D laboratory to innovation
7	Organizational design: Structure	*Integrated or dedicated sales team?*	**Explore**: Create innovation sales team
8	Product design: Technology	*Existing or new technology for innovation?*	**Explore**: Adopt new innovation programming language
9	Resource allocation: HR	*R&D resources for explore or exploit?*	**Explore**: Move engineers to develop innovation
10	Resource allocation: Senior leadership time	*Spend time on existing product or innovation?*	**Exploit**: Senior leaders spend time on exist product
11	Product design: Technology/target markets	*Existing or new technology?*	**Both**: Develop existing product and innovation to be able to cross-sell together
			Decision pattern: **Exploit** = 3; **Explore** = 7; **Both** = 1
IT Services			
1	Organizational design: Skills	*New or existing leaders?*	**Exploit**: Hire new existing product leader
2	Resource allocation: HR	*Integrated or targeted consultants?*	**Exploit**: Hire consultants with existing product skills
3	Resource allocation: Senior leadership time	*Allocate time to innovation or existing product?*	**Explore**: Protect senior leadership time for innovation
4	Organizational design: Structure	*Integrated or distinct innovation unit?*	**Explore**: Create new innovation subunit with new leader
5	Resource allocation: HR	*Hire consultants with existing skills/new skills?*	**Explore**: Hire new consultants focused on the innovation
6	Resource allocation: HR	*Integrated or targeted sales team?*	**Explore**: Create new sales team targeted toward the innovation
7	Organizational design: Process	*Integrated or targeted revenue processes?*	**Both**: Create process enabling revenue sharing and collaboration
8	Product design: Technology/target markets	*Target new markets or existing market?*	**Explore**: Expand product offering to new markets
			Decision pattern: **Exploit** = 2; **Explore** = 5; **Both** = 1

FIGURE 2
A Model of Dynamic Decision Making to Manage Strategic Paradoxes



existing product and innovation as contradictory, yet both necessary for long-term success. They noted inherent contradictions within each issue impervious to resolution. For example, leaders pointed to short-term and long-term paradoxes in allocating resources. Senior leaders wanted to achieve performance in the long term, but doing so depended on short-term successes. Investing in the innovation often involved short-term costs for long-term benefits. As Software 1's innovation vice president summarized:

> We are in cost cutting mode. Still, when the finance people came in and said that you have to take out $30M of the [innovation], the general manager said, "You don't get it, this is an innovation business." We are so constrained on cost right now, that she has to start cutting the bone off the other division . . . And, she is really serious about the innovation.

Leaders further acknowledged stability and flexibility tensions in resource allocations. Leaders wanted to shift resources flexibly, yet could do so better when stable resource commitments fostered confidence that they were invested in the product. Software 2's general manager noted: "We were constantly moving headcount . . . yet we needed to protect the innovation." Software 1 leaders talked about "[m]aking a lot of decisions to shore up individual products . . . but saying no to reducing the investments." IT Services' vice president of business development talked about "ensuring the innovation that we are behind it . . . but being cautious about investing too much."

Organizational design issues raised paradoxical tensions between experience and novelty. To innovate effectively, leaders wanted to leverage existing knowledge, relationships, and processes, but also to develop novel design features in response to specific innovation needs. Relatedly, leaders experienced tensions of uniformity or specificity in issues of organizational designs as they sought to benefit from uniform design features, but wanted designs that fit each strategic domain. As the general manager of Software 1 noted: "I had two different cultures that were clashing, [one] wanted to build something that was lean and mean. [The other] was a lower design point, . . . but we needed both." Software 1's innovation vice president further explored the tensions around financial metrics:

> Finance needs to cut costs across the whole business. I've taken the equal amount of cuts as my peers. But [the general manager] is not saying to me, "you make 40% less in revenue so you should have 40% less in resources."

A Software 2 leader noted that, to respond to the competitor's product:

> We built [our innovation] within a year. If we had gone through the normal process, with all the gates and sign offs, it would have taken three years to build . . . but the existing product engineers did not understand the process.

IT Services leaders also wanted to leverage existing metrics to the innovation in order to ensure comparability and fairness, yet recognized that the "business models are very different."

Finally, leaders depicted product design choices as paradoxical. Leaders found that they valued freedom to develop the new product, but wanted to align the innovation with the existing product, which constrained their freedom. For example, Software 2 leaders recognized that time constraints to develop the innovation quickly resulted in introducing a lower quality product, but allowed them to be a legitimate competitor:

> [The competitor] put a product in the market . . . [The general manager] realized that if we were going to capture some market share, we would have to put out a product that might be less quality. But it was confusing to the [existing product engineers].

Product design decisions further raised paradoxical tensions around certainty and uncertainty. Innovating inherently demanded uncertainty as new products unfolded over time. Yet being comfortable with such uncertainty required confidence and certainty. Software 2's innovation leader noted that the general manager "had a strong vision," while also recognizing that "his vision was evolving, because where he was going was a moving point." As a result, Software 2 leaders were enmeshed in deep discussions about the innovation's design to meet this vision. Similarly, as IT Services' innovation vice president noted: "As the innovation grew, it also challenged the existing products to shift their own business models. They wanted the growth of the innovation, but didn't want the have to change what they do."

Leadership Practices

Differentiating leadership practices. Analyzing how leaders responded to tensions between the existing product and innovation brought to the surface various categories of practices. One category

involved several practices to clarify how the existing product and the innovation differed from one another, and to advocate for each domain separately. I label these as "differentiating" practices. First, the leaders in these three top management teams all created domain-specific senior leadership roles. Each strategic business unit included senior leaders with only responsibility for the existing product and other leaders with only responsibility for innovation. Software 1 leaders described the value of these domain-specific leaders. When they invested in the innovation, each leader managed a function and had responsibilities for both domains. These roles challenged leaders to allocate their own time and resources. As the research and development vice president noted, "the innovations weren't getting much traction," because of "distractions by the demands of current clients." Software 1 leaders created an innovation subunit with distinct leaders. Doing so freed the leaders from splitting their time and commitments between both strategic domains, and allowed them to focus only on one. One leader noted the value of dedicated innovation leaders: "Our problem is that if we say we all own [the innovation], then nobody does. We need to clarify who owns these products." Similarly, both Software 2 and IT Services created a position of a dedicated innovation leader, who reported to the general manager. These leaders raised issues and advocated for their products. For example, the IT Services' innovation leader faced aggressive "stretch targets," but felt that the other senior leaders eschewed their commitment to the innovation. She went to the other senior leaders and "spit the dummy," demanding—and subsequently receiving—support for the innovation. In these teams, the existing product leaders also ensured that the team maintained commitments to their exploitative goals. One Software 1 senior leadership meeting involved an extensive exchange during which the existing product sales leader laid out his needs to ensure continued success.

Second, conversations among the senior leaders involved explicit comparisons between strategic domains, which raised critical distinctions between them. In both formal discussions at meetings and informal conversations, leaders discussed the specific needs of each domain and raised issues of how these products differed from one another. In Software 1, the general manager frequently questioned the innovation and existing product leaders as a way in which to surface the distinct product needs. In one senior leadership meeting, an issue arose around sales resources for the innovation. The general manager asked:

> Do you guys think that we have plans [for the innovation] that are going to get us to where we need to go? I don't know what you guys think, but this is just a feeling. Are we taking actions that are really going to allow us to make progress? I've had this gnawing feeling all morning.

This question sparked a long conversation about how the innovation's business plan differed from that of the existing product. Senior leaders also engaged stakeholder groups outside of the senior team—including clients, leaders from other units, and subordinates—to better clarify uniqueness and distinctions. As a Software 1 senior leader noted: "[The general manager] spends an incredible amount of time with customers . . . She learns from our customers what we are doing right or wrong to realize next steps." When the IT Services' general manager first arrived in the organization, he went to learn from its clients—"I made calls on our top 10 customers to find out how they felt about us"—noting that doing so helped to realize some of the key differences in how the clients understood the existing product and how they understood the innovations. In addition, Software 1 senior leaders frequently invited executives from other parts of the organization to present at their senior leadership meeting. This additional information proved particularly useful in helping them to sort through critical issues. Similarly, Software 2 leaders frequently reached out to other experts outside their own unit to better assess and compare the needs of each of their products.

Finally, senior leaders sought information about each domain independently of one another. All three top management teams allocated monthly meeting time to each strategic domain. In Softwares 1 and 2, product leaders updated their fellow senior leaders, which was followed by extensive questions. IT Services partitioned its meeting, allocating half to the operational needs and the existing product, and half to the strategic development and the innovation. The vice president of business development noted the value thus: "We realized that we wanted to make strategic decisions as a team . . . Every month at our meetings, we now spend half the time on [existing] business, and half the time on [innovation] businesses." These leaders also used offsite conferences, "white papers," or small group conversations to learn more about the existing product or the innovation. For example, Software 2

leaders debated whether the innovation should adopt the existing product's software, thereby benefiting from complementarities across products, or a totally new software platform with different functionality, but also associated with different technical skills. Several senior leaders held strong, opposing beliefs about this decision and, facing a deadlock, they brought the decision to the general manager. He punted the decision back to them. One of the leaders wrote a white paper to explore the issue, facilitating new insight, as well as commitments from the other leaders. In another example, IT Services' leaders grappled with how to structure the organization to better accommodate the innovation. They hosted a three-day offsite conference with 40 leaders from across the organization to raise issues and to clarify the innovation needs.

Integrating practices. A second category of leadership practices in response to tensions brought to the surface the synergies and connections between exploration and exploitation. I label these as "integrating" practices. First, all three strategic business units included at least one senior leader with responsibility for the overarching business plan, and overseeing both exploratory and exploitative businesses. The general managers of each unit held this role. In addition, Software 2's chief technology officer also assumed responsibility for integrating the products' technologies, and IT Services had a vice president of business development responsible for developing a coherent market strategy across products. The general managers of Software 1 and IT Services expected each of their domain-specific leaders to understand overall organizational needs along with their own domain needs. One leader described this as "wearing two hats." Integrative leaders advocated for the overarching strategic business unit. For example, soon after the general manager arrived at IT Services, he realized that it faced a critical issue because the existing business and innovation competed directly with one another—and neither was succeeding. He realized that the organization could continue to invest in only the existing product, but that doing so would offer only a short-term solution to its problems. Instead, he offered a long-term insight to his senior leaders that required building and developing both businesses.

Second, all three strategic business units identified and stressed overarching goals that depended on both the existing product and the innovation for success. It is interesting to note that these goals were not always necessarily formal vision statements for the organization. Often, the senior leaders communicated a sense of addressing both businesses in more informal ways. For example, several of the senior leaders in this study used rhetorical devices to communicate effectively that the unit's success depended on both exploratory and exploitative performance. Software 1 leaders described their organization as a portfolio with multiple contributions, while Software 2 leaders depicted their strategy as an onion with multiple layers. Both of these images pervaded multiple strategic conversations. Comparing to other competitors further emphasized the critical role of both exploratory and exploitative success. The general managers talked about being patient, to gain the rest of the senior leaders' buy-in to these overarching goals over time. A Software 2 leader noted the general manager's patience in letting people "come to the overall vision at their own pace . . . as it takes a good amount of time to get everyone to evolve in their own time." Similarly, the Software 1 general manager gained buy-in to this integrative vision by starting each meeting stating the strategic business unit's overarching goals, noting how this goal depended on the innovation's success and existing product's success, and then evaluating the progress of each domain. She further noted that she took every opportunity possible to get the other senior leaders to connect with this overarching vision. As she stated, part of her role was to:

> . . . get people to view the business the way I view it. You have to get them to identify with the whole thing, because they are usually passionate about the one piece that they have. There is a leadership ability to get people to get to that point with you. You have to be really good at getting them to link the piece that they have to the whole thing. They have to think why is [the innovation] important to the overall business? Because the customers are important to the overall business. We want to extend those customers, customers who we have had for over 30 years. You have to look for ways to draw everybody into what they are doing and why it is important to the overall growth of the business. You have to be really good at communicating it . . . and look for ways to communicate it at every chance that you have.

One instance depicts how the general manager of Software 1 linked the team members' efforts to the overarching goal. The innovation leader was being attacked by the other leaders for how she would develop this domain. The general manager stepped in, saying:

> Let me make one thing clear. The [innovation vice president] is taking responsibility for [the innovation] on behalf of our whole strategic business unit. But make no mistake; everyone in this room has responsibility for this product and for the overall success of the business.

The general managers also eventually fired senior leaders that were too myopically focused on their own domain and could not, over time, buy into this overarching goal. As the IT Services' general manager reflected:

> We needed people who were going to play in the same game . . . [Some people] were not thinking about the group as a whole but rather thinking, "I can do it better in my organization." We eliminated these folks in under 30 days.

As one Software 1 leader noted:

> There is not a lot of individual grandstanding. We are made or broken by how our business does. If our business is going into the toilet, and I'm doing a great year, then I don't get much benefit from this. The right answer is for us to rally behind common goals, and just do well enough as we can in the midst of all that. If our personal goals get in the way of all that, we just don't do well together. I think that part of that has to do with the kinds of people that [the general manager] has chosen for her board.

Finally, leaders stressed integration by solving exploratory and exploitative problems jointly. Juxtaposing domains in conversation forced leaders to confront issues between them, reinforcing the value of each product and surfacing synergies. Each top management team allocated formal meeting time to addressing overarching issues. IT Services used part of its business meetings for considering its overall portfolio. A small group of Software 2 leaders met with the general manager to discuss issues across the strategic business unit. Leaders also held joint problem-solving sessions in response to specific tensions. For example, Software 2 leaders frequently met in the general manager's office to work through issues. IT Services and Software 1 leaders reflected on working through problems one-on-one with each other. As one Software 1 leader described:

> We all agreed that [the innovation] was a critical business in our portfolio review. But we all required more resources from development than [the research and development vice president] had. [The research and development vice president] developed a plan—and my development director came back and said that we are going to have to cut some of our resources. I called the [research and development vice president] and said, tell me what your problem is that you are trying to solve and let me help you solve it.

Decision-Making Contexts

Differentiating and integrating practices fostered a context to inform the leaders' decisions that involved two key themes. Senior leaders valued each distinct strategic domain and its contribution to their overall organizational success, as well as the interconnections between domains. This context highlighted the product (exploration or exploitation) and organizational levels of analysis, facilitating dynamic and iterative decision patterns.

Valuing distinct strategic domains. Differentiating and integrating practices encouraged leaders to understand and support both the exploratory and exploitative products. Practices such as identifying specific roles among senior leaders and carving time in which to focus on each domain proved particularly important. For example, the Software 1 innovation vice president noted how one-on-one meetings with other leaders fostered a deeper knowledge for an innovation plan that he was developing, which in turn informed their decisions:

> I will go to the others in the unit before I bring the plan to the General Manager . . . I can get the tensions out on the table and then we will sit as a group . . . If everyone is in sync, then we will agree on it and then move on. But if not, everyone will have been briefed and we can get these ideas out on the table and discuss them.

Similarly, IT Services' senior leaders recognized how salient the innovation's needs were after a three-day offsite: "The [offsite] session identified [some of our needs]. Some of the senior leaders were at the [offsite] session. I identified requirements for a couple of very senior folks."

Differentiating and integrating practices further catalyzed ongoing support for each domain. In these strategic business units, the senior leaders talked about being "serious" about the exiting product or innovation. Leadership practices signaled this support. For example, domain-specific roles—particularly for the innovation—reinforced commitment to these products. As one of the IT senior leaders noted: "When we elevate something to [the general manager's] level, we protect the investment . . . It shows people that we need this." Software 1's innovation vice president further noted that creating a distinct

subunit with its own leader for the innovation showed the top management team that they were "really serious about the innovation." The IT Services three-day innovation offsite further solidified this support. Before the meeting, the IT Services' innovation vice president felt that the rest of the senior leaders were not "living up to their side of the bargain" and investing in the innovation's success. After the offsite meeting, she felt that "they [were] really committed to this business."

In contrast, senior leaders in the other three business units that only differentiated or only integrated noted significant gaps in understanding and supporting both strategic domains. For example, in Life Sciences, the role of vice president for the existing product remained unfilled for more than a year and a half. When the unit hired a leader, he noted that the existing product "had taken a back seat." For Software 3, the innovation faltered. As its research and development vice president said: "We are not delivering business results on [the innovations]. The problem is—we don't understand these products . . . Most of the top management team are living in *today*."

Valuing interconnections between strategic domains. Differentiating and integrating practices further fostered a context focused on interconnections between strategic domains, valuing collaboration and linkages. First, practices to identify distinct domain needs, while also supporting an overarching role, drive leaders to create a context of collaboration. Leaders talked about how exploratory and exploitative products both needed to contribute the strategic business unit's success. Software 2's research and development vice president captured this idea:

> I thought that [the general manager] should give me all his money. I felt that I had a premium part of the business. But I really had some more business acumen than that, and I realized that there were other products that were important to the business. I also know that we needed some of these products (for the innovation to succeed).

Software 1's executive assistant further noted this context, suggesting that the general manager consistently stressed the overarching portfolio that the team sought to achieve, creating a context of collaboration: "What happens on the team? Each of them wants to see their team contribute to the bottom line, and their bottom line is the success of the entire business."

Differentiating and integrating practices led leaders to expose conflicts between strategic domains and to seek compromises. In Software 1, probing for additional insight encouraged leaders to address conflicts. As the research and development vice president noted:

> The General Manager wants to invite some level of conflict into the process . . . If I was going to say this plan is wonderful, she would say, "What do you think about this?" to the head of sales. Then we would spend the next 45 minutes [sorting] out why we think what we think . . . We raise a lot of conflict. We get to get in there and get into issues.

Similarly, IT Services leaders recognized how the value of addressing conflicts enabled further connections among each, in contrast with their previous culture of avoiding conflicts:

> [The previous general manager] was a very non-confrontational—don't want to hear the issues, don't want to work through the real problems, avoid it at all cost—type of individual. Probably one of the most non-confrontational: In his senior team meetings, I mean, it was like people smiling at each other and you knew the background, none of the problems were getting out on the table. [The current general manager] addresses things head-on. No question about it. As a result, he personally has created an environment where he's made it very clear that we're supposed to be a team—that we are supposed to tackle these roadblocks, and work together. He's made that very clear.

The Software 1 chief technical officer noted: "We tend to run a very proactive debating society. The idea is to debate these things out. Those that come from the outside are always surprised at the free for all nature." Software 2 leaders dealt with conflict by discussing it in small groups in the general manager's office. As the innovation vice president noted: "[The general manager's] style is to handle the conflict in his office. He is not a big conflict guy in a full meeting. If it broke out in a meeting, he would say that he would take it off line."

In response to key conflict, senior leaders depicted a context of compromise. They were willing to work together to seek beneficial solutions to both strategic domains. As Software 1's innovation vice president noted:

> The team has to be willing to forgo their own business for the benefit of the total business. I know that I'm in [Software 1]. If something in [my innovation] doesn't get invested in, I'm going to have to go back into my own business and disinvest. Who signs your paycheck? We are in this together.

IT Services' leaders offer another example. Traditionally, IT Services' organizational design was siloed and fostered competition between lines of business such that leaders frequently rejected opportunities for cross-selling services to the same client. As one senior leader noted:

> I'm not even sure I would have had the conversation and attended the meeting, because I know that he would have intentionally tried to suck up every piece of business that would have otherwise flown to my organization into his.

This dynamic created problems for the innovation, which relied on cross-line business support. Yet the senior leader recalled a more recent conversation that suggested a dramatic shift in this mindset: "I just said [to the existing product leader] 'if I can secure more business, I'm happy to contribute to the total. Done.' We didn't even talk about math of how to allocate revenue. It's just done." As the business development leader noted: "The leaders are now seeing the appropriate cross-[lines of business] assistance in helping getting their job done."

In contrast, the three strategic business units that only differentiated or integrated described suppressing and avoiding key conflicts, and fostering a context of competition and mistrust. Often, these suppressed conflicts burst out in a frustrated outrage. In one meeting, the Software 3 general manager banged on the table, shouting his frustration at the lack of progress for the innovation. As he noted: "Right now, everyone's attitude is, I'm here to protect my turf." Semiconductor senior leaders found that the tensions built up for so long that they required a full-day emergency meeting in a "war room" to sort out their problems.

Decision Patterns

In response to the issues that emerged between strategic domains, leaders made choices. These choices predominantly supported exploration or exploitation, with only a few decisions supporting both simultaneously. For example, in response to a debate about organizational design, Software 1 senior leaders reorganized their business unit to support the innovation. To address existing customers' demands, IT Services' senior leaders allocated more resources to develop their existing products. Software 2 senior leaders grappled with the technology platform for their innovation, ultimately deciding to adopt a new platform to support the innovation.

Making decisions in response to individual issues spurred new issues. For example, after Software 1 senior leaders decided to create a subunit for their innovation, additional issues arose around whether to hire a leader for that unit from the existing team or someone from outside, whether or not to have an integrated sales team across the existing product and the innovation, and how to allocate research and development resources. These issues persisted over time. As a senior leader in IT Services noted, "there were issues throughout the process," while another in Software 2 pointed out that "battles continued throughout." A critical insight was that addressing both exploration and exploitation simultaneously was reflected in the patterns of decisions that leaders made over time, not in understanding the responses to individual decisions. The key pattern for supporting both exploration and exploitation involved iteratively shifted support between the two strategic domains. Table 6 depicts this pattern of decisions by identifying for the full year each issue that arose and the leaders' decisions.

The senior leaders described how they experienced this pattern, noting that their decisions were flexible and temporary. These leaders depicted decisions as dynamic, referring to their resources as flexible and to organizational designs as temporary. For example, one leader in IT Services described decisions in general as "experimental." Both Software 1 and Software 2 senior leaders talked about moving sales resources. Similarly, as Software 2's innovation vice president noted, engineers were a critical resource for developing both the existing product and innovation, and leaders were "frequently moving headcount." They also thought of the organizational design as flexible. An issue emerged for Software 1 about how to sell the innovation when the skills, knowledge, rewards, and contacts of the sales team reinforced existing product sales. While they needed a dedicated sales team, they eventually wanted to cross-sell their existing products and innovations to the same clients. Rather than create a new permanent team, they developed a "SWAT" team to focus temporarily on innovation sales, to integrate knowledge back to a broader sales team, and eventually to disband the SWAT team itself. Similarly, in IT Services, the general manager noted that, to support the innovation, leaders "created a shadow profit and loss structure so that it could start tracking its own finances, without yet creating an entirely new unit." They used this temporary unit to support the

innovation, to learn about how to manage it, and to decide whether to create an independent line of business or to integrate this product with other existing lines of business.

In contrast, the teams that did not sustain commitments to both exploration and exploitation made decisions that consistently supported one domain over time. Tracking the patterns of decisions by leaders in Life Sciences or Semiconductor reveals a pattern of frequent decisions shifting resource and designs from the existing product to the innovation. As the vice president of human resources summarized: "We are focusing our decisions on supporting the innovation. There is no focus on the existing business." For Software 3, the senior leaders made relatively few decisions to shift resources or to alter designs. Those few decisions that they made all reinforced the existing product and the status quo. Software 3's vice president of strategy noted: "We have some nice ideas for the [innovations], but have done nothing to build them out."

A DYNAMIC DECISION-MAKING MODEL

Up to this point, I have described how leaders experienced and responded to issues of exploration and exploitation to sustain commitments to both strategic domains. Combining these insights with existing literature informs a model of dynamic decision making, depicted in Figure 2. Decision making can be considered dynamic because leaders shift resources and designs between the existing product and innovation in order to support both. I now develop this model in more depth.

Scholars argue that organizations inherently host paradoxical tensions (Ford & Backoff, 1988; Smith & Lewis, 2011). The act of organizing creates distinctions, but binds these dualities within a unified system, resulting in inherent paradoxes. Exploring and exploiting present one type of paradox: These strategic domains are inconsistent with one another, yet are both necessary for long-term success (March, 1991; Smith & Tushman, 2005). Moreover, exploration and exploitation define one another as the seeds of exploration emerge from exploitation, and vice versa (Farjoun, 2010). These tensions often remain latent—existing in the organization, but not particularly challenging for leaders or members of the organization. However, several conditions can surface these tensions. For example, Smith and Lewis (2011) suggest that tensions become salient in response to an individual's adopting paradoxical frames, or in response to environmental conditions defined by plurality, scarcity, and change. The data in this study identify an organization's annual strategic commitments as an additional factor that can render latent tensions salient. In this study, these dual commitments created pressure to succeed in each business, and raised increased conflict and tension between them. As Figure 2 depicts, strategic paradoxes embedded in an organization's annual plan surfaced issues between competing domains and triggered dynamic decision making.

The data from this study revealed three types of issue that emerged for top management teams between exploring and exploiting, including issues of resources allocation, organizational design, and product design. The responses to each of these issues critically impact success. A key insight from these data depicts how senior leaders experienced these issues as both dilemmas and paradoxes. Dilemmas are "either/or" tradeoffs resolved by choices, while paradoxes involve tensions that are impervious to resolution (Cameron & Quinn, 1988; Smith & Lewis, 2011). Leaders experienced issues as both. Responding to "either/or" dilemmas became critical for effectively managing tensions. As the data shows, senior leaders raised a number of issues in the three cases that did not sustain paradox, but they made no choices in response. As a result, senior leaders felt unable to advance the innovation or extend the existing product. At the same time, leaders also depicted these key issues as paradoxical tensions that persisted over time and recognized that they were impervious to resolutions. This idea informed an understanding of managing paradox through a "consistently inconsistent" decision pattern, in which leaders could address individual issues with an "either/or" choice, but maintain commitments to both tensions over time.

To sustain exploration and exploitation, leaders responded to these experienced dilemmas and paradoxes with differentiating and integrating practices. Differentiating practices raise distinctions between exploration and exploitation, and stress their unique characteristics, whereas integrating practices emphasize synergies, connections, and interdependencies (Andriopoulos & Lewis, 2009; Smith & Tushman, 2005). As Figure 2 depicts, I identified three differentiating practices and three integrating practices that leaders in this study adopted. Differentiating practices included allocating domain-specific roles, comparing domains to raise novel distinctions, and seeking information about domains

independently. Integrating practices included allocating integrative roles, stressing overarching goals, and solving problems jointly. Yet research suggests other possibilities. For example, mindfulness scholars describe practices such as cultivating uncertainty and developing new categories to facilitate novel distinctions (Langer, 1989). Organizational learning studies point toward practices for experimentation, reflection, and problem solving to surface differences (Edmondson, Bohmer, & Pisano, 2001). Other literatures identify practices for encouraging integrating. Studies on integrative thinking involve fostering synergies through practices such as depicting connections (Suedfeld, Tetlock, & Streufert, 1992), or considering multidirectional relationships (Martin, 2007).

Differentiating and integrating practices enabled leaders to sustain commitments to strategic paradox by creating a flexible context to support decision making. Differentiating focuses leaders on exploring and exploiting independently of one another by communicating substantive and symbolic investments in each domain (Ocasio, 1997), while also surfacing new knowledge, ideas, and insights (Langer, 1997). Information and commitments motivated decisions to support each strategic domain. At the same time, by stressing overarching goals and exploring connections between domains, integrating practices elevate leaders' attention to the organizational level. Juxtaposing both domains brings conflict to the surface, and motivates connections and compromises between strategic domains (Suedfeld et al., 1992). Critical to dynamic decision making are differentiating and integrating practices that together urge leaders to shift attention consistently—both between the different products and from the product level to the organizational level. This shifting focus facilitated an adaptive context, which motivated flexibility in decisions.

Contrasting the three cases that adopted a dynamic decision-making approach with the other three cases highlights the necessity of both differentiating and integrating practices. By adopting only one type of practice, senior leaders fall prey to defensive responses and vicious cycles of paradox. Differentiating without integration fostered conflict, resulting in leaders consistently choosing only one outcome—in this case, the innovation. Differentiating practices helped to emphasize the unique aspects of the innovation, to avoid inertia, and to detach the past from the future. However, in the absence of integrative practices that sought to create synergies between time horizons, these leaders paid attention only to the future. Conflicts between exploration and exploitation emerged. Leaders adjudicated conflicts and tensions by stressing only exploration. Classic change management studies emphasize this approach, in which leaders explicate a vision for the future and then align the organization to achieve this goal (Tushman & Nadler, 1997). Doing so depends on liberating the future from the shackles of the past (Leonard-Barton, 1992; Sull, 1999; Tripsas, 2009), resulting in more radical change (Tushman & Romanelli, 1985). However, these radical changes occur at the expense of the existing product. In this study, both the Life Sciences and Semiconductor strategic business units demonstrate how an overzealous emphasis on creating distinctions can enable change, but diminish the existing products.

Integrating in the absence of differentiating proved equally problematic for sustaining paradox. In an effort to leverage value and engage synergies across domains, cognitive commitments and myopic thinking overemphasize exploitative demands and keep leaders focused on the present (Benner & Tushman, 2003; Leonard-Barton, 1992; Levinthal & March, 1993). Leaders may become entrenched in existing cognitions and fail to see unique innovation needs (Taylor & Helfat, 2009; Tripsas & Gavetti, 2000). Ineffectively adopting practices from the existing product to the innovation can result in a false synergy. For example, Tripsas and Gavetti (2000) note the demise of Polaroid: In service of fostering linkages, executives insisted on leveraging a "razor and blade" strategy from their instant camera to apply to digital products, despite the lack of printing of digital images. In this study, Software 3 depicts how integrating without differentiating led to unwavering emphasis on existing competencies and processes, constraining innovation.

In contrast, as Figure 2 depicts, differentiating and integrating together fostered a context that focused leaders both on the needs of individual products and on the connections between them, and in doing so encouraged flexibility and adaptation. Fluctuating attention and focus between strategic domains and levels of analysis urged leaders not only to make temporary and flexible decisions, but also, over time, to embed inconsistency into these decisions by alternating support between the existing product and innovation. Cognitive commitments and focused attention drive leaders to make each subsequent decision consistent with past ones

(Chanowitz & Langer, 1981; Tripsas & Gavetti, 2000). In contrast, in this study leaders adopted a more adaptive approach by making individual decisions in response to specific tensions, yet allowing these individual decisions to be inconsistent with previous decisions. The leaders depicted these decisions as flexible and temporary.

This study therefore resulted in the critical insight that managing paradoxical tensions was reflected in the pattern of decisions over time, rather than in each individual decision. Paradoxes persist over time, such that making choices in response to each issue spurs new issues (Jarzabkowski et al., 2013). Figure 2 depicts this persistence in the feedback arrow between the individual decisions in response to each issue and the creation of new issues. The aggregation of individual decisions over time accumulated to the pattern of shifting support between exploration and exploitation. Following Smith and Lewis (2011), I describe this pattern as a "consistently inconsistent" pattern of decision making. I label this overall approach as "dynamic decision making" to capture the flexibility of support for exploration and exploitation. This shifting decision pattern allowed leaders to manage paradox by make choices in response to specific dilemmas in the short term, while embracing competing demand inherent in paradoxes in the long term.

DISCUSSION

Implications for Theory

If competitive contexts increasingly impose paradoxical demands on firms, then senior leaders must be able to address these tensions. Yet even as scholars find that embracing paradox can foster creativity (Miron-Spektor, Erez, & Naveh, 2011), build dynamic capabilities (Harreld, O'Reilly, & Tushman, 2007), and enable sustainability (Cameron, 1986; Smith et al., 2011), effectively implementing strategic paradoxes is complex and challenging for senior leaders. The data in this study highlight this difficulty. I interviewed senior leaders from six strategic business units with annual plans to exploit existing products while exploring innovation, yet only three executed this strategy. Therefore the main goal of this study was to understand how senior leaders effectively addressed this challenge, making decisions to support competing strategies simultaneously amidst the intense pressures to focus on only one. Comparing across these six units informed a model of sustaining strategic paradox through dynamic decision making, the details of which contribute to our understanding of organizational paradox in at least three significant ways.

First, this model complicates our understanding of tensions, depicting the interwoven nature of dilemmas and paradoxes. Previous research delineates dilemmas from paradoxes (Cameron & Quinn, 1988; Smith & Lewis, 2011), in that dilemmas are said to involve tradeoffs that can be resolved by weighing alternatives and choosing one option, while paradoxes are contradictory elements that persist over time and defy resolution. Choosing one element sparks the alternative, creating a vicious cycle (Andriopoulos & Lewis, 2009). However, as Smith and Lewis (2011) suggested, dilemmas can become paradoxes if understood over a longer time horizon. The data from this study complicate our understanding of paradoxes and dilemmas by depicting an interwoven relationship between them. This study surfaced three types of issues that emerged between the existing product and innovation around resource allocation, organizational design, and product design. Leaders described these issues as both "either/or" dilemmas that demanded choices, as well as paradoxical tensions that eluded resolutions. For example, resource allocation issues forced leaders to make tradeoffs between how to allocate financial resources, human resources, etc. At the same time, resource allocations fostered paradoxes of stability and flexibility. The more stability leaders experienced in allocating resources to exploring and exploiting, the more they could entertain flexibility to shift resources around. These circular and self-referential relationships persisted over time. This more complicated depiction shifts our understanding of both the nature and management of tensions: Whereas paradox scholars and practitioners emphasize that managing paradox depends on changing our cognitive frames from "either/or" thinking to "both/and" thinking (i.e., Bartunek, 1988; Martin, 2007; Smith & Tushman, 2005), this research suggests the need for more complicated frames. Moreover, this interwoven nature of tensions demands more complex management strategies.

This study therefore surfaces a more complex management strategy to engage tensions as *both* dilemmas and paradoxes, which constitutes the second key contribution. Existing research depicts three dominant approaches to paradox, including choosing, accommodating, and accepting. Choos-

ing involves making a choice between alternative demands. Choosing one alternative brings its opposite to the fore, fueling vicious cycles over time (Lewis, 2000). Accommodating strategies involve addressing specific issues by finding a novel synergy between competing demands (i.e., Rothenberg, 1979). For example, Eisenhardt and Westcott (1988) describe how the senior leaders at Toyota approach tensions by seeking creative solutions that engage competing demands simultaneously. As new issues emerge, executives consistently look for new creative synergies (see also Osono, Shimizu, & Takeuchi, 2008; Takeuchi & Osono, 2008). Accepting strategies describe approaching paradoxical tensions by engaging, but not resolving, the tensions. For example, Luscher and Lewis (2008) suggest finding a "workable certainty" to offer a way forward without a specific decision. Others describe individual practices (Hatch & Erhlich, 1993), communication styles (Argyris, 1988), or organizational practices (Andriopoulos & Lewis, 2009) that can expose paradoxical tensions and allow leaders to move forward, without making decisions. Even as these different approaches fuel cycles over time, research predominantly describes a consistent application of these strategies.

In contrast, dynamic decision making involves addressing a paradox by choosing, accommodating, and accepting over time. Expanding on the dynamic equilibrium model of Smith and Lewis (2011), this approach involves making explicit choices in response to individual issues. These choices predominantly involve "either/or" decisions between competing demands, with some of the decisions that create a novel synergy to accommodate both options. Yet these decisions are not consistent with one another; rather, they shift in their support between contrasting demands over time. A key insight here involves exploring the pattern of responses to issues over time, rather than a response to an individual issue. This pattern adopts multiple different approaches to paradox—choosing, accommodating, and accepting. This pattern is consistently inconsistent because it involves frequent, consistent shifts between inconsistent demands. This model challenges scholars of paradox to be mindful of the time horizon within which they explore responses to tensions and shifts our understanding of managing paradox from addressing discrete issues to managing paradox as a pattern of responses over time.

A dynamic decision pattern echoes more historical decision-making literature. Early strategic decision-making scholars acknowledged that multiple external and internal stakeholders impose competing strategic demands on organizations (Cyert & March, 1963; Selznick, 1957), and proposed decision models such as quasi-rationality, sequential attention (Cyert & March, 1963), or logical incrementalism (Braybrooke & Lindblom, 1970) with which to manage these tensions over time. Similar to dynamic decision making, these models involve shifting support between alternative strategies over time. A key distinction, however, is the goals of the senior leaders. These more traditional models acknowledged inconsistencies in strategic decisions over time, yet they did so in service of overarching strategic consistency, which they believed to be critical for efficiency and long-term survival (Lamberg, Tikkanen, Nokelainen, & Suur-Inkeroinen, 2009). In contrast, a consistently inconsistent pattern assumes that leaders adopt a shifting decision-making pattern in service of sustaining strategic paradoxes. This insight joins the research of others suggesting that a dynamic and contradictory response to complex challenges enables simplicity amidst complexity and supports inconsistencies through consistency (Follett, 1996; Klein, Ziegert, Knight, & Xiao, 2006; Weick, Sutcliffe, & Obstfeld, 1999).

As a third contribution, a dynamic decision-making model describes how both differentiating and integrating leadership practices are necessary to sustain strategic paradoxes. These insights extend our understanding of the nature and relationships between differentiating and integrating. Building on early insights from Lawrence and Lorsch (1967), paradox studies depict differentiating and integrating as complementary. These studies demonstrate differentiating and integrating in organizational structures (Tushman & O'Reilly, 1996), managerial cognition (Smith & Tushman, 2005), or organizational practices (Andriopoulos & Lewis, 2009). Beyond structures, cognition, and organizational practices, the data in this study describe leadership practices (Whittington, Jarzabkowski, Mayer, Mounoud, Nahapiet, & Rouleau, 2003), showing what leaders do to differentiate and integrate. Differentiating leadership practices include allocating domain-specific roles, comparing domains to raise novel distinctions, and seeking information about domains independently. Integrating leadership practices include allocating integrative roles, stressing overarching goals, and solving problems jointly. Differentiating and integrating leadership practices together

sustain paradoxes by facilitating a multilevel, flexible, and dynamic context for framing decisions. Contrasting three strategic business units that supported exploration and exploitation with three that did not highlights how either differentiating and integrating alone can lead to choosing only one domain, with the three units unable to sustain paradox engaged in only differentiating or integrating practices, but not both. Differentiation focuses leaders on distinct products, but in the absence of integrating, domain-specific advocates become entrenched in their own position. Doing so engenders increased conflict, diminishes the motivation to compromise, and stresses only one domain. Integrating without distinctions also failed to sustain competing demands. Integration emphasizes synergies between distinct elements. Yet in the absence of recognizing nuanced distinctions, an overzealous commitment to one domain could cloud the unique aspects of each and take precedence, resulting in a false synergy. However, together, these forces facilitated a context that shifted focus between multiple strategic domains (exploring and exploiting), at multiple levels (product and organizational) to foster a dynamic, flexible approach to decision making. In doing so, this study expands our thinking about differentiating and integrating, recognizing not only that they are complementary (Andriopoulos & Lewis, 2009; Smith & Tushman, 2005), but also that both are necessary for sustaining paradox.

Finally, by investigating strategic paradox in the context of exploration and exploitation, this study makes several contributions to ambidexterity research. Ambidexterity studies argue that long-term organizational success depends on addressing exploration and exploitation simultaneously (O'Reilly & Tushman, 2008; Raisch & Birkinshaw, 2008; Tushman et al., 2010). Scholars identify paradoxical tensions that emerge from exploring and exploiting, suggesting that ambidexterity depends on effectively engaging these paradoxes (Andriopoulos & Lewis, 2009; Raisch & Birkinshaw, 2008; Smith & Tushman, 2005). The data from this study expand our insight into the paradoxical nature of exploration and exploration, by describing specific issues arising for senior leaders around resource allocation, organizational design, and product design. In addition, existing empirical studies depict insights into the demographics and characteristics of the top management teams, suggesting that effectively managing ambidexterity is associated with transformational leaders (Jansen, George, van den Bosch, & Volberda, 2008) who have more decision-making authority (Mom, van den Bosch, & Volberda, 2009) and top management teams with more behavioral integration (Carmeli & Halevi, 2009; Lubatkin, Simsek, Yan, & Veiga, 2006) or social integration (Jansen, Tempelaar, van den Bosch, & Volberda, 2009). These characteristics suggest the critical role of strong leaders that have the capability to work together to manage the challenges of exploring and exploiting. But they offer fewer insights into what the leaders do to work together to manage these challenges. Complementing this existing research on ambidexterity and top management teams, this study describes specific leadership practices of differentiating and integrating in a decision context to address the challenges and frustrations of managing exploration and exploitation simultaneously.

Implications for Practice

Practitioner literature increasingly calls for leaders to embrace paradox (Cronin & Genovese, 2012; Handy, 1994; Jensen, 2013). Collins and Porras (1997) suggest that great leaders are those who can reframe strategic challenges from the "tyranny of the or" to the "genius of the and." More recently, Martin (2007) argues that leadership success derives from engaging an "opposable mind" to embrace contradictory demands simultaneously. Warnings about the need to manage paradox and advice about how to do so now infuse leadership blogs across the Internet. For senior leaders, effectively managing paradoxes is critical to their success.

The data from this study offer at least two recommendations. First, a dynamic decision-making model proposed an alternative approach for decision making. Echoing the academic scholarship, managerial literature emphasizes either accepting or accommodating strategies for managing paradox in response to a single issue. This study encourages managers to shift the time horizon for managing paradox from responding to a single issue, and instead to focus on the pattern of decisions over time and to embrace inconsistencies in decisions, rather than to strive for consistency.

Second, existing advice to manage paradox emphasizes cognitive strategies for framing tensions (Collins & Porras, 1997; Martin, 2007). To do so, leaders must hire or train others to be capable of paradoxical or integrative thinking (Smith & Tushman, 2005; Suedfeld et al., 1992). Yet leaders might not have the capability to hire new people or,

if they can hire, may have limited insight into potential employees' capabilities for paradoxical thinking. Moreover, it may be hard to train existing employees to adopt paradoxical frames, because this perspective may reflect deeply engrained ontological beliefs driven by societal cultures and myths (Keller & Loewenstein, 2011). Instead of depicting leadership capabilities, skills, and traits, this study highlights practices for managing paradoxes—specifically, differentiating and integrating. Senior leaders who want to sustain commitments to strategic paradoxes can focus on embedding these practices into their top management team.

Limitations and Future Research

The context of this study raises questions about the model's generalizability and posits possibilities for future research. First, additional research could extend these insights to a broader context beyond the tension of exploring and exploiting. As environments become more complex, leaders face pressures to address multiple competing demands that are core to their strategy and inconsistent with one another, including tensions between social missions and profits, or global demands and local needs (Besharov & Smith, 2014; Greenwood et al., 2011; Kraatz & Block, 2008). Additional research could further investigate conditions that facilitate or thwart dynamic decision making. The strategic business units in this study were embedded in one Fortune 500 corporation that encouraged and supported strategic paradoxes. Additional research might investigate how different corporate contexts impact models of managing strategic paradox. In addition, each of the cases in this study launched innovations to the market no less than six months and no more than a year before beginning the study. As a result, many of the tensions that emerged in the study involved pressures to expand the innovation. Leaders may face different types of pressure in attending to exploration and exploitation at different innovation phases.

This study further raises question about how leaders can engage subordinates while embracing paradoxical strategies. The results from this study stress the benefits of leaders being consistently inconsistent in their decision making to engage paradoxes. Yet extensive research suggests that doing so raises problems for subordinates. In general, research argues that individuals have a strong preference for consistency (Cialdini, Trost, & Newsom, 1995). Inconsistencies raise ambivalence and anxiety (Wang & Pratt, 2008), and lead individuals to respond by seeking to regain alignments and consistency. Specifically, in the face of inconsistencies, subordinates often judge their leaders as hypocritical (Cha & Edmondson, 2006) or rationalize the decisions of leaders to emphasize only one of the goals (Kunda, 1990). These existing studies raise questions about how leaders can engage and communicate a paradoxical strategy embedded with inconsistencies to subordinates who strive for consistency (Huy, 2002).

Finally, future research can consider how a dynamic decision-making model informs insight into organizational dynamism and change. Scholars depict a mutually constituative relationship between exploration and exploitation (Farjoun, 2010). Exploration embeds the seeds of exploitation, such that supporting exploration ultimately extends exploitation and vice versa. Practices to sustain both over time could provide insight into organizational dynamism and flexibility (Feldman & Orlikowski, 2011; O'Reilly & Tushman, 2008). A dynamic decision-making model offers one possibility of practices that fuel these relationships, and invites future research into how this model sustains dynamism and change in organizations.

CONCLUSION

In increasingly complex environments, leaders face pressures to manage paradoxical demands. The data in this study suggest one means of doing so. If these results survive further empirical testing in broader settings, they will shift our understanding of senior leaders as offsetting organizational complexity with clarity and stability toward leaders instead embracing complexity with inconsistency and dynamism. Together, these ideas contribute to existing research and invite future research on strategic paradoxes and senior leadership.

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