Citation for published version:

De Clercq, D, Thongpapanl, NT & Dimov, D 2013, 'Shedding new light on the relationship between contextual ambidexterity and firm performance: an investigation of internal contingencies', *Technovation*, vol. 33, no. 4-5, pp. 119-132. <https://doi.org/10.1016/j.technovation.2012.12.002>

DOI:

[10.1016/j.technovation.2012.12.002](https://doi.org/10.1016/j.technovation.2012.12.002)

Publication date:

2013

Document Version

Peer reviewed version

[Link to publication](#)

“NOTICE: this is the author’s version of a work that was accepted for publication in Technovation. Changes resulting from the publishing process, such as peer review, editing, corrections, structural formatting, and other quality control mechanisms may not be reflected in this document. Changes may have been made to this work since it was submitted for publication. A definitive version was subsequently published in Technovation, forthcoming (2013), DOI: 10.1016/j.technovation.2012.12.002

University of Bath

Alternative formats

If you require this document in an alternative format, please contact:
openaccess@bath.ac.uk

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

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

Dirk De Clercq
Brock University
Faculty of Business
500 Glenridge Avenue
St. Catharines, Ontario L2S 3A1
Tel: +1 905 688 5550 x5187
Fax: +1 905 984 8068
ddeclercq@brocku.ca

Narongsak (Tek) Thongpapanl
Brock University
Faculty of Business
500 Glenridge Avenue
St. Catharines, Ontario L2S 3A1
Tel: +1 905 688 5550 x5195
Fax: +1 905 378 5716
nthongpa@brocku.ca

Dimo Dimov
University of Bath
School of Management
Claverton Down
Bath, BA2 7AY, UK
d.p.dimov@bath.ac.uk

Forthcoming in Technovation

December 2012

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

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.

Keywords: ambidexterity; performance; organizational contingencies

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

and Ricart i Costa, 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 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 and Ricart i Costa, 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 et al., 1986) 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 (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 Figure 1, suggests that the relationship between contextual ambidexterity and firm performance is moderated by these four factors.

Insert Figure 1 about here

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; Vilkamo 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 and Ricart i Costa, 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 solving 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 (Lovelace 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 likely is 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 1,500 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 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 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.”

Insert Tables 1 and 2 about here

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 previous 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.

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 ($r = .49, p < .001$).

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 ($r = .52, p < .01$).

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 ($r = .21, p < .05$).

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 ($r = .31, p < .01$).

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 ($r = .46, p < .001$).

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).

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 ($\chi^2_{(64)} = 2,764.70$, CFI = .51, RMSEA = .15), significantly worse ($\Delta\chi^2_{(21)} = 1,939.57$, $p < .001$) 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 $\times$ 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 ($\beta = -.025, ns$).

Insert Table 3 about here

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 Figure 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 Figure 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 (Figure 2, Panel C) indicated that the 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 Figure 2, Panel D, revealed that the contextual ambidexterity–firm performance relationship was stronger at higher levels of reward interdependence.

 Insert Figure 2 about here

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.

Insert Table 4 about here

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 (Figure 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 Rodriguez, 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 *intra*firm 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., 1986). 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.

References

- Adler, P., Goldoftas, B., Levine, D. 1999. Flexibility versus efficiency? A case study of model changeovers in the Toyota Production System. *Organization Science* 10, 43-68.
- Aiken, L.S., West, S.G. 1991. *Multiple Regression: Testing and Interpreting Interactions*. Sage Publications, Newbury Park, CA.
- Amabile, T., Conti, R., Coon, H., Lazenby, J., Herron, M. 1996. Assessing the work environment for creativity. *Academy of Management Journal* 39, 1154-1184.
- Amason, A.C. 1996. Distinguishing the effect of functional and dysfunctional conflict on strategic decision making: resolving a paradox for top management teams. *Academy of Management Journal* 39, 123-148.
- Amason, A.C., Sapienza, H.J. 1997. The effects of top management team size and interaction norms on cognitive and affective conflict. *Journal of Management* 23, 495-516.
- Amason, A.C., Schweiger, D.M. 1994. Resolving the paradox of conflict, strategic decision making and organizational performance. *International Journal of Conflict management* 5, 239-253.
- Anderson J.C., Gerbing D.W. 1988. Structural equation modeling in practice: a review and recommended two step approach. *Psychology Bulletin* 103, 411-423.
- Armstrong, J.S., Overton, T. 1977. Estimating non-response bias in mail surveys. *Journal of Marketing* 51, 71-86.
- Atuahene-Gima, K. 2005. Resolving the capability-rigidity paradox in new product innovation. *Journal of Marketing* 69, 61-83.
- Atuahene-Gima, K., Murray, J.Y. 2004. Antecedents and outcomes of marketing strategy comprehensiveness. *Journal of Marketing* 68(4), 33-46.
- Auh, S., Menguc, B. 2007. Performance implications of the direct and moderating effects of centralization and formalization on customer orientation. *Industrial Marketing Management* 36, 1022-1034.
- Baba, M., Gluesing, J., Ratner, H., Wagner, K. 2004. The contexts of knowing: natural history of a globally distributed team. *Journal of Organizational Behavior* 25, 547-87.
- Bagozzi, R.P., Yi, Y. 1988. On the evaluation of structural equation models. *Journal of the Academy of Marketing Science* 16, 74-94.
- Bergkvist, L., Rossiter, J.R. 2007. The predictive validity of multiple-item versus single-item measures of the same constructs. *Journal of Marketing Research* 44, 175-184.
- Bierly, P., Chakrabarti, A. 1996. Generic knowledge strategies in the US pharmaceutical industry. *Strategic Management Journal* 17 (Winter Special), 123-135.
- Bies, R.J., Moag, J.F. 1986. Interactional justice: Communication criteria of fairness. In: *Research on Negotiations in Organizations*, ed. Lewicki, R.J., Sheppard, B.H., Bazerman, M.H.. Greenwich, CT: JAI Press, 43-55.
- Bies, R. J., Shapiro, D. L., Cummings, L. L. 1988. Causal accounts and managing organizational conflict: it is enough to say it's not my fault? *Communication Research* 15(4), 381-399.
- Birkinshaw, J., Gibson, C. 2004. Building ambidexterity into an organization. *MIT Sloan Management Review* 45(4), 46-55.

- Bloom, M. 1999. The performance effects of pay dispersion on individuals and organizations. *Academy of Management Journal* 42, 25-40.
- Brewer, M., Miller, N. 1996. *Intergroup Relations*. Brooks Cole Publishing, Pacific Grove, CA.
- Campion, M., Cheraskin, L., Stevens, M.J. 1994. Career-related antecedents and outcomes of job rotation. *Academy of Management Journal* 37(6), 1518-43.
- Cheung, M.F.Y., Law, M.C.C. 2008. Relationships of organizational justice and organizational identification: the mediating effects of perceived organizational support. *Asia Pacific Business Review* 14(2), 213-231.
- Cohen, J., Cohen, P., West, S.G., Aiken, L.S. 2003. *Applied Multiple Regression/Correlation Analysis for the Behavior Sciences*. Lawrence Erlbaum Associates, Mahwah, NJ.
- Collins, C.J., Clark, K.D. 2003. Strategic human resources practices and top management team social networks: an examination of the role of HR practices in creating organizational competitive advantage. *Academy of Management Journal* 46, 740-752.
- Collins, C.J., Smith, K.G. 2006. Knowledge exchange and combination: The role of human resource practices in the performance of high-technology firms. *Academy of Management Journal* 49(3), 544-560.
- Colquitt, J.A. 2001. On the dimensionality of organizational justice: a construct validation of a measure. *Journal of Applied Psychology* 86(5), 386-400.
- Cui, A.S., Griffith, D.A., Cavusgil, S.T. 2005. The influence of competitive intensity and market dynamism on knowledge management capabilities of multinational corporation subsidiaries. *Journal of International Marketing* 13(3), 32-53.
- De Clercq, D., Menguc, B., Auh, S. 2009. Unpacking the relationship between innovation strategy and firm performance: The role of task conflict and political activity. *Journal of Business Research* 62(11), 1046-1053.
- De Clercq, D., Sapienza, H.J. 2006. Effects of relational capital and commitment on venture capitalists' perception of portfolio company performance. *Journal of Business Venturing* 21(3), 326-347.
- De Clercq, D., Thongpapanl, N., Dimov, D. 2011. A closer look at cross-functional collaboration and product innovativeness: contingency effects of structural and relational context. *Journal of Product Innovation Management* 28(5), 680-699.
- De Luca, L.M., Atuahene-Gima, K. 2007. Market knowledge dimensions and cross-functional collaboration: examining the different routes to product innovation performance. *Journal of Marketing* 71(1), 95-112.
- de Visser, M., de Weerd-Nederhof, P., Faems, D., Song, M., van Looy, B., Visscher, K. 2010. Structural ambidexterity in NPD processes: A firm-level assessment of the impact of differentiated structures on innovation performance. *Technovation* 30(5/6), 291-299.
- Dillman, D.A. 1978. *Mail and Telephone Surveys: The Total Design Method*. John Wiley & Sons, New York.
- Dougherty, D. 2008. Bridging social constraint and social action to design organizations for innovation. *Organization Studies* 29(3), 415-434.
- Dyer, B., Song, M.X. 1998. Innovation strategy and sanctioned conflict: a new edge in innovation? *Journal of Product Innovation Management* 15, 505-519.

- Edmondson, A.C., Smith, D.M. 2006. Too hot to handle? How to manage relationship conflict. *California Management Review* 49(1), 6-31.
- Fernandez, E., Montes, J., Vazquez C. 2000. Typology and strategic analysis of intangible resources. A resource-based approach. *Technovation* 20(2), 81-92.
- Eisenhardt, K., Bourgeois, L. 1988. Politics of strategic decision making in high-velocity environments: toward a midrange theory. *Academy of Management Journal* 31, 737-70.
- Finkelstein, S., Mooney, A.C. 2003. Not the usual suspects: How to use board process to make boards better. *Academy of Management Executive* 17(2), 101-113.
- Fisher, R.J., Maltz, E., Jaworski, B.J., 1997. Enhancing communication between marketing and engineering: the moderating role of relative functional identification. *Journal of Marketing* 61, 54-70.
- Floyd, S.W., Lane, P.J. 2000. Strategizing throughout the organization: managing role conflict in strategic renewal. *Academy of Management Review* 25(1), 154-177.
- Ford, J.D., Ford, L.W. 1994. Logics of identity, contradiction, and attraction in change. *Academy of Management Review* 19, 756-795.
- Fornell, C., Larcker, D.F. 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research* 18, 39-50.
- Frankwick, G., Ward, J., Hult, M., Reingen, P. 1994. Evolving patterns of organizational beliefs in the formation of strategy. *Journal of Marketing* 58, 96-110.
- Gerbing, D.W., Anderson, J.C. 1988. An updated paradigm for scale development incorporating unidimensionality and its assessment. *Journal of Marketing Research* 25, 186-92.
- Ghemawat, P., Ricart i Costa, J. 1993. The organizational tension between static and dynamic efficiency. *Strategic Management Journal* 14, 59-73.
- Gibson, C., Birkinshaw, J. 2004. The antecedents, consequences, and mediating role of organizational ambidexterity. *Academy of Management Journal* 47, 209-226.
- Gilbert, C.G. 2006. Change in the presence of residual fit: Can competing frames coexist? *Organization Science* 17(1), 150-167.
- Grant, R.M. 1996. Toward a knowledge-based theory of the firm. *Strategic Management Journal* 17, 109-122.
- Greenberg, J. 1990. Organizational justice: Yesterday, today, and tomorrow. *Journal of Management* 16(2), 399-432.
- Greenberg, J. 1993. Justice in the workplace: approaching fairness in human resource management. In R. Cropanzano (Ed.), *The Social Side of Fairness: Interpersonal and Informational Classes of Organizational Justice*. Lawrence Erlbaum Associates, Hillsdale, NJ.
- Griffin, A., Hauser, J.R., 1996. Integrating R&D and marketing: A review and analysis of the literature. *Journal of Product Innovation Management* 13, 191-215.
- Gupta, A.K., Govindarajan, V. 1986. Resource sharing among SBUs: strategic antecedents and administrative implications. *Academy of Management Journal* 29, 695-714.
- Gupta A.K., Govindarajan V. 2000. Knowledge flows within multinational corporations. *Strategic Management Journal* 21, 473-496.
- Gupta, A.K., Raj, S.P., Wilemon, D.L. 1986. A model for studying R&D-marketing interface in the product innovation process. *Journal of Marketing* 50, 7-17.

- He, Z., Wong, P. 2004. Exploration vs. exploitation: an empirical test of the ambidexterity hypothesis. *Organization Science* 15, 481-494.
- Hitt, M.A., Beamish, P.W., Jackson, S.E., Mathieu, J.E. 2007. Building theoretical and empirical bridges across levels: multilevel research in management. *Academy of Management Journal* 50, 1385-1399.
- Hofstede, G. 2001. *Culture's Consequences: Comparing Values, Behaviors, Institutions and Organizations across Nations*, 2d ed. Sage Publications, Thousand Oaks, CA.
- Houston, M.B., Walker, B.A., Hutt, M.D., Reingen, P.H. 2001. Cross-unit competition for a market charter: the enduring influence of structure. *Journal of Marketing* 65, 19-34.
- Jansen, J., Simsek, Z., Cao, Q. 2012. Ambidexterity and performance in multiunit contexts: Cross-level moderating effects of structural and resource attributes. *Strategic Management Journal* 33, 1286-1303.
- Jansen, J., Tempelaar, M., Van Den Bosch, F., Volberda, H. 2009. Structural differentiation and ambidexterity: the mediating role of integration mechanisms. *Organization Science* 20(4), 797-811.
- Jehn, K. 1995. A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly* 40, 256-82.
- Jehn, K., Bendersky, C. 2003. Intragroup conflict in organizations: A contingency perspective on the conflict-outcome relationship. *Research in Organizational Behavior* 25, 187-242.
- Jehn, K.A., Mannix, E.A. 2001. The dynamic nature of conflict: A longitudinal study of intragroup conflict and group performance. *Academy of Management Journal* 44, 238-251.
- Kelley, D. 2009. Adaptation and organizational connectedness in corporate radical innovation programs. *Journal of Product Innovation Management* 26(5), 487-501.
- Kim, H.S. 2009. Examining the role of informational justice in the wake of downsizing from an organizational relationship management perspective. *Journal of Business Ethics*, 88(2), 297-312.
- Kim, W. Mauborgne, R. 1997. Fairness process: managing in the knowledge economy. *Harvard Business Review*, 75(4), 65-75.
- Kim, W. C., Mauborgne, R., 1998. Procedural justice, strategic decision making, and the knowledge economy. *Strategic Management Journal* 19, 323-338.
- Kyriakopoulos, K., Moorman, C. 2004. Tradeoffs in marketing exploitation and exploration strategies: the overlooked role of market orientation. *International Journal of Research in Marketing* 21, 219-240.
- LaBianca, G., Brass, D., Gray, B. 1998. Social networks and perceptions of intergroup conflict: The role of negative relationships and third parties. *Academy of Management Journal* 41, 55-67.
- Leonard-Barton, D. 1995. *Wellsprings of Knowledge: Building and Sustaining the Sources of Innovation*. Harvard Business School Press, Boston.
- Lewis, M.W. 2000. Exploring paradox: toward a more comprehensive guide. *Academy of Management Review* 25, 760-777.
- Li, H., Atuahene-Gima, K. 2001. Product innovation strategy and performance of new technology ventures in China. *Academy of Management Journal* 44, 1123-1134.

- Li, T., Calantone, R.L. 1998. The impact of marketing knowledge competence on new product advantage: Conceptualization and empirical examination. *Journal of Marketing* 62, 13–29.
- Love, J.H., Roper, S., 2009. Organizing innovation: complementarities between cross-functional teams. *Technovation* 29, 192–203.
- Lovelace, K., Shapiro, D.L., Weingart, L.R. 2001. Maximizing cross-functional new product teams' innovativeness and constraints adherence: a conflict communications perspective. *Academy of Management Journal* 44, 779-794.
- Lubatkin, M.H., Simsek, Z., Ling, Y., Veiga, J.F. 2006. Ambidexterity and performance in small to medium-sized firms: the pivotal role of TMT behavioral integration. *Journal of Management* 32, 1-17.
- Luo, X., Slotegraaf, R.J., Pan, X. 2006. Cross-functional “coopetition”: The simultaneous role of cooperation and competition within firms. *Journal of Marketing* 70(2), 67-80.
- Maltz, E., Kohli, A. 1996. Market intelligence dissemination across functional boundaries. *Journal of Marketing Research* 33, 47–61.
- March, J.G. 1991. Exploration and exploitation in organizational learning. *Organization Science* 2, 71-86.
- Masterson, S.S. 2001. A trickle-down model of organizational justice: Relating employees' and customers' perceptions of and reactions to fairness. *Journal of Applied Psychology* 86(4), 594-604.
- McDonough, E.F. 2000. Investigation of factors contributing to the success of cross-functional teams. *Journal of Product Innovation Management* 17(3), 221-235.
- McNally, R.C., Akdeniz, M. B., Calantone, R.J. 2011. New product development processes and new product profitability: Exploring the mediating role of speed to market and product quality. *Journal of Product Innovation Management* 128(1), 63-77.
- Ocasio, W. 1997. Towards an attention-based view of the firm. *Strategic Management Journal* 18, 187-206.
- O'Connor, G.C., DeMartino, R. 2006. Organizing for radical innovation: an exploratory study of the structural aspects of management systems in large established firms. *Journal of Product Innovation Management* 23, 475-497.
- O'Reilly CA, Tushman M.L. 1997. *Winning Through Innovation: A Practical Guide to Leading Organizational Change and Renewal*. Cambridge, MA, Harvard Business School Press.
- O'Reilly, C.A., Tushman, M.L. 2004. The ambidextrous organization. *Harvard Business Review* 82, 74-82.
- Pelled, L. 1996. Demographic diversity, conflict, and work group outcomes: An intervening process theory. *Organization Science* 7, 615-31.
- Podsakoff, P.M., MacKenzie, S.B., Jeong-Yeon, L., Podsakoff, N.P. 2003. Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology* 88 (5), 879-903.
- Qiu, T., Qualls, W., Bohlmann, J., Rupp, D.E. 2009. The effect of interactional fairness on the performance of cross-functional product development teams: a multilevel mediated model. *Journal of Product Innovation Management* 26, 173–187.
- Raisch, S., Birkinshaw, J. 2008. Organizational ambidexterity: antecedents, outcomes, and moderators. *Journal of Management* 34 (3), 375-409.

- Revilla, E., Rodríguez, B. 2011. Team vision in product development: How knowledge strategy matters. *Technovation* 31(2/3), 118-127.
- Sarkees, M., Hulland, J. 2009. Innovation and efficiency: It is possible to have it all? *Business Horizons* 52(1), 45-55.
- See, K. E. 2009. Reactions to decisions with uncertain consequences: reliance on perceived fairness versus predicted outcomes depends on knowledge. *Journal of Personality and Social Psychology* 96(1), 104-118.
- Simons, T., Peterson, R.S. 2000. Task conflict and relationship conflict in top management teams: the pivotal role of intragroup trust. *Journal of Applied Psychology* 83, 102-111.
- Simsek, Z., Heavey, C., Veiga, J. F., Souder, D. 2009. A typology for aligning organizational ambidexterity's conceptualizations, antecedents, and outcomes. *Journal of Management Studies* 46, 864-894.
- Smith, W.K., Tushman, M.L. 2005. Managing strategic contradictions: a top management model for managing innovation streams. *Organization Science* 16, 522-536.
- Song, X.M., Dyer, B., Thieme, R.J. 2006. Conflict management and innovation performance: an integrated contingency perspective. *Journal of the Academy of Marketing Science* 34, 341-356.
- Song, X. M., Neeley, S.M., Zhao, Y. 1996. Managing R&D-marketing integration in the new product development process. *Industrial Marketing Management* 25, 545-553.
- Song, X.M., Parry, M.E. 1993. R&D-marketing integration in Japanese high-technology firms: Hypotheses and empirical evidence. *Journal of the Academy of Marketing Science* 21(2), 125-133.
- Song, X.M., Thieme, R.J., Xie, J., 1998. The impact of cross-functional joint involvement across product development stages: an exploratory study. *Journal of Product Innovation Management* 15, 289-303.
- Song, X.M., Xie, J., 2000. Does innovativeness moderate the relationship between cross-functional integration and product performance? *Journal of International Marketing* 8(4), 61-89.
- Spector, P.E. 2006. Method variance in organizational research: Truth or urban legend? *Organizational Research Methods* 9, 221-232.
- Sun, H., Hong, C. 2002. The alignment between manufacturing and business strategies: Its influence on business performance. *Technovation* 22(11), 699-705.
- Taylor, A., and Helfat, C.E. 2009. Organizational linkages for surviving technological change: complementary assets, middle management, and ambidexterity. *Organization Science* 20(4), 718-739.
- Tsai, W.P. 2002. Social structure of "coopetition" within a multiunit organization: coordination, competition, and intraorganizational knowledge sharing. *Organization Science* 13(2), 179-190.
- Tushman, M.L., O'Reilly, C.A. 1996. Ambidextrous organizations: managing evolutionary and revolutionary change. *California Management Review* 38(4), 8-30.
- Van Looy, B., Martens, T., Debackere, K. 2005. Organizing for continuous innovation: on the sustainability of ambidextrous organizations. *Creativity and Innovation Management* 14, 208-221.

- Venkatraman, N., Lee, C.H., Iyer, B. 2007. Strategic ambidexterity and sales growth: a longitudinal test in the software sector. Annual Meeting of the Academy of Management, Honolulu, HI.
- Vilkamo, T., Keil, T. 2003. Strategy technology partnering in high-velocity environments: lessons from a case study. *Technovation* 23(3), 193-204.
- Xie, J., Song, X.M., Stringfellow, A. 2003. Antecedents and consequences of goal incongruity on new product development in five countries: A marketing view. *Journal of Product Innovation Management* 20(3), 233-251.
- Yli-Renko, H., Autio, E., Sapienza, H.J. 2001. Social capital, knowledge acquisition and knowledge exploitation in young technology-based firms. *Strategic Management Journal* 22, 587-614.

Table 1 Constructs and measurement items

	Factor Loading	t-Value
Firm performance ($\alpha = 0.92$; CR = 0.92; AVE = 0.56)		
Return on investment	0.830	15.249
Return on sales	0.848	15.974
Profit growth	0.837 ^a	--
Return on assets	0.846	15.731
Overall efficiency of operations	0.612	10.003
Sales growth	0.672	11.425
Market share growth	0.650	10.938
Cash flow from operations	0.775	13.773
Firm's overall reputation	0.600	9.743
Alignment ($\alpha = 0.84$; CR = 0.84; AVE = 0.64)		
The management systems in this company work coherently to support the overall objectives of the company.	0.853	11.804
People in this company work toward the same goals because our management systems avoid conflicting objectives.	0.733 ^a	--
The management systems in this company prevent us from wasting resources on unproductive activities.	0.813	11.937
Adaptability ($\alpha = 0.89$; CR = 0.89; AVE = 0.73)		
The management systems in this company encourage people to challenge outmoded traditions/practices.	0.811	14.669
The management systems in this company are flexible enough to allow us to respond quickly to changes in our market.	0.879 ^a	--
The management systems in this organization evolve rapidly in response to shifts in our business priorities.	0.874	17.394
Informational justice ($\alpha = 0.88$; CR = 0.88; AVE = 0.59)		
People's viewpoints are considered by the other function.	0.804	13.712
People are candid in their communications with the other function.	0.699	11.432
People are provided with reasonable explanations regarding the other function's decisions.	0.828 ^a	--
The two functions communicate their decisions in detail.	0.772	13.258
The two functions tailor their communications to address each other's needs.	0.728	12.004
Task conflict ($\alpha = 0.85$; CR = 0.86; AVE = 0.61)		
The two functions often have conflicting opinions about projects.	0.842 ^a	--
The two functions often have conflicting ideas.	0.862	15.652
The tasks pursued by the two functions are often incompatible with each other.	0.629	9.646
The two functions often have disagreements about task-related issues.	0.763	12.519
Resource competition ($\alpha = 0.90$; CR = 0.91; AVE = 0.66)		
Protecting one's functional turf is considered a way of life in our company.	0.718	--
The two functions frequently compete with each other for the same resources (e.g., capital, personnel).	0.738 ^a	10.851
The two functions frequently compete with each other for more attention and time from top executives.	0.865	12.712
Tensions frequently run high during talks about how resources should be distributed between the two functions.	0.847	12.282
The two functions frequently try to obtain more time and attention from senior managers, even at the cost of the other function.	0.875	12.957

Reward interdependence ($\alpha = 0.78$; CR = 0.78; AVE = 0.54)		
Different functions share the rewards of a successfully commercialized new product.	0.765	10.095
Individual functions are evaluated on their joint performance instead of separate function performance.	0.663	9.280
Our senior management promotes cross-functional team cohesion over separate departmental loyalty.	0.772 ^a	--
Notes: CR = construct reliability; AVE = average variance extracted.		
^a Initial loading was fixed to 1 to set the scale of the construct.		

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																	
2. Contextual ambidexterity	.418**																
3. Informational justice	.426**	.614**															
4. Task conflict	-.187**	-.368**	-.435**														
5. Resource competition	-.193**	-.504**	-.583**	.589**													
6. Reward interdependence	.357**	.612**	.553**	-.323*	-.468*												
7. Company size	.067	.091	.106	-.107	-.156*	.007											
8. Company age	-.035	-.078	-.02	-.046	-.027	-.051	.304**										
9. Industry: manufacturing	.05	.05	.065	-.035	-.133*	-.049	.041	.091									
10. Industry: services	-.06	-.041	-.011	-.003	.05	-.003	-.070	-.132*	-	.580**							
11. Industry: mining	-.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	-	-	-.079	-.032					
14. Industry: wholesale	.037	.129*	.02	-.013	-.016	.095	-.049	-.084	.231**	.149*	-.065	-.027	-.049				
15. Industry: retail	-.019	-.067	-.015	.123	.082	.002	.102	.345**	-.191**	-.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	2,655	32.871	0.470	0.270	0.090	0.020	0.060	0.040	0.030	3.233	0.490
Standard dev.	0.708	5.032	0.758	0.819	0.971	0.919	9,734	36.305	0.500	0.446	0.294	0.130	0.230	0.194	0.159	0.727	0.501
Minimum	1.000	1.000	1.200	1.000	1.000	1.000	3.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.250	0.000
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

** $p < .01$; * $p < .05$.

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				.158*			
× Informational justice							
H2: Contextual ambidexterity					-.140*		
× Task conflict							
H3: Contextual ambidexterity						-.155**	
× Resource competition							
H4: Contextual ambidexterity							.188***
× Reward interdependence							
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.

Table 4
Post-hoc analysis results

		Structural equation modeling results (dependent variable: firm performance) (N=232)			
Panel A		Model 4	Model 5	Model 6	Model 7
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
		Regression results (dependent variable: revenue growth) (N=107)			
Panel B		Model 4	Model 5	Model 6	Model 7
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.

Fig. 1. Conceptual model

Fig. 2 (A). Moderating effect of informational justice on the contextual ambidexterity–firm performance relationship

Fig. 2 (B). Moderating effect of task conflict on the contextual ambidexterity–firm performance relationship

Fig. 2 (C). Moderating effect of resource competition on the contextual ambidexterity–firm performance relationship

Fig. 2 (D). Moderating effect of reward interdependence on the contextual ambidexterity–firm performance relationship