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Shedding new light on the relationship between contextual ambidexterity and firm performance: An investigation of internal contingencies

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ABSTRACT

This research investigates four key factors that influence the relationship between contextual ambidexterity and firm performance: two knowledge exchange elements (i.e., informational justice and task conflict) and two aspects of the internal competitive environment (i.e., resource competition and reward interdependence). These components define a firm's ability to convert its ambidextrous posture into enhanced performance. A sample of Canadian-based firms shows that the contextual ambidexterity–firm performance relationship is amplified at higher levels of informational justice and reward interdependence but suppressed at higher levels of task conflict and resource competition. The authors discuss the study's implications as well as future research directions.

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1. Introduction

When exposed to dynamic and changing environments, firms have no choice but to manage the tension between streamlining their current activities and developing new lines of business (Dougherty, 2008; Ford and Ford, 1994; Lewis, 2000). They face in essence the challenge of engaging in two separate, non-substitutable sets of activities: *alignment*, which they use to innovate incrementally and maintain coherence among their current activities, and *adaptability*, which implies a drastic reconfiguration of activities to innovate radically (de Visser et al., 2010; Gibson and Birkinshaw, 2004; O'Connor and DeMartino, 2006; Sun and Hong, 2002). When they engage in alignment and adaptability concurrently, organizations exhibit ambidexterity (Adler et al., 1999; Lubatkin et al., 2006), which is *contextual* when managers are able to make their own judgments about how to allocate their time across the two activity types (Gibson and Birkinshaw, 2004).

Ambidexterity research that examines the role of the firm's internal context—such as its structural and relational elements (e.g., Gibson and Birkinshaw, 2004; Jansen et al., 2009; Taylor and Helfat, 2009)—focuses mostly on how to make the organization more or less ambidextrous, rather than how organizational elements can facilitate or hinder positive outcomes of an ambidextrous posture (Raisch and Birkinshaw, 2008). Although a major premise

of ambidexterity research holds that ambidextrous organizations exhibit better performance, the ambidexterity–performance relationship remains unclear. Some researchers find a beneficial effect of ambidexterity (Gibson and Birkinshaw, 2004; He and Wong, 2004; Lubatkin et al., 2006); others argue that firms should choose alignment or adaptability, to avoid being mediocre at both (Ghemawat 1993). Some even question whether there are any performance benefits of ambidexterity (Van Looy et al., 2005).

What is clear is that the path from ambidexterity to organizational performance is strewn with implementation challenges, particularly related to the need to devote sufficient resources to different functional areas (Bierly and Chakrabarti, 1996; Kyriakopoulos and Moorman, 2004; O'Reilly and Tushman, 2004) and achieve flexibility in the allocation of company resources across alignment and adaptability activities (O'Reilly and Tushman, 2004; Van Looy et al., 2005). For these two types of activities to benefit the organization as a whole, managers across the organization must be willing to share the firm's overall resource base on an ongoing basis (Kyriakopoulos and Moorman, 2004). Ambidexterity researchers thus typically assume that resources are abundantly available and that managers across the organization have equal access to them (O'Reilly and Tushman, 2004; Simsek et al., 2009), yet this assumption is not universally tenable (Kyriakopoulos and Moorman, 2004). The paucity of research into internal contextual factors that might underlie the *performance* consequences of ambidexterity (Raisch and Birkinshaw, 2008) leaves a central conundrum: what contingencies define a firm's ability to convert its simultaneous pursuit of alignment and adaptability into enhanced performance?

In response, we advance the argument that attaining the potential performance benefits of an ambidextrous posture

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requires an internal context that facilitates intrafirm resource flows. Using a contingency perspective (Kyriakopoulos and Moorman, 2004; Song et al., 1998; Song and Xie, 2000), we explicate how several organizational conditions that inform cross-functional resource flows might influence the impact of contextual ambidexterity on firm performance. Such flows are critically informed by the exchange of *knowledge* within the firm (Love and Roper, 2009; Lovelace et al., 2001), as well as the firm's internal *competitive* dynamics (Luo et al., 2006; Xie et al., 2003). Therefore, we suggest that the performance outcomes of the simultaneous presence of alignment- and adaptability-oriented activities depend on two sets of critical factors: (1) the fairness and conflict inherent to cross-functional knowledge sharing, and (2) the internal competitive environment with respect to functions' inputs (resources) and outputs (rewards). To clarify, the terms "function" and "activity" capture two different issues: the former captures the location within the firm, in the context of its division of labor, while the latter pertains to the more generic nature of the tasks carried out. Thus, a given function comprises different (generic) activities, and at the same time a particular activity can be carried out in different functional areas of the firm. In this sense, alignment and adaptability represent activities that are not specific to particular functions but permeate all functions within the firm.

2. Theoretical background and hypotheses

2.1. Ambidexterity and organizational context

The term "ambidexterity" refers broadly to the ability to pursue disparate goals concurrently, such as exploitation and exploration (March, 1991), efficiency and flexibility (Adler et al., 1999), or alignment and adaptability (Gibson and Birkinshaw, 2004). While previous research uses different terms to label the dimensions underlying ambidexterity, they essentially capture the same phenomena and thus can be used interchangeably (Raisch and Birkinshaw, 2008). For parsimony, we use the terms "alignment" and "adaptability" hereafter. Alignment implies the presence of management systems that ensure coherence across the firm's ranks, with an emphasis on incrementally updating the firm's existing skills and capabilities (Adler et al., 1999; Gibson and Birkinshaw, 2004). It also pertains to the firm's ability to refine its current competencies to improve operational efficiency (Ghemawat 1993). In contrast, adaptability captures the presence of management systems aimed to reconfigure the firm's current activity set, with an emphasis on experimentation with radically new innovations (Adler et al., 1999; Gibson and Birkinshaw, 2004)—often as a means to cope with changing external conditions (March, 1991) and challenge existing ideas, such as deploying new technologies optimally or targeting and serving new market domains (Kyriakopoulos and Moorman, 2004).

In line with prior research (Birkinshaw and Gibson, 2004; Gibson and Birkinshaw, 2004), we focus on the role of *contextual* ambidexterity, or "the processes or systems that enable and encourage (managers) to make their own judgments about how to divide their time between conflicting demands for alignment and adaptability" (Gibson and Birkinshaw, 2004, p. 211). This approach regards the simultaneous presence of alignment and adaptability as contextual "because it arises from features of its organizational context" (Gibson and Birkinshaw, 2004, p. 209). Such organizational contexts are marked by a strong results orientation (i.e., managers do whatever it takes to deliver desirable results and are accountable for those results), together with the provision of social support (i.e., managers have the required freedom and security to accomplish goals) as illustrated by the

Renault and Oracle cases reported in Birkinshaw and Gibson (2004). Significantly, contextual ambidexterity thus is a higher-order, firm-level capability that reflects the collective orientation of the firm's managers, dispersed across the organization, toward the simultaneous pursuit of both alignment and adaptability in their daily work (Birkinshaw and Gibson, 2004). We extend previous research that has investigated antecedents of contextual ambidexterity (Gibson and Birkinshaw, 2004) by investigating instead the contingencies that underlie its resultant performance effects.

Although alignment and adaptability can increase firm performance individually (Adler et al., 1999; March, 1991), the consequences of their concurrent presence is less certain. Empirical findings related to the performance effects of ambidexterity are inconsistent, with some research finding a direct positive impact (e.g. Gibson and Birkinshaw, 2004; He and Wong, 2004; Lubatkin et al., 2006), while others find no significant effect (Venkatraman et al., 2007), or even a negative effect (e.g. Atuahene-Gima, 2005). Ambidextrous firms are inherently unstable because of the opposing resource demands that their posture imposes on managers in their daily tasks. The enhanced complexity of deciding which resources should be allocated to which activities (Tushman and O'Reilly, 1996; Van Looy et al., 2005) implies that ambidextrous firms might risk being outperformed by their more focused counterparts (Raisch and Birkinshaw, 2008).

Therefore, ambidextrous firms must ensure that they can shift their resource bases flexibly between their alignment- and adaptability-oriented activities, which should enable these activities to translate into positive performance outcomes (Kyriakopoulos and Moorman, 2004; O'Reilly and Tushman 2004; Van Looy et al. 2005). That is, for ambidextrous organizations to thrive, their internal resource base should be easily accessible across the firm, and particularly to managers who reside in different functions. Indeed, the successful combination of incremental improvements in current operations with the implementation of radically new ideas requires that the firm's different function-specific knowledge bases get easily unlocked and integrated (Jansen et al., 2012; Van Looy et al., 2005). Yet the internal resource exchanges that facilitate such knowledge integration are fraught with challenges (McNally et al., 2011). Interactions among managers of different functional areas often bring their contrasting "thoughtworlds" (Griffin and Hauser, 1996) and cultures (Gupta, Govindarajan 1986a) into direct contact, most notably so in the context of the interactions between technically- and commercially-oriented functions. For example, while the former (e.g., operations, engineers, R&D) tend to focus on technical feasibility or operational efficiency, the latter (e.g., marketing, sales) tend to emphasize customer satisfaction or issues regarding external competition (De Luca and Atuahene-Gima, 2007; Song and Parry, 1993).

Specifically, concerns about the fairness of intra-organizational interactions (Colquitt, 2001), conflicting opinions about how the firm's resource base should be applied to implement a particular strategic posture (Song et al., 2006), and internal competition for company resources and rewards (Luo et al., 2006; Song et al., 1996) all can hamper the ease with which resource flows materialize within the firm. Accordingly, we explicate four contextual factors that may act as key contingencies for translating contextual ambidexterity into enhanced firm performance. Two factors capture the ways in which function-specific *knowledge*—arguably one of the most critical elements of the firm's resource base (De Luca and Atuahene-Gima, 2007; Grant, 1996)—gets shared across functional areas, particularly in terms of perceived fairness (informational justice) and inherent conflict (task conflict). Two other factors capture the firm's internal competitive environment, namely managers' access to firm-level resources

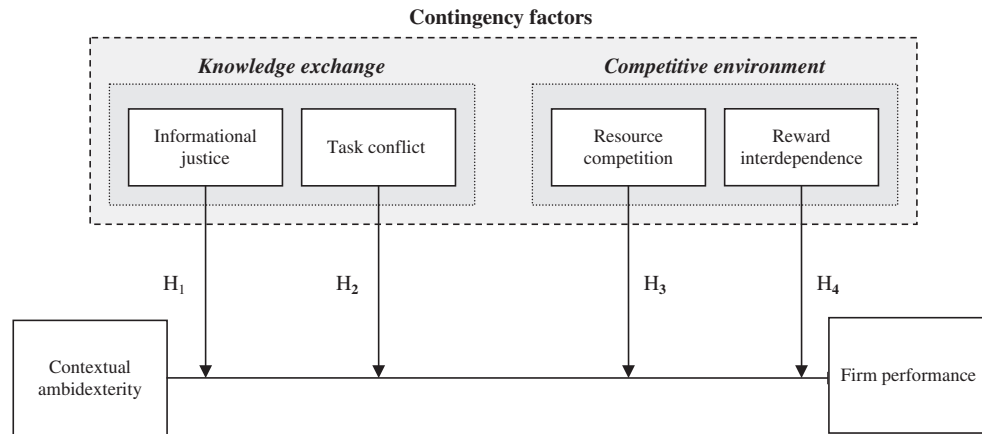


Fig. 1. Conceptual model.

(resource competition) and rewards for their performance (reward interdependence). All four factors affect the level of cross-functional collaboration and thus the likelihood and extent to which different functional areas share resources. Accordingly, our conceptual framework, as illustrated in Fig. 1, suggests that the relationship between contextual ambidexterity and firm performance is moderated by these four factors.

2.2. Informational justice

Cross-functional knowledge exchange features varying levels of fairness (Colquitt, 2001). Informational justice in this context refers to the perceived fairness that surrounds knowledge exchanges within the firm, including intrafirm communication about motivations for the firm's emphasis on any particular activities (Colquitt, 2001; Greenberg, 1990). For example, organizational settings that create uncertainty or stress in managers' daily work likely benefit particularly from internal contexts that encourage the provision of detailed and timely information about the rationales for any particular decisions or procedures (Bies and Moag, 1986; Kim, 2009). Informational justice thus is a key element of the broader concept of organizational justice (Colquitt 2001) and is particularly akin to procedural justice, though it extends this notion by focusing on managers' concerns about whether their viewpoints are considered by others and whether they receive sufficient information about decision-making processes. For example, O'Reilly and Tushman (1997) point to the important role of informational justice in Hewlett-Packard's ability to convert its incremental and radical innovation efforts into enhanced performance when transforming itself from a minicomputer company to a personal computer and network company. Such informational justice became manifest in a shared value system that promoted the company-wide integration of dispersed information, as well as, importantly, objective and respectful evaluations of others' opinions.

We hypothesize that contextual ambidexterity improves firm performance more when cross-functional interactions feature greater informational justice. First, the successful conversion of contextual ambidexterity into organizational performance creates enhanced resource demands—including the need to switch resources flexibly between alignment- and adaptability-oriented activities (O'Reilly and Tushman 2004; Van Looy et al. 2005)—and therefore should be facilitated when informational justice is high. Extant research has argued that such justice motivates managers to go out of their way to bring complex tasks to a successful end through enhanced resource exchanges (Bies and Moag, 1986; Qiu et al., 2009; Vilkmam and Keil, 2003). Similarly, the simultaneous

pursuit of alignment and adaptability should manifest greater organizational performance at higher levels of informational justice, because information about the potential risks associated with an ambidextrous posture is more readily available (Ghemawat, 1993; Tushman and O'Reilly, 1996) and seemingly fair (Gibson and Birkinshaw, 2004), so managers can better reconcile the contradictory demands of this strategic posture in their daily work (March, 1991).

Second, informational justice should enhance managers' willingness to accept the job complexity that accompanies an ambidextrous posture (Tushman and O'Reilly, 1996; Van Looy et al., 2005), because it increases their belief that firm-level decisions are based on merit rather than politics and do not unfairly favor other functional areas at the expense of their own (Bies and Moag, 1986; Cheung and Law, 2008; Eisenhardt and Bourgeois, 1988). Informational justice increases confidence that function-specific interests will be taken into consideration during the simultaneous pursuit of alignment and adaptability activities, so managers should be more motivated to share the resources that are necessary for a successful translation of these two activity types into enhanced performance. Similarly, the provision of fair explanations about decision-making process tends to promote the development of long-term, harmonious relationships with colleagues throughout the organization (See, 2009), which can help mitigate the uncertainty that contextual ambidexterity induces into functional managers' day-to-day decisions (Gibson and Birkinshaw, 2004) and thus their reluctance to share resources. In all, higher levels of informational justice should elicit favorable reactions and support from managers across the firm, thereby enabling the translation of the firm's ambidextrous posture into enhanced performance.

H1. The relationship between contextual ambidexterity and firm performance is moderated by the level of informational justice, such that the relationship is stronger at higher levels of informational justice.

2.3. Task conflict

Conflict is a multidimensional concept, commonly distinguished into task versus relational conflict (Amason, 1996; Finkelstein and Mooney, 2003). The latter arises when there are incompatibilities between different personalities, whereas the former is knowledge-driven and arises from differences in viewpoints held by different parties (Amason and Sapienza, 1997; Jehn and Mannix, 2001). Similar to previous research on innovation implementation (De Clercq et al., 2009), we focus on the role of

task conflict or knowledge-specific disagreements that might arise in the implementation of contextual ambidexterity, not on personal issues. This aspect of conflict is particularly salient for strategic postures, such as ambidexterity, that require strong collaboration among functional areas that represent different content domains within the firm (Jansen et al., 2009; Taylor and Helfat, 2009).

Although some research suggests direct beneficial effects of task conflict on creativity or innovation (Amabile et al., 1996; Amason and Schweiger, 1994; Leonard-Barton, 1995), we focus on conflict as a moderator of the performance effects of a complex strategic posture that includes aspects of both incremental and radical innovation. Conflict, whether content- or person-related, typically produces some negative feelings, such as discomfort, tension, frustration, anger, animosity, or stress (Jehn, 1995; Jehn and Bendersky, 2003; Pelled, 1996), and these feelings are particularly likely in situations marked by high uncertainty or complexity (Kelley, 2009), as is the case for contextual ambidexterity (Gibson and Birkinshaw, 2004). Thus, to the extent that cross-functional exchanges involve high levels of task conflict, different viewpoints may spark destructive interactions that lead different functional areas to pursue only their function-specific interests and duties (Brewer and Miller, 1996; Eisenhardt and Bourgeois, 1988; LaBianca et al., 1998), thereby undermining the performance outcomes of an organization's ambidextrous posture. Significantly, such interactions likely raise cognitive barriers that block the free sharing of resources across functional borders (Baba et al., 2004). At high levels of task conflict, we thus expect that the firm's ability to provide sufficient resources to support the concurrent, successful implementation of alignment and adaptability diminishes, such that the relationship between contextual ambidexterity and firm performance becomes attenuated.

Similarly, the tensions resulting from strong content-related disagreements may make it more difficult for managers to devote significant mental energy to solve the opposing demands associated with the simultaneous, successful implementation of alignment and adaptability activities (Adler et al., 1999; Gibson and Birkinshaw, 2004). In this situation, managers' attention instead is directed toward finding solutions to day-to-day disagreements, rather than maximizing firm-level performance outcomes that can result from these activities (Lovell et al., 2001). Ultimately, high levels of task conflict should hamper the effective translation of contextual ambidexterity into enhanced firm performance.

H2. The relationship between contextual ambidexterity and firm performance is moderated by the level of task conflict, such that the relationship is weaker at higher levels of task conflict.

2.4. Resource competition

We also consider the potential moderating role of the firm's internal competitive environment, which includes managers' perception that peers in other functional areas compete with them for company resources (Houston et al., 2001; Luo et al., 2006). Such company resources include not only tangible inputs, such as financial or human capital, but also intangible resources such as top management attention (Frankwick et al., 1994; Ocasio, 1997). We hypothesize that the influence of contextual ambidexterity on firm performance depends on the level of resource competition; it should be suppressed in firms that suffer from higher levels of internal competition.

Although some resource competition might directly improve certain firm-level outcomes, such as the ability to solve customer needs (Luo et al., 2006), it is likely to be problematic for the successful implementation of a complex strategic posture, such as

contextual ambidexterity (Fernandez, Montes, and Vazquez, 2000). In particular, managers might be unable to predict how the free sharing of their own resources with others—even if such sharing is necessary for the ambidextrous firm as whole—alters their own situation (Adler et al., 1999; Gibson and Birkinshaw, 2004). Not only might they be hesitant to share their function-specific resources, for fear that a competing function would benefit from such resources, but they also may refrain from applying others' resources if doing so seems likely to increase the competing functions' reputation among top management (Gupta and Govindarajan, 2000). When managers operate in intense competitive internal environments, they are more sensitive to top management control over strategy implementation and critical of any interference in their decision making (Tsai, 2002). In turn, if managers are wary that top management will sacrifice their interests in favor of other functional areas, they should be less willing to share their resources with colleagues. In this situation, there is insufficient commitment to reaping the benefits of a concurrent pursuit of alignment- and adaptability-oriented activities. The firm's resource base gets more "thinly" distributed across alignment and adaptability activities, and the successful conversion of their simultaneous pursuit into enhanced performance is more cumbersome (Simsek et al., 2009).

Overall, cross-functional interactions represent an important competitive aspect, in that experiences and insights shared with others can provide those others with private gains and help them claim more resources (Cui et al., 2005; Kim and Mauborgne, 1998). To the extent that the free exchange of resources across functional areas is hampered by strong internal competition, the contextual ambidexterity–firm performance relationship should be suppressed.

H3. The relationship between contextual ambidexterity and firm performance is moderated by the level of resource competition, such that the relationship is weaker at higher levels of resource competition.

2.5. Reward interdependence

A second facet of the internal competitive environment pertains to how managers earn performance rewards, particularly in comparison with other functional areas (Song et al., 1996; Xie et al., 2003). We argue that the contextual ambidexterity–firm performance relationship grows stronger when reward interdependence—or the extent to which individual rewards are contingent on the collective performance of managers across the whole organization—is higher. A complex strategic posture, such as contextual ambidexterity, demands the transcendence of individual interests (O'Reilly and Tushman, 2004); collective rewards may stimulate such transcendence (Collins and Smith, 2006). To the extent that the firm emphasizes joint rather than individual rewards, managers should be more committed to implementing seemingly contradictory activities (alignment and adaptability), even if doing so is risky and complex, because such rewards install a normative form of control rather than a purely utilitarian one based on individual interests (Bloom, 1999; Collins and Clark, 2003). Similarly, reward interdependence can create a sense of ownership of the firm's strategy (McDonough, 2000), such that managers are more committed to see complex strategies through, to the point of their successful translation into organizational-level performance, when their own rewards depend on the input of others (O'Reilly and Tushman, 2004).

Finally, in contrast with individual managers, top management may possess a better overarching perspective on how to create firm-level value by combining alignment and adaptability (Simsek et al., 2009) and thus understand how to reward such

value creation (O'Reilly and Tushman, 2004). Extant research shows that top management tends to be better positioned to provide rewards for synergies that result from combining different activity types (Gilbert, 2006; Smith and Tushman, 2005). Similarly, reward interdependence should enhance the potential contributions of contextual ambidexterity to organization-wide performance, because individual managers can be more effectively rewarded for accomplishing the complex tasks needed to implement an ambidextrous posture (O'Reilly and Tushman, 2004).

H4. The relationship between contextual ambidexterity and firm performance is moderated by the level of reward interdependence, such that the relationship is stronger at higher levels of reward interdependence.

3. Research methods

3.1. Sample and data collection

To test the study's hypotheses, we extracted all firms included in Hoover's Business Directory that are headquartered in Canada, then retrieved a random sample of 1500 firms based on their

alphabetical appearance in the database. These firms are active across the country's provinces and represent all sectors of Canada's economy. For each firm, we obtained contact information about managers whose job title indicated that they worked either in a "technically oriented" function (i.e., engineering, operations, or R&D) or a "commercially oriented" one (i.e., marketing or sales). Although this specification does not span all possible functional areas, extant research points to the critical role of these functional areas in shaping the success of a firm's innovative endeavors (e.g., Griffin and Hauser, 1996; Li and Calantone, 1998; Song and Parry, 1993). The key issues we investigate—the challenge to ensure sufficient internal resource flows that can convert contextual ambidexterity into enhanced firm performance—should thus be particularly salient for managers who operate in these areas. To ensure that the contacted managers were knowledgeable about their firms' performance, strategic posture, and overall internal functioning, we included only managers who held either a vice-president or director/department head title as possible participants. We sent a survey instrument to one randomly selected manager per firm, a design similar to prior approaches (e.g., De Clercq et al., 2011; Simons and Peterson, 2000; Song et al., 2006).

To pretest the survey and ensure that our questions were clear and understandable, we undertook informal interviews with

Table 1
Constructs and measurement items.

| | Factor loading | t-Value |
|---|------------------|---------|
| Firm performance ($\alpha = .92$; CR = .92; AVE = .56) | | |
| Return on investment | 830 | 15249 |
| Return on sales | 848 | 15974 |
| Profit growth | 837 ^a | – |
| Return on assets | 846 | 15731 |
| Overall efficiency of operations | 612 | 10003 |
| Sales growth | 672 | 11425 |
| Market share growth | 650 | 10938 |
| Cash flow from operations | 775 | 13773 |
| Firm's overall reputation | 600 | 9743 |
| Alignment ($\alpha = .84$; CR = .84; AVE = .64) | | |
| The management systems in this company work coherently to support the overall objectives of the company | 853 | 11804 |
| People in this company work toward the same goals because our management systems avoid conflicting objectives | 733 ^a | – |
| The management systems in this company prevent us from wasting resources on unproductive activities | 813 | 11937 |
| Adaptability ($\alpha = .89$; CR = .89; AVE = .73) | | |
| The management systems in this company encourage people to challenge outmoded traditions/practices | 811 | 14669 |
| The management systems in this company are flexible enough to allow us to respond quickly to changes in our market | 879 ^a | – |
| The management systems in this organization evolve rapidly in response to shifts in our business priorities | 874 | 17394 |
| Informational justice ($\alpha = .88$; CR = .88; AVE = .59) | | |
| People's viewpoints are considered by the other function | 804 | 13712 |
| People are candid in their communications with the other function | 699 | 11432 |
| People are provided with reasonable explanations regarding the other function's decisions | 828 ^a | – |
| The two functions communicate their decisions in detail | 772 | 13258 |
| The two functions tailor their communications to address each other's needs | 728 | 12004 |
| Task conflict ($\alpha = .85$; CR = .86; AVE = .61) | | |
| The two functions often have conflicting opinions about projects | 842 ^a | – |
| The two functions often have conflicting ideas | 862 | 15652 |
| The tasks pursued by the two functions are often incompatible with each other | 629 | 9646 |
| The two functions often have disagreements about task-related issues | 763 | 12519 |
| Resource competition ($\alpha = .90$; CR = .91; AVE = .66) | | |
| Protecting one's functional turf is considered a way of life in our company | 718 | – |
| The two functions frequently compete with each other for the same resources (eg, capital, personnel) | 738 ^a | 10851 |
| The two functions frequently compete with each other for more attention and time from top executives | 865 | 12712 |
| Tensions frequently run high during talks about how resources should be distributed between the two functions | 847 | 12282 |
| The two functions frequently try to obtain more time and attention from senior managers, even at the cost of the other function | 875 | 12957 |
| Reward interdependence ($\alpha = .78$; CR = .78; AVE = .54) | | |
| Different functions share the rewards of a successfully commercialized new product | 765 | 10095 |
| Individual functions are evaluated on their joint performance instead of separate function performance | 663 | 9280 |
| Our senior management promotes cross-functional team cohesion over separate departmental loyalty | 772 ^a | – |

Notes: CR = construct reliability; AVE = average variance extracted

^a Initial loading was fixed to 1 to set the scale of the construct

three academics and three managers (not included in the final sample) before the administration of the final version. We asked them to point out ambiguous, vague, or unfamiliar terms and incorporated their feedback to improve the study's readability and relevance (Podsakoff et al., 2003). To minimize the possibility that their responses were subject to biases due to social desirability, acquiescence, or consistency with "assumed" research hypotheses, we guaranteed the participants complete confidentiality, repeatedly assured them during the survey that there were no right or wrong answers, and asked them to answer the questions as honestly as possible (Spector, 2006). According to Podsakoff et al. (2003), these measures help alleviate concerns about common method bias (which we also tested formally).

For the data collection, we followed the total design method suggested by Dillman (1978). First, we prepared a mailing packet that contained (1) a cover letter addressed personally to the targeted managers of the sampled firms, (2) a questionnaire, and (3) a postage-paid return envelope. Second, two weeks after the initial mailing, we conducted "thank you" calls to those who had responded and reminder calls to those who had not. Third, four weeks after the initial mailing, we sent replacement questionnaires to nonrespondents. Some initially selected firms were unfit for the final sample, because they were not active anymore, had moved and their new address could not be identified, or no longer employed the selected respondents. We ended up with 950 potential respondents and received 232 completed surveys, for a response rate of 24%. We did not find significant differences between respondents and nonrespondents in terms of firm size, firm age, industry distribution, or location (province) distribution, nor did we find significant differences between early and late respondents for the survey-collected dependent, independent, or control variables (Armstrong and Overton, 1977).

A follow-up survey, conducted six months after the initial one, used a shortened format. For each construct, we chose one proxy item, different from the specific items in the original survey, that captured the general content domain of that construct (De Clercq and Sapienza, 2006; Yli-Renko et al., 2001). This approach reduces recall and consistency bias and thus enhances confidence that positive and significant correlations between original and follow-up survey items can be interpreted as evidence of the absence of common method bias (Yli-Renko et al., 2001). We received 78 responses from our original respondents; all the validation items correlated positively with the original measures. We did not find significant differences between firms that responded to the follow-up survey and those that did not for the dependent, independent, or control variables from the original survey; thus, attrition bias between the first and second waves was not a concern.

3.2. Construct measures

The scales of the constructs came from extant literature. All items were measured on five-point Likert scales, ranging from 1 (strongly disagree) to 5 (strongly agree). We summarize the study's key measures and psychometric properties in Table 1, and we include the correlations and descriptive statistics of these key measures in Table 2. In line with our research focus, the questions in the survey were worded to refer to the firm level, rather than the level of the individual manager or his or her own department. Thus, for questions that captured the nature of cross-functional knowledge exchange and the internal competitive environment (i.e., the four moderators), respondents provided their opinions about the interactions and relationships between their firms' technically and commercially oriented functions in general, rather than details about their individual situation. As noted previously, our focus on these two broad function types

Table 2
Descriptive statistics and correlations (N=232).

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|------------------------------|---------|---------|---------|---------|--------|-------|--------|---------|---------|---------|--------|-------|-------|-------|-------|-------|-------|
| 1. Firm performance | .418** | | | | | | | | | | | | | | | | |
| 2. Contextual ambidexterity | .426** | .614** | | | | | | | | | | | | | | | |
| 3. Informational justice | -.187** | -.368** | .614** | | | | | | | | | | | | | | |
| 4. Task conflict | -.193** | -.504** | -.583** | .612** | | | | | | | | | | | | | |
| 5. Resource competition | .357** | .612** | .553** | .589** | .468** | | | | | | | | | | | | |
| 6. Reward interdependence | .067 | .106 | .107 | -.156* | -.156* | .007 | | | | | | | | | | | |
| 7. Company size | -.035 | -.078 | -.02 | -.046 | -.027 | -.051 | .304** | | | | | | | | | | |
| 8. Company age | .05 | .05 | .065 | -.035 | -.133* | -.049 | .041 | .091 | | | | | | | | | |
| 9. Industry: manufacturing | -.06 | -.041 | -.011 | -.003 | .05 | -.003 | -.070 | -.132* | -.580** | | | | | | | | |
| 11. Industry: services | -.053 | -.053 | -.085 | .039 | .022 | .012 | .051 | -.100 | -.307** | -.198** | | | | | | | |
| 12. Industry: construction | .187** | .111 | .143* | -.157** | -.122 | .154* | -.006 | .046 | -.126 | -.081 | -.043 | | | | | | |
| 13. Industry: transportation | .007 | -.013 | -.046 | -.021 | .103 | -.017 | -.032 | .014 | -.231** | -.149* | -.079 | -.032 | | | | | |
| 14. Industry: wholesale | .037 | .129** | .02 | -.013 | -.016 | .095 | -.049 | -.084 | -.191** | -.123 | -.065 | -.027 | -.049 | | | | |
| 15. Industry: retail | -.019 | -.067 | -.015 | .123 | .082 | .002 | .102 | .345** | -.155* | -.099 | -.053 | -.022 | -.04 | -.033 | | | |
| 16. External rivalry | .037 | .062 | .081 | .01 | -.005 | .055 | .156* | .140* | -.091 | .021 | .206** | .003 | -.104 | -.034 | .116 | | |
| 17. Commercial function | .125 | -.087 | .054 | .061 | .074 | -.04 | .126 | .193** | .034 | -.038 | -.083 | .069 | -.015 | .026 | .003 | .095 | |
| Mean | 3.553 | 11.393 | 3.435 | 2.719 | 2.343 | 3.269 | 2655 | 32.871 | .470 | .270 | .090 | .020 | .060 | .040 | .030 | 3.233 | .490 |
| Standard dev. | .708 | 5.032 | .758 | .819 | .971 | .919 | 9734 | 36.305 | .500 | .446 | .294 | .130 | .230 | .194 | .159 | .727 | .501 |
| Minimum | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 3.000 | 1.000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | 1.250 | .000 |
| Maximum | 5.000 | 25.000 | 5.000 | 5.000 | 5.000 | 5.000 | 82.000 | 337.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 5.000 | 1.000 |

** p < .01.
* p < .05.

aligns with arguments about their critical role in the successful implementation of firm-level innovation (De Luca and Atuahene-Gima, 2007; Griffin and Hauser, 1996; Song and Parry, 1993). To ensure that the responses covered organization-wide phenomena rather than idiosyncratic issues that have to do with specific departments, in the cover letter and survey instrument we defined these “function” types in a broad sense. Particularly, we clarified that we were not interested in investigating interactions or relationships between specific functional departments, but rather between “the managers who typically are most preoccupied with technical issues such as operations, engineering, or research and development on one hand, and those who are typically most preoccupied with commercial activities such as marketing or sales on the other.”

To further ensure that the responses covered organization-wide phenomena rather than idiosyncratic issues related to specific functional areas, in the cover letter and survey instrument, we defined “function” types broadly. We clarified that we were not interested in investigating interactions or relationships between specific departments but rather between “the managers who typically are most preoccupied with technological (or technical) issues such as operations, engineering, or research and development on one hand, and those who are typically most preoccupied with commercial activities such as marketing or sales on the other.”

3.2.1. Firm performance

Our performance measure consisted of nine indicators used in prior research (Li and Atuahene-Gima, 2001) to capture information such as return on investment and sales growth. For each indicator, respondents assessed their perceptions of their firm's performance, relative to its principal competitors, during the last three years. To avoid concerns about reverse causality, the survey questions pertaining to the other focal constructs (i.e., the independent and moderator variables) emphasized our focus on the firm's “current or recent” situation. We found a positive correlation between the average measure ($\alpha=.92$) of the nine performance indicators and the single-item counterpart in the follow-up survey ($r=.66, p < .001$). We also collected performance data about firms' revenue growth from a secondary data source one year after the survey data, as reported in our post-hoc analysis section.

3.2.2. Contextual ambidexterity

We operationalized contextual ambidexterity as the product of a firm's alignment and adaptability (Gibson and Birkinshaw, 2004). The alignment measure used a three-item scale, based on Gibson and Birkinshaw (2004). For example, respondents indicated the extent to which the firm's management systems worked coherently to support overall company objectives. This measure ($\alpha=.84$) correlated positively with its counterpart from the follow-up survey ($r=.48, p < .001$). Similarly, adaptability used a three-item scale (Gibson and Birkinshaw, 2004) to assess whether the firm's management systems encouraged the reconfiguration of activities, such as by pushing people to challenge outmoded traditions. This measure ($\alpha=.89$) correlated positively with the single item from the follow-up survey ($r=.49, p < .001$).

3.2.3. Informational justice

The measure of informational justice was similar to that used in prior research (Colquitt, 2001; Masterson, 2001). Respondents indicated whether in the working relationships between technically and commercially oriented functions, “people are provided with reasonable explanations regarding the other function's decisions” or “people are candid in their communications with

the other function.” The measure ($\alpha=.88$) correlated positively with its single-item counterpart from the follow-up survey ($r=.52, p < .01$).

3.2.4. Task conflict

To measure task conflict, we used a four-item scale from prior literature on group and interdepartmental conflict (Dyer and Song, 1998; Jehn and Mannix, 2001). For example, respondents assessed whether technically and commercially oriented functions often had disagreements about task-related issues or conflicting opinions about projects. The measure ($\alpha=.85$) correlated positively with its single-item counterpart from the follow-up survey ($r=.21, p < .05$).

3.2.5. Resource competition

Following prior studies (Luo et al., 2006), the resource competition measure reflected the level of competition for various company resources—including capital, personnel, and top management attention—between the technically and commercially oriented functions. The measure ($\alpha=.90$) correlated positively with its follow-up single-item counterpart ($r=.31, p < .01$).

3.2.6. Reward interdependence

We measured the level of reward interdependence with three items that assessed the interdependence of the rewards between technically and commercially oriented functions (Xie et al., 2003). For example, respondents indicated the extent to which individual units were evaluated on their joint performance instead of separate departmental performance and whether they shared the rewards of successfully commercialized new products. The measure ($\alpha=.78$) correlated positively with its single-item counterpart from the follow-up survey ($r=.46, p < .001$).

3.2.7. Control variables

We included several control variables to avoid model misspecification and allow for possible alternative explanations of any performance variations. First, we controlled for *firm size*, measured as a log transformation of the number of full-time employees. Second, we measured *firm age*, or the number of years the firm had been in business. Third, we noted the *industry* of the firm, using standard industrial classification codes. Fourth, because firm performance might be driven by external competitive conditions, we controlled for *external rivalry*, as assessed by respondents on a scale derived from Maltz and Kohli (1996). Fifth, we controlled for whether the respondent represented a technically or commercially oriented function.

3.3. Assessing measurement reliability and validity

The confirmatory factor analysis (CFA) of a seven-factor measurement model revealed factor loadings greater than .40, normalized residuals less than 2.58, and modification indices less than 3.84 (Anderson and Gerbing, 1988). The measurement model fit the data well: $\chi^2_{(85)}=825.13$, confirmatory fit index (CFI)=.92, and root mean squared error of approximation (RMSEA)=.06. The convergent validity of the scales was affirmed by the significant factor loadings in the measurement model (Gerbing and Anderson, 1988) and the magnitude of the average variance extracted (AVE) estimates (Bagozzi and Yi, 1988). The constructs also indicated discriminant validity: none of the confidence intervals for the correlations between constructs included 1.0 ($p < .05$) (Anderson and Gerbing, 1988), and the AVE estimates of the constructs were greater than the squared correlations of the corresponding pairs of constructs (Fornell and Larcker, 1981).

Table 3
Regression results (dependent variable: firm performance) ($N=232$).

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|---------|--------------------|
| Company size (log) | .116 | .148 | .196** | .189** | .223** | .185** | .214** |
| Company age | -.160 ⁺ | -.142 ⁺ | -.141 ⁺ | -.131 ⁺ | -.144 ⁺ | -.111 | -.146 ⁺ |
| Industry: manufacturing ^a | .059 | -.032 | .041 | -.008 | .004 | .012 | .293 |
| Industry: services | -.009 | -.059 | .004 | -.047 | -.052 | -.041 | .233 |
| Industry: mining | -.031 | -.036 | .010 | -.013 | -.001 | .012 | .19 |
| Industry: construction | .197* | .127 | .120 | .093 | .100 | .106 | .156* |
| Industry: transportation | .017 | -.014 | .003 | -.039 | -.026 | -.006 | .114 |
| Industry: wholesale | .043 | -.036 | -.001 | -.022 | -.039 | -.017 | .092 |
| Industry: retail | .023 | .008 | -.005 | -.014 | -.014 | -.008 | .075 |
| External rivalry | .016 | -.041 | -.069 | -.045 | -.109 ⁺ | -.086 | -.076 |
| Commercially oriented function ^b | .109 | .165* | .131* | .122 | .115 ⁺ | .103 | .150* |
| Contextual ambidexterity | | .381*** | .238** | .208* | .281** | .266** | .237** |
| Informational justice | | | .281*** | .300 | .252** | .256** | .293*** |
| Task conflict | | | -.025 | -.027 | .021 | -.057 | -.075 |
| Resource competition | | | .220** | .213** | .219** | .242** | .206** |
| Rewards interdependence | | | .146 ⁺ | .134 ⁺ | .149 ⁺ | .150* | .136 ⁺ |
| H1: Contextual ambidexterity × Informational justice | | | | .158* | | | |
| H2: Contextual ambidexterity × Task conflict | | | | | -.140* | | |
| H3: Contextual ambidexterity × Resource competition | | | | | | -.155** | |
| H4: Contextual ambidexterity × Reward interdependence | | | | | | | .188*** |
| R-square | .073 | .204 | .275 | .298 | .312 | .324 | .342 |
| ΔR-square | | .131*** | .071*** | .023* | .037* | .049** | .067*** |

Notes: Standardized coefficients (two-tailed p -values).

*** $p < .001$.

** $p < .01$.

* $p < .05$.

⁺ $p < .10$.

^a Base case = finance industry.

^b Base case = technically oriented function.

To check whether common method bias was a concern, we used a CFA for a single-factor model, which revealed a poor fit with the data ($\chi^2_{(64)}=2764.70$, CFI=.51, RMSEA=.15), significantly worse ($\Delta\chi^2_{(21)}=1939.57$, $p < .001$) than the fit of the aforementioned seven-factor model. Furthermore, we ran several pairs of structural equation models (SEM) that enabled a comparison between a model that included an interaction term and another model with an added common method factor (Podsakoff et al., 2003; Song et al., 2006). For example, for the contextual ambidexterity × informational justice interaction (i.e., regression Model 4 in Table 3), the chi-square difference between the two models was not significant ($\Delta\chi^2_{(1)}=.094$; ns), and only small changes in the size and significance of the paths across the two models emerged. The same pattern of results emerged for the SEM equivalents of the three models that included the other two-way interactions. Since common method concerns may be exacerbated for the multiplicative measure of contextual ambidexterity, we also undertook a robustness check and excluded firms with the lowest (bottom 2.5%) and highest (top 2.5%) contextual ambidexterity scores. The results were consistent with those in the main analysis (Table 3). These results, together with arguments that common method bias is less prevalent in studies that involve highly educated respondents and multi-item scales (Bergkvist and Rossiter, 2007) and that focus on moderating effects rather than main effects (Simons and Peterson, 2000), alleviated concerns related to the use of common respondents in this study.

4. Results

4.1. Main analysis

Table 3 contains the hierarchical regression results. After we mean-centered the interacting variables, the variance inflation factor

values were well below the threshold of 10, so multicollinearity was not a problem (Aiken and West, 1991). Model 1 contained the control variables, Model 2 added the effect of contextual ambidexterity, and Model 3 included the direct effects of informational justice, task conflict, resource competition, and reward interdependence. Model 2 revealed a positive relationship between contextual ambidexterity and firm performance ($\beta=.381$, $p < .001$). In Model 3, we found significant effects for informational justice ($\beta=.281$, $p < .001$), resource competition ($\beta=.220$, $p < .01$), and reward interdependence ($\beta=.146$, $p < .10$), but not for task conflict ($\beta=-.025$, ns).

With Hypotheses 1–4, we predicted moderating effects of two aspects of the firm's internal knowledge exchange (informational justice and task conflict) and competitive environment (resource competition and reward interdependence) on the relationship between contextual ambidexterity and firm performance. To test these hypotheses, we entered their interaction terms with contextual ambidexterity in Models 4–7. In Model 4, the interaction effect between contextual ambidexterity and informational justice on firm performance was positive and significant ($\beta=.158$, $p < .05$), in support of Hypothesis 1. To understand the nature of this interaction, in Fig. 2 (Panel A), we plotted the effects of contextual ambidexterity on firm performance for high and low levels of informational justice (Cohen et al., 2003). The plot suggested a positive contextual ambidexterity–firm performance relationship at high levels of informational justice and a neutral one at low levels. In Model 5, the interaction effect between contextual ambidexterity and task conflict was negative and significant ($\beta=-.140$, $p < .05$). Its plot in Fig. 2, Panel B, indicated that the positive contextual ambidexterity–firm performance relationship was stronger at low levels of task conflict than at high levels, in support of Hypothesis 2.

In addition, Model 6 supported Hypothesis 3: the interaction effect between contextual ambidexterity and resource competition on firm performance was negative and significant ($\beta=-.155$, $p < .01$). The related plot (Fig. 2, Panel C) indicated that the

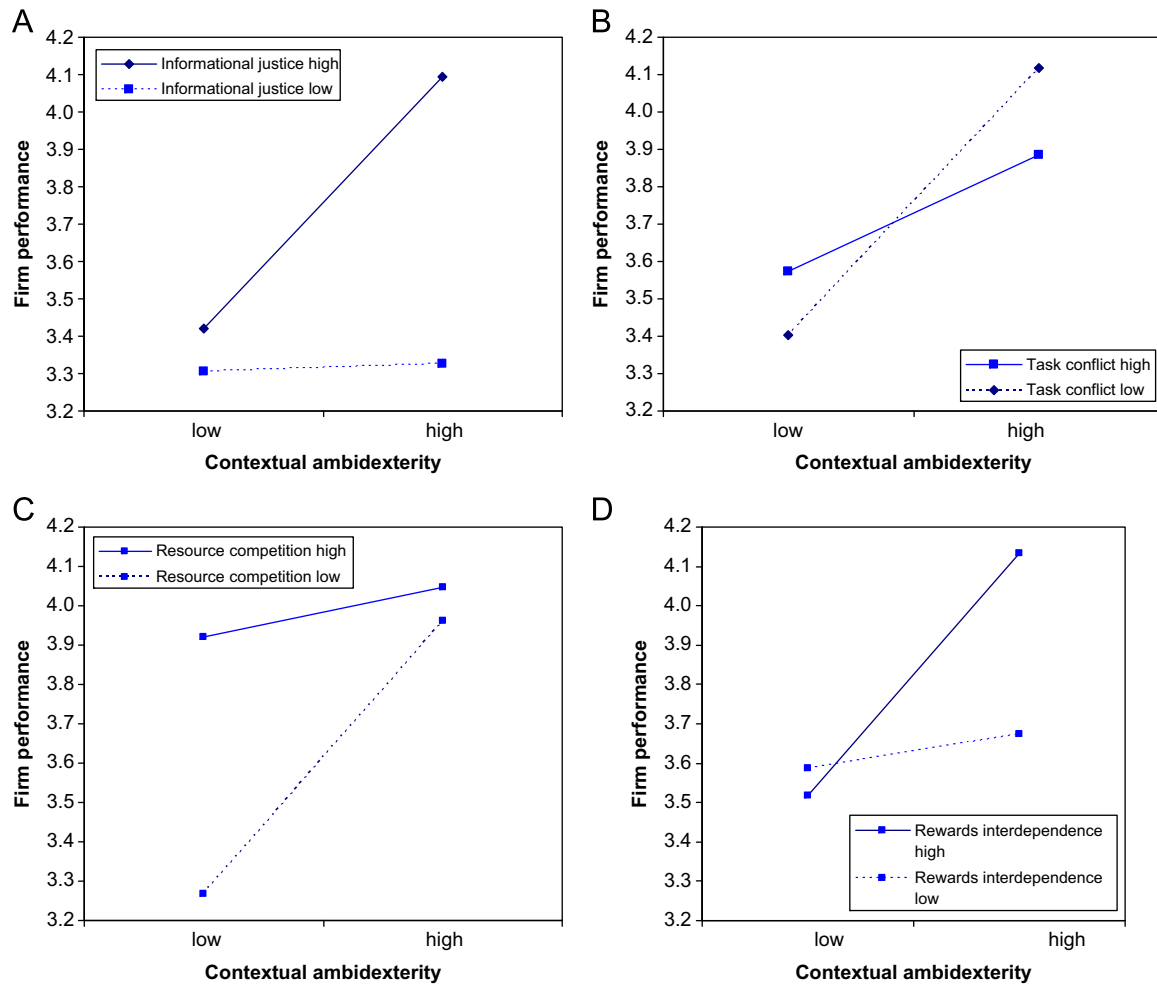


Fig. 2. (A) Moderating effect of informational justice on the contextual ambidexterity–firm performance relationship. (B). Moderating effect of task conflict on the contextual ambidexterity–firm performance relationship. (C). Moderating effect of resource competition on the contextual ambidexterity–firm performance relationship. (D). Moderating effect of reward interdependence on the contextual ambidexterity–firm performance relationship.

Table 4
Post hoc analysis results.

| | Model 4 | Model 5 | Model 6 | Model 7 |
|---|-------------------|------------|--------------------|-------------------|
| Panel A | | | | |
| Structural equation modeling results (dependent variable: firm performance) (N=232) | | | | |
| H1: Contextual ambidexterity × Informational justice | .156* | | | |
| H2: Contextual ambidexterity × Task conflict | | -.142* | | |
| H3: Contextual ambidexterity × Resource competition | | | -.160** | |
| H4: Contextual ambidexterity × Reward interdependence | | | | .198** |
| χ ² (df) | 469.45 (81) | 464.57(81) | 459.23(81) | 467.20(81) |
| CFI | .706 | .709 | .712 | .709 |
| RMSEA | .120 | .120 | .119 | .120 |
| Panel B | | | | |
| Regression results (dependent variable: revenue growth) (N=107) | | | | |
| H1: Contextual ambidexterity × Informational justice | .454 ⁺ | | | |
| H2: Contextual ambidexterity × Task conflict | | -.498** | | |
| H3: Contextual ambidexterity × Resource competition | | | -.534 ⁺ | |
| H4: Contextual ambidexterity × Reward interdependence | | | | .413 ⁺ |
| R-square | .263 | .319 | .232 | .276 |

Notes: Standardized coefficients (two-tailed *p*-values). Control and direct effects are modeled but not reported.

** *p* < .01.
* *p* < .05.
⁺ *p* < .10.

contextual ambidexterity–firm performance relationship was stronger at lower levels of resource competition, as hypothesized; however, all else being equal, firm performance is higher at high (versus low) levels of resource competition across the whole spectrum of contextual ambidexterity. Finally, in Hypothesis 4

we suggested that to the extent the firm was marked by higher levels of reward interdependence, the relationship between contextual ambidexterity and firm performance would be amplified. Our findings supported this hypothesis with a positive and significant interaction effect ($\beta = .188, p < .001$). The plot in

Fig. 2, Panel D, revealed that the contextual ambidexterity–firm performance relationship was stronger at higher levels of reward interdependence.

4.2. Post-hoc analyses

We undertook several post-hoc analyses to test the robustness of the results. First, noting prior arguments of direct relationships between organizational context characteristics and the firm's level of ambidexterity (Gibson and Birkinshaw, 2004; Jansen et al., 2009), we estimated four SEMs equivalent to Models 4–7 (Table 3), in which we added the direct effects of the study's four organizational characteristics (informational justice, task conflict, resource competition, and reward interdependence) on contextual ambidexterity. The sign and significance of the moderating effects (Table 4, upper panel) were consistent with the main analyses (Table 3), indicating a significant role of the theorized moderators on the performance consequences of contextual ambidexterity, *beyond* their direct impact on such ambidexterity. These four post-hoc SEMs also revealed positive direct effects of informational justice and reward interdependence on contextual ambidexterity, but no effects of task conflict and resource competition. We obtained similar results with respect to the presence or absence of direct effects of the four organizational context characteristics on contextual ambidexterity in a robustness check in which we regressed contextual ambidexterity on the four characteristics. Importantly, the relatively poor statistical fit of the aforementioned SEMs suggests that organizational factors that help shape a firm's ambidextrous posture may not be identical to those that affect the conversion of this posture into enhanced performance.

Second, to address arguments that some task conflict (Amabile et al., 1996; Amason and Schweiger, 1994) and resource competition (Luo et al., 2006) can benefit a firm's innovation endeavors, we tested for the presence of curvilinear effects. Specifically, we ran two regression models (equivalent to Models 5 and 6 in Table 3) that included the product of contextual ambidexterity with the respective squared moderators (and the squared moderator terms). We found no evidence of three-way interactions between contextual ambidexterity on one hand and the squared task conflict and internal competition terms on the other, possibly due to our focus on how these two organizational context factors impacted the successful implementation of contextual ambidexterity, in the form of enhanced performance, rather than their direct effects on firm performance. In a further analysis, we observed that the direct curvilinear effects of task conflict and resource competition variables on firm performance were not significant either.

Third, as another check of common method bias, we collected performance data from Hoovers Online Prospector Database, specifically, firms' revenue growth for a subsample of firms ($N=107$) one year after the survey. As we show in Table 4 (bottom panel), the interaction results from this subsample analysis were consistent with those revealed by the full sample in Table 3, though with somewhat smaller statistical significance, due to the lower statistical power (informational justice $\beta=.454$, $p<.10$; task conflict $\beta=-.498$, $p<.01$; resource competition $\beta=-.534$, $p<.10$; reward interdependence $\beta=.413$, $p<.10$).

Finally, since the tasks of managers in smaller firms may not always be restricted to one function and therefore the distinction between technical and commercial functions may be more difficult to make, we undertook a robustness check in which we excluded the smaller firms (i.e., fewer than 100 employees) from the analyses. The results for this sample of 136 firms were consistent with those reported in Table 3.

5. Discussion

5.1. Theoretical implications

To ensure that the simultaneous pursuit of alignment and adaptability leads to enhanced firm-level performance, the firm's different functional areas must freely share resources. Although research has acknowledged the role of cross-functional collaboration and resource flows in enabling ambidexterity (Gibson and Birkinshaw, 2004; Jansen et al., 2009; Taylor and Helfat, 2009), it offers only limited theoretical insights into how internal contextual conditions and their effects on resource exchanges within the firm influence the performance outcomes related to firm ambidexterity. Our main contribution thus is to highlight several contingencies that underlie the ambidexterity–performance relationship. In particular, we have considered how knowledge is shared within the firm (fairness and conflict) and the firm's internal competitive environment (resources and rewards).

First, contextual ambidexterity contributes more to firm performance when cross-functional interactions are marked by higher informational justice. Adequate communication about the purpose of a particular strategic posture can drive its effective implementation by facilitating the free exchange of resources across functional borders, including adequate allocations to relevant strategic actions (Bies et al., 1988; Kim and Mauborgne, 1997). The successful implementation of strategies marked by high levels of uncertainty or complexity, such as an ambidextrous posture, are particularly cumbersome when managers receive only *inadequate* information or explanations (Colquitt, 2001; Greenberg, 1990). We find that stronger fairness perceptions regarding knowledge exchanges across functional areas facilitate the transformation of contextual ambidexterity into better performance. Such informational justice implies that during ambidexterity implementation, managers take each other's viewpoints into consideration, receive reasonable explanations of other functions' decisions, and tailor their communications to address others' needs (Colquitt, 2001). The presence of informational justice also implies beneficial *social* aspects, such that the fairness of the information exchanged reduces concerns that colleagues in other areas have only their own interests at heart (Greenberg, 1993). This perception reduces managers' resistance to complex strategic postures (O'Reilly and Tushman, 2004). Overall, our findings suggest that the level of fairness in intra-organizational knowledge exchanges is instrumental for enhancing the performance outcomes that stem from contextual ambidexterity.

Second, there are multiple challenges associated with combining the conflicting viewpoints of various functional areas to achieve effective strategy implementation (Atuahene-Gima and Murray, 2004). We show in turn that when cross-functional knowledge exchange is marked by higher levels of task conflict, it is more difficult to leverage contextual ambidexterity to achieve positive performance outcomes. When strong differences of opinion continually arise in managers' interactions, the resulting negative feelings and tensions may hamper the free and flexible allocation of resources to alignment- and adaptability-oriented activities, which prevents their simultaneous, successful conversion into better organizational performance (O'Reilly and Tushman 2004; Van Looy et al. 2005). Strong conflicts about content-related issues, combined with concerns about the complexity of executing alignment and adaptability concurrently, may lead managers to redirect their attention to just their assigned, function-specific tasks (Brewer and Miller, 1996; Eisenhardt and Bourgeois, 1988; LaBianca et al., 1998). They thus may express limited interest in using relationships with peers throughout the organization to leverage both activity types into enhanced performance.

Third, we find a negative interaction effect between contextual ambidexterity and resource competition on firm performance. When managers perceive a need to compete for resources or fear that other functional areas will opportunistically exploit any shared resources for their own benefit, they may invest less in ensuring free resource flows and focus instead on protecting their own functional turf (Luo et al., 2006; Maltz and Kohli, 1996; Tsai, 2002). In these conditions, a reluctance to share valuable resources with “competing” areas could mean insufficient resources are devoted to the simultaneous implementation of alignment and adaptability activities (Sarkees and Hulland, 2009) and thus poorer performance outcomes. In this regard, we also find that though firm performance is higher among firms marked by high versus low levels of resource competition, this advantage disappears for firms with high ambidexterity (Fig. 2, Panel C). That is, we add interesting nuance to the acclaimed benefits of internal competition in terms of generating positive firm-level outcomes (Luo et al., 2006; Tsai, 2002); such competition actually might hamper the implementation of a complex, resource-intensive strategic posture such as contextual ambidexterity.

Fourth, the relationship between contextual ambidexterity and firm performance becomes stronger to the extent that individual rewards depend to a greater extent on collective performance. Such a reward system acknowledges the interdependence of functional areas and discourages individual areas from focusing only on their own interests; instead, they must determine how to devote sufficient resources to the successful implementation of alignment and adaptability, even when resource flows cross functional borders (Collins and Smith, 2006; Floyd and Lane, 2000). If the performance of colleagues in other functional areas has ramifications for returns on their own efforts, managers tend to sense shared ownership of the firm’s strategic posture, regardless of its complexity (McDonough, 2000), which stimulates their collective motivation to bring the strategy to a successful end (O’Reilly and Tushman, 2004). In our study context, high reward interdependence may stimulate the cross-functional coordination needed to subdue the complex, opposing demands of an ambidextrous posture and allocate sufficient resources for its successful implementation (Tushman and O’Reilly, 1996).

5.2. Limitations and future research

This study contains some limitations that offer avenues for further research. First, although we defined firms’ technically and commercially oriented functions in a general sense, the focus on these two broad function types may not cover all possible functional areas that contribute to the translation of a firm’s contextual ambidexterity into enhanced performance. Thus, while these function types play salient roles in the successful implementation of the firm’s innovative endeavors (Griffin and Hauser, 1996; Song and Parry, 1993), further research could nonetheless consider a more comprehensive set of functions than investigated herein.

Second, by focusing on four specific contingent factors, this study ignores other factors that may be relevant to the successful conversion of contextual ambidexterity into firm performance, such as alternative dimensions of organizational justice (Colquitt, 2001), the presence of relational conflict (Edmondson and Smith, 2006), centralized decision-making processes (Auh and Menguc, 2007), the clarity of organizational vision and strategic direction (Revilla and Rodríguez 2011), or the extent to which managers depend on colleagues in other departments to accomplish their daily tasks (Fisher et al., 1997). Our study also did not include other relevant variables that might affect firm performance,

such as the firm’s R&D expenditures or engagement in alliance activities.

Third, our single-respondent design might raise some concerns about common method bias, despite our precautionary measures and the statistical evidence against its presence. Further research could collect data from multiple respondents in each firm to assess how its levels of contextual ambidexterity and organizational characteristics impact organization-wide performance. Such research designs also could account for the presence of *intrafirm* variation in the extent to which individual managers engage in alignment- and adaptability-oriented activities concurrently.

Fourth, further research also could apply multilevel approaches (Hitt et al., 2007) and examine how individual and organizational variables jointly affect the performance consequences of an ambidextrous posture. Such research could extend previous arguments about what constitutes “ambidextrous managers” (Birkinshaw and Gibson, 2004), how managers with relevant characteristics affect organizational *performance*, and which characteristics of an organizational context help unlock their performance potential. For example, managers who are comfortable with multitasking may be more positively inclined toward the installation of a job rotation system, in which the organization transfers its managers across different functional areas (Campion et al., 1994). Job rotation might enhance the firm’s ability to share its resource base easily among different functional areas—in which case it implies an organizational context factor that might extend our conceptual framework—though its usefulness in ambidextrous organizations could depend on the extent to which managers with “appropriate” ambidextrous characteristics (Birkinshaw and Gibson, 2004) are part of the job rotation system itself.

Fifth, we asked respondents to reflect on their firm’s contextual ambidexterity and other organizational context features in its “current or recent situation.” The three-year performance time frame means that our dependent variable may not be perfectly concurrent with the independent and moderating variables. However, the results from our post-hoc analysis, which used revenue growth data from one year after the survey (Table 4, bottom panel), were consistent with those from our main analysis (Table 3), despite the lower statistical power of this analysis with its limited sample. The cross-sectional nature of our data still demands caution before drawing causal inferences though, because the theoretical relationships we examine may perhaps be susceptible to reverse causality. Our hypotheses have a strong theoretical grounding, but high-performing firms might use their slack resources to simultaneously promote economies of scope through alignment *and* undertake more risky activities through adaptability. Therefore, longitudinal designs could elucidate and distinguish among various internal causal processes by studying the relationships among contextual ambidexterity, firm performance, and intra-organizational contingencies over time. Such research designs also could systematically uncover how certain organizational factors might function as both antecedents and performance enablers of contextual ambidexterity, while others play only one role.

Sixth and finally, our results are based on surveys of firms in Canada. Although we do not expect much variation in the findings between Canadian and other Western contexts, cultural factors could interfere with the arguments we apply, particularly if a dominant national culture is at odds with the firm’s internal position toward the extent and ways resources are exchanged across different functional areas (Hofstede, 2001).

5.3. Practical implications

To reap the benefits from contextual ambidexterity, top management must carefully consider the organizational context in which

their key managers operate, particularly with regard to how knowledge is exchanged across functional areas and the internal competitive context in terms of the allocation of resources and rewards. Top management must not only be concerned about how it can *develop* an appropriate organizational context that creates an ambidextrous posture (e.g., Birkinshaw and Gibson, 2004), but also whether and how this posture subsequently leads to increased performance. The potential performance benefits of an ambidextrous posture are not guaranteed, so ambidextrous companies should develop adequate contextual conditions to maximize their performance.

In particular, top management should recognize how contextual factors influence the free exchange of resources across the organization and thus determine the transformation of contextual ambidexterity into better organizational performance. Cross-functional resource exchanges provide a fertile ground for performance in ambidextrous organizations, but they also will encounter various challenges before they can bear fruit. Different functional areas play different roles in the implementation of any strategic posture, including an ambidextrous one. For example, engineers and technicians may attend mainly to internal technical and quality-related aspects, while marketing and sales managers focus on how to create value in the market space (Gupta et al., 1986b). This study shows that the translation of contextual ambidexterity into enhanced performance becomes more cumbersome when different functions do not perceive fairness in their knowledge sharing routines or if they disagree continuously about task-related issues. Perceptions of unfairness and conflict in knowledge exchanges likely push managers into an “I don’t know, and I don’t want to know” stance that dampens commitment and cripples the effective allocation of resources to alignment and adaptability—ultimately rendering those activities worthless to the organization.

Further, functional managers in ambidextrous organizations that compete heavily for internal resources may believe that collaborating with other colleagues will reduce their access to company resources, which encourages them to play destructive power games and fight for top management attention (Luo et al., 2006). Such fights may reduce the resource support available for a successful, organization-wide implementation of the different activities that underlie the firm’s ambidextrous posture. Moreover, when individual rewards are *not* tied to collective performance, sharing resources with colleagues in other areas seems pointless, or at least not valuable enough, because the organizational benefits appear decoupled from individual benefits (Collins and Smith, 2006). In contrast, shared performance rewards across functional areas should invigorate the free flow of resources and ensure that both alignment- and adaptability-oriented activities receive the resources they need to ensure enhanced organizational performance.

In conclusion, by considering various internal knowledge- and competition-based contextual factors, this study has sought to direct greater attention to the boundary conditions of the relationship between contextual ambidexterity and firm performance. In doing so, we hope to have offered a clearer understanding of how firms might translate their simultaneous pursuit of alignment and adaptability into stronger competitive positions in the marketplace. To be ambidextrous is not an end in itself; for performance potential to become real, there must be a hospitable, compatible internal environment.

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