

Contextual ambidexterity in SMEs: the roles of internal and external rivalry

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Abstract This article seeks to extend research on small to medium-sized enterprises (SMEs) and ambidexterity by investigating contingency factors that influence the relationship between contextual ambidexterity and SME performance. Acknowledging the importance of internal knowledge flows in leveraging ambidexterity, it offers unique insights into how internal and external rivalry conditions influence performance outcomes related to an ambidextrous posture. Using a sample of Canadian-based SMEs, the study shows that the contextual ambidexterity–performance relationship is suppressed at higher levels of internal rivalry and amplified at higher levels of external rivalry. The findings suggest that developing an ambidextrous posture should not be an end by itself, and they point to the need for SMEs to understand how the features of their internal and external environments affect the performance consequences of such posture.

Keywords Ambidexterity · Knowledge · Rivalry · Contingencies · SMEs

JEL Classifications M10 · M19 · L26

1 Introduction

When exposed to dynamic and changing environments, firms are compelled to manage the tension between streamlining their current activities and developing new lines of business (Dougherty 2008; Fauchart and Keilbach 2009; Ford and Ford 1994). Most researchers studying small- to medium-sized enterprises (SMEs) view this tension as the impetus for SMEs to become more successful in their innovation efforts (e.g., Cosh et al. 2012). However, organizational literature offers a broader perspective on this impetus by noting the challenge of engaging in both alignment and adaptability, two separate, inter-related, and non-substitutable sets of innovation activities. Alignment pertains to incremental innovation and maintaining coherence among current activities, whereas adaptability implies a drastic reconfiguration of activities to innovate radically (de Visser et al. 2010; Gibson and Birkinshaw 2004; Raisch and Birkinshaw, 2008). Firms exhibit *ambidexterity* when their managers aim simultaneously to improve their current operations and to expand them by implementing breakthrough

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new ideas (De Luca and Atuahene-Gima 2007; Gibson and Birkinshaw 2004; Jansen et al. 2012; Lubatkin et al. 2006).

Despite the intuitive appeal of ambidexterity, the ambidexterity–performance relationship is not straightforward, particularly for SMEs whose resource constraints make the successful implementation of an ambidextrous posture cumbersome (Lubatkin et al. 2006). Previous ambidexterity research has focused mostly on how to make firms more or less ambidextrous (e.g., Gibson and Birkinshaw 2004; Jansen et al. 2009; Taylor and Helfat 2009), and has overlooked the internal frictions that might result from adopting an ambidextrous posture (Raisch and Birkinshaw 2008). This oversight is notable in light of the inconsistent findings related to the actual performance outcomes of ambidexterity. That is, some researchers find a beneficial effect (Gibson and Birkinshaw 2004; He and Wong 2004), whereas others argue that firms should choose between alignment or adaptability, to avoid being mediocre at both (Ghemawat and Ricart i Costa 1993), or challenge the performance benefits of ambidexterity altogether (Barney 1991; Van Looy et al. 2005). Engaging in alignment and adaptability concurrently poses significant organizational challenges, including increased complexity and coordination costs (Adler et al. 1999; Fauchart and Keilbach 2009; Gibson and Birkinshaw 2004), as well as the need to maintain internal support for ambidexterity across functional areas (Ghemawat and Ricart i Costa 1993; March 1991; Jansen et al. 2012; Van Looy et al. 2005).

An insight that emerges from this research is that the path from ambidexterity to firm performance is paved with implementation challenges, particularly in relation to the need to facilitate extensive knowledge flows among managers across functional areas (Bierly and Chakrabarti 1996; Kyriakopoulos and Moorman 2004; O'Reilly and Tushman 2004). A better understanding of the relationship between ambidexterity and firm performance requires the specification of the underlying contingencies that can spur managers to share function-specific knowledge on an ongoing basis (Kyriakopoulos and Moorman 2004; Raisch and Birkinshaw 2008). Extant ambidexterity research typically assumes that knowledge is abundantly available and that managers across the firm have equal access to it (O'Reilly and Tushman 2004; Simsek et al. 2009), an assumption that is not universally tenable (Kyriakopoulos and Moorman 2004). Rather, firms

often find themselves with “deep pockets” of knowledge, but the lack of internal knowledge flows prevents the firm from realizing the performance potential associated with its accumulated, fragmented knowledge (Grant 1996; Jansen et al. 2012). In this context, we consider an important question: What contingencies, internal and external to the firm, might enable it to convert its simultaneous pursuit of alignment and adaptability into enhanced performance?

To the best of our knowledge, no research systematically investigates whether and how certain factors, internal or external to the firm, prompt managers to exchange knowledge during the implementation of an ambidextrous posture. Following claims that *competitive* elements underlying intrafirm knowledge may have instrumental influences on the performance effects of firms' innovation strategies (Luo et al. 2006; Song et al. 2006; Tsai 2002), we investigate how the benefits of ambidexterity depend on contingency factors that reflect internal and external rivalry pressures. Accordingly, we adopt a contingency perspective (De Clercq et al. 2010; Song et al. 2006; Song and Xie 2000) to explicate how conditions that determine intrafirm knowledge exchange influence the relationship between ambidexterity and SME performance. This contingency perspective follows the notion of “fit” in strategy literature, which posits that superior firm performance is more likely when the firm's strategic posture matches the characteristics of its internal and external environments (Doty and Glick 1994; Zatzick et al. 2012). This study shows that whereas internal rivalry attenuates the ambidexterity–performance relationship, external rivalry invigorates it. In doing so, we provide critical insights into how SMEs can create a competitive advantage on the basis of their ambidexterity posture.

2 Theoretical background

2.1 Contextual ambidexterity and its underlying components

Ambidexterity refers broadly to a firm's ability to pursue disparate goals concurrently, such as exploitation and exploration (March 1991), efficiency and flexibility (Adler et al. 1999), incremental and radical innovation (de Visser et al. 2010), or alignment and

adaptability (Gibson and Birkinshaw 2004).¹ A widely shared belief suggests that “too much” adaptation, without alignment, can lead organizations into a morass of unrealizable and unrewarding change, whereas “too much” alignment, without adaptability, ties organizations too tightly to the past and existing competencies, which renders them defenseless against environmental changes (e.g., Huy 2002; Levinthal and March 1993). To remain competitive, firms must be ambidextrous and have the “ability to simultaneously pursue both incremental and discontinuous innovation and change” (Tushman and O’Reilly 1996, p. 24). Yet the opposing goals of alignment and adaptability are not always pursued with the same effort, and relative efforts devoted to these goals may depend on the firm’s industry or strategic priorities (Gibson and Birkinshaw 2004).

Some researchers argue that firms should develop separate business units to harvest the benefits of alignment and adaptability simultaneously (Puranam et al. 2006; Rosenbloom and Christensen 1994; Tushman and O’Reilly 1996), yet such structural separation typically is not feasible for SMEs (Lubatkin et al. 2006). A related approach describes *contextual ambidexterity* as “building a set of 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). The simultaneous presence of alignment and adaptability is contextual in this sense, “because it arises from features of its organizational context” (Gibson and Birkinshaw 2004, p. 209). In turn, the ability to master alignment and adaptation concurrently helps firms both overcome the structural inertia that results from an overemphasis on continuity and avoid accelerating in a direction of change without realizing its bottom-line impacts and benefits (Levinthal and March 1993). In line with Gibson and Birkinshaw (2004), we adopt this latter conception of “contextual ambidexterity” and investigate the performance effects of the presence of system capacities aimed at

both types of activities, simultaneously permeating the firm.

Both alignment and adaptability can benefit SMEs. High levels of alignment reflect the firm’s ability to undertake its current activities efficiently rather than invest in new activities that may require the deconstruction of established procedures and rules (Fauchart and Keilbach 2009; Porter 1996). In contrast, adaptability or the ability to reconfigure and regenerate activities decreases the likely manifestation of dysfunctional rigidities (Fauchart and Keilbach 2009; Leonard-Barton 1992) or the chance of falling into a competency trap (de Visser et al. 2010; Teece et al. 1997). Yet the combination of alignment and adaptation can give rise to a zero-sum game, because of their opposing demands on managers’ day-to-day work (March 1991). Even if ambidexterity were to increase SME performance, the lack of internal consistency and the enhanced complexity that inherently results from a combination of alignment and adaptability may deter managers from openly sharing knowledge with one another (Tushman and O’Reilly 1996; Van Looy et al. 2005), which in turn implies that ambidextrous firms might risk being outperformed by their more focused counterparts (Raisch and Birkinshaw 2008).

2.2 Contextual ambidexterity and intrafirm knowledge exchange

To overcome these challenges, ambidextrous firms must ensure that they can shift their knowledge base flexibly between their alignment and adaptability activities (Kyriakopoulos and Moorman 2004; O’Reilly and Tushman 2004). For ambidextrous firms to thrive, their internal knowledge base must be easily accessible to managers across the firm. In their unique positions, from which they can combine knowledge with colleagues, individual managers can have a direct impact on how ambidexterity benefits the entire firm (Gibson and Birkinshaw 2004). Such knowledge combinations require the presence of both incremental and radical knowledge (March 1991).

On the one hand, contextual ambidexterity requires individual managers to be familiar with and understand the knowledge currently offered by colleagues in the firm, which supports the *incremental* refinement and extension of their own knowledge base (Cohen and Levinthal 1990; Lane and Lubatkin 1998). That is, contextual ambidexterity requires managers who hold

¹ Previous research uses different terms to label the dimensions underlying ambidexterity, but they essentially capture the same phenomena and can be used interchangeably (Raisch and Birkinshaw 2008). For parsimony, we use the terms “alignment” and “adaptability” hereafter.

different function-specific knowledge to recognize how they can draw from and use one another's current knowledge domains, as well as learn how function-specific knowledge domains can be leveraged across the firm's ranks (He and Wong 2004; Lubatkin et al. 2006). On the other hand, it implies that individual managers have the flexibility to develop *radically* new knowledge when they recognize differences between their own knowledge domain and that of colleagues specializing in other areas (Lane and Lubatkin 1998; March 1991). Thus, individual managers in ambidextrous firms tend to refine both their own and others' current practices and develop new strategic lenses in the course of the interactions they have with one another (Dougherty 2008).

Converting this ambidextrous posture into performance benefits requires processes that mitigate the challenges associated with combining incremental and radical elements of intrafirm knowledge exchange (Cohen and Levinthal 1990; Lane and Lubatkin 1998; Levinthal and March 1993). Although intrafirm collaboration can provide a platform that allows for both incremental and radical knowledge development (McDonough 2000; Sherman et al. 2005), such collaboration is fraught with challenges (Strang and Jung 2009). Intrafirm knowledge exchanges do not occur in isolation but rather are embedded in a broader context (Floyd and Lane 2000), and the nature of the context may affect whether function-specific knowledge gets combined and expanded to benefit the entire firm (Nahapiet and Ghoshal 1998). Interactions among managers who hold different functional expertise entail contrasting thought worlds (Griffin and Hauser 1996) and cultures (Gupta et al. 1986), which make free and open knowledge exchange difficult (De Luca and Atuahene-Gima 2007). Notably, both concerns about internal fights for resources and attention (Dutton and Ashford 1993; Luo et al. 2006) and external competitive pressures (Maltz and Kohli 1996) may determine the ease with which established and new pieces of knowledge get integrated across the firm.

Accordingly, we consider two contextual factors that may act as key boundary conditions for the effective translation of contextual ambidexterity into SME performance. These factors capture the competitive context in which intrafirm knowledge exchanges take place, either internally or externally. The glue that binds them is their impact on the level of intrafirm

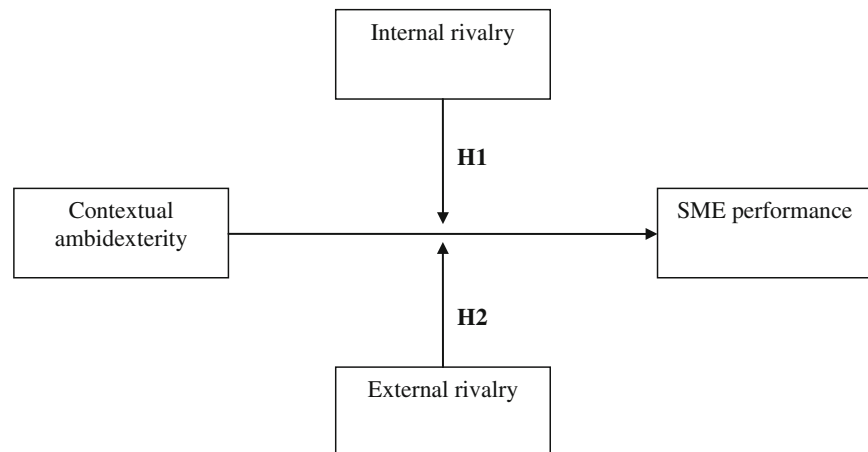
collaboration and the motivation or willingness of individual managers to share their knowledge openly with colleagues (De Luca and Atuahene-Gima 2007; Soderquist 2006). Our conceptual framework, as illustrated in Fig. 1, suggests that the relationship between contextual ambidexterity and SME performance is subject to these two critical rivalry-driven contingencies, which we elaborate on in the following section.

3 Hypotheses

3.1 Internal rivalry

Internal rivalry refers to the extent to which individual managers perceive their peers as competitors for company resources (Houston et al. 2001; Luo et al. 2006)—including both tangible resources, such as financial or human capital, and intangible resources, such as attention from the firm's key decision makers (Ocasio 1997). Managers operating in different functional areas might compete in their pursuit of divergent goals and strategic priorities (Houston et al. 2001; Ruekert and Walker 1987), particularly when they are subject to comparisons of their performance outputs (Maltz and Kohli 1996).

We hypothesize that the effectiveness of contextual ambidexterity for SME performance depends on the level of internal rivalry, such that it is suppressed in firms marked by higher levels of internal rivalry. Although some resource competition might 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 (Adler et al. 1999; Fauchart and Keilbach 2009). Not only might individual managers be hesitant to share their own function-specific knowledge with others, for fear that competing colleagues could benefit from such knowledge, but they also may refrain from applying others' knowledge, because doing so could increase the value of that knowledge in the eyes of the firm's key decision makers (Gupta and Govindarajan 2000). When individual managers operate in intensely competitive internal environments, they may be more sensitive to top-down control and be critical of interference in their decision making (Tsai 2002). If they are wary that top management will

Fig. 1 Conceptual framework

sacrifice their interests in favor of colleagues', they in turn should be less willing to share their knowledge with colleagues. In this situation, the firm's knowledge base may get too thinly spread across its alignment and adaptability activities, challenging the successful conversion of their simultaneous pursuit into enhanced performance (Simsek et al. 2009).

Overall, intrafirm knowledge exchange includes an important competitive aspect, in that knowledge shared with others can provide those others with private gains and help them claim more of the firm's resources (Cui et al. 2005; Kim and Mauborgne 1998; Palacios et al. 2009). Because the free exchange of knowledge within the firm is hampered in strongly competitive internal environments, the contextual ambidexterity–performance relationship should be suppressed in such circumstances. That is, in SMEs marked by high levels of internal resource competition, individual managers are less inclined to exchange, combine, and integrate knowledge freely with colleagues in the firm, and therefore, the performance effects of contextual ambidexterity are weaker.

Hypothesis 1 The relationship between contextual ambidexterity and SME performance is moderated by internal rivalry, such that the relationship is weaker at higher levels of internal rivalry.

3.2 External rivalry

In contrast, we argue that the contextual ambidexterity–performance relationship is stronger for SMEs that face higher levels of external competitive rivalry than for those with lower levels. External competitive rivalry captures the extent to which individual managers

encounter strong competition when interacting with other firms in the marketplace (Grewal and Tansuhaj 2001; Jaworski and Kohli 1993). We hypothesize a positive interaction effect between contextual ambidexterity on SME performance, such that contextual ambidexterity–SME performance is stronger at higher levels of external rivalry.

Strong external rivalry poses external threats to the success of the firm, and those threats coalesce and mobilize managers to share their knowledge internally, as well as apply others' knowledge, even if it is unfamiliar, to better fend off external threats (Lahiri et al. 2008). Thus, external competitive rivalry may pressure individual managers to ensure their that current knowledge space is exploited fully and enriched with new knowledge (Porter 1996), such that an ambidextrous posture can be more effectively implemented and benefit the entire firm. In markets characterized by intense external competition, firms with advanced knowledge management capabilities can increase their understanding of both current and future competitive pressures, such that complex strategic postures can be implemented more effectively (Cui et al. 2005; Kim and Atuahene-Gima 2010). Similarly, Jansen et al. (2006) note that the simultaneous pursuit of exploitative and exploratory innovation, akin to the notions of alignment and adaptability, is most beneficial in periods of high external rivalry.

Alternatively, in benign environments marked by little external rivalry, the effect of contextual ambidexterity on SME performance should be attenuated, because the firm encounters greater environmental munificence (Covin and Slevin 1989; Kim and Atuahene-Gima 2010), so its managers are less prone to continuously refine and replenish the firm's current

knowledge base, even if doing so is required for the successful implementation of an ambidextrous posture. In other words, when external rivalry is low, the internal knowledge mobilization by managers, designed to deflect external pressures, becomes less salient, and the ability to leverage contextual ambidexterity into enhanced performance diminishes. When external rivalry is low, the firm's investments in management systems that facilitate the simultaneous pursuit of alignment and adaptability also may be suboptimal or even seem unnecessary, such that the costs and complexity of these systems outweigh their benefits (Gibson and Birkinshaw 2004; Lubatkin et al. 2006).

Hypothesis 2 The relationship between contextual ambidexterity and SME performance is moderated by external rivalry, such that the relationship is stronger at higher levels of external rivalry.

4 Research methods

4.1 Sample and data collection

To test our 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 (De Clercq et al. 2010). For each firm, we obtained contact information for managers whose job titles indicated that they worked either in a technically oriented function (i.e., engineering, operations, or R&D) or a marketing 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 firms' engagement in different innovation endeavors (e.g., Griffin and Hauser 1996; Song and Parry 1997), including their ambidextrous postures (Raisch and Birkinshaw 2008). To ensure that the contacted managers were knowledgeable about their firms' ambidextrous posture and overall external and internal functioning, we included only managers who held a senior position as possible participants. We then sent a survey instrument to one randomly selected manager, who met these criteria, in each firm. This single-respondent design is similar to prior approaches (e.g., De Clercq et al. 2010; 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 actual 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 should help alleviate concerns with respect to common method bias (we also conducted formal statistical tests of common method bias, as we describe subsequently).

The data collection relied on Dillman's (1978) total design method. We prepared a mailing packet containing (1) a cover letter addressed personally to the sampled managers, (2) a questionnaire, and (3) a postage-paid return envelope. Two weeks after the initial mailing, we called all of the managers to thank those who had responded and remind those who had not. We sent replacement questionnaires to nonrespondents four weeks after the initial mailing. 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. Because the database provided incomplete data related to the firms' sizes, we had no prior knowledge about whether the responding firms qualified as SMEs, which we defined as firms with fewer than 500 employees (Préfontaine and Bourgault 2002). Our analyses focus on the 146 participating firms that met this criterion.² To test for nonresponse

² A follow-up analysis showed that our reported results were robust when applied to the complete sample of 232 firms, indicating their applicability across a wide spectrum of firms. A comparison of the SME and non-SME participating firms did not reveal any significant differences in terms of the focal constructs either. Finally, we did not find any significant differences between responding and nonresponding firms (regardless of size) in terms of their industry and location (province) distribution.

bias, we tested for any significant differences between the early and late respondents among the 146 firms in the dependent, independent, or control variables from the survey; no such differences emerged, which suggests nonresponse bias was not an issue (Armstrong and Overton 1977).

4.2 Construct measures

In line with our research focus, the survey questions were worded to capture constructs at the firm rather than the individual manager level. All focal constructs were measured using five-point Likert scales, and for each, we calculated a composite score that was the mean of its corresponding measurement items.³

4.2.1 SME performance

Our performance measure consists of an exhaustive list of nine indicators used in prior research (Li and Atuahene-Gima 2001) to capture items such as sales growth, profitability, and return on investment. For each indicator, respondents assessed their firm's performance relative to that of its principal competitors ($\alpha = 0.92$).

4.2.2 Contextual ambidexterity

To measure *alignment*, we used three items, with which respondents assessed the extent to which the firm's management systems worked coherently to support its current activity set ($\alpha = 0.84$). *Adaptability* also used three items, assessing whether the management systems encouraged the reconfiguration of activities ($\alpha = 0.89$). Similar to Gibson and Birkinshaw (2004), we operationalized *contextual ambidexterity* as the product of these alignment and adaptability measures.

³ To ensure that the responses would cover organization-wide phenomena rather than idiosyncratic issues that have to do with specific departments, in the cover letter and survey instrument, we referred to the firm's functional areas broadly. For the measure of internal rivalry, we clarified that we were not interested in investigating resource competition 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."

4.2.3 Internal rivalry

Following prior studies (Luo et al. 2006), the internal rivalry measure included five items that reflected the level of competition for company resources. For example, respondents rated the extent to which people in different functional areas frequently competed for the same resources (e.g., capital, personnel) or to which protecting turf was considered a way of life in the firm ($\alpha = 0.90$).

4.2.4 External rivalry

Drawing on prior research (Jaworski and Kohli 1993; Maltz and Kohli 1996), the measure of external rivalry assessed the level of competition that the firm confronted in the marketplace. Respondents indicated, for example, whether competition in their industry was very intense or if price competition was a hallmark of their industry ($\alpha = 0.79$).

4.2.5 Control variables

We included several control variables to avoid model misspecification and allow for alternative explanations for performance variations. First, we controlled for firm size, measured as a log transformation of the number of full-time employees. This control served as a proxy for the firm's resource endowments and, by extension, the availability of slack resources, which can contribute to its performance (Audia and Greve 2006; Ruef and Scott 1998). Second, we noted the industry of the firm, using standard industrial classification codes: manufacturing [standard industrial classification (SIC) 20–39], nonfinancial services (SIC 70–89), mining (SIC 10–14), construction (SIC 15–17), transportation (SIC 40–49), wholesale (SIC 50–51), retail (SIC 52–59), and finance (SIC 60–67), which served as the base category. Such industry characteristics may capture systematic variations in growth opportunities and thus performance. Third, because some respondents worked in a technology-oriented (e.g., R&D, engineering) and others in a marketing-oriented (e.g., marketing, sales) function, we controlled for the respondents' *function* type.

We conducted several diagnostic analyses to rule out common method bias. First, a CFA for a single-

factor model revealed a significantly poorer fit with the data than the fit of a multifactor model that included the study's focal constructs separately—an indication that common method bias should not be a serious concern (Anderson and Gerbing 1988; Podsakoff et al. 2003). Second, in a structural equation modeling follow-up analysis, we compared the hypothesized interaction model with a parallel model that contained an additional common method factor (Podsakoff et al. 2003; Song et al. 2006). This analysis revealed no significant differences in the fit between the hypothesized model and the model that included the common method factor, which provided further evidence that common method bias was not a concern (Podsakoff et al. 2003). Third, common method bias typically is less salient in studies that include highly educated respondents and multi-item scales (Bergkvist and Rossiter 2007), as well as those that test for moderating effects, because respondents cannot easily guess these effects, which decreases the likelihood of spurious findings (Brockner et al. 1997; Simons and Peterson 2000). These considerations alleviate concerns related to the use of common respondents in our study.

5 Results

Table 1 includes the correlations and descriptive statistics, and Table 2 shows the hierarchical regression results. Model 1 contains only the control variables, model 2 adds contextual ambidexterity, as well as internal rivalry and external rivalry, and model 3 adds the two interaction terms. In model 1, we observed that firms active in manufacturing, non-financial services, and constructing industries exhibited greater performance than their counterparts in the finance industry (the base category in the regression). Model 2 showed no significant relationship between contextual ambidexterity and SME performance, in line with our theoretical premise that the effective implementation of contextual ambidexterity into enhanced performance may depend on various contingencies (Raisch and Birkinshaw 2008), as well as with previous conflicting results on the ambidexterity–performance relationship (e.g., Gibson and Birkinshaw 2004; Ghemawat and Ricart i Costa 1993; Van Looy et al. 2005). The negative direct relationship between internal rivalry and performance in model 2 indicated that internal

fight about company resources may impede internal knowledge transfer and therefore undermine firms' competitive positioning (Maltz and Kohli 1996).

Hypotheses 1–2 predicted moderating effects of the two dimensions of rivalry (internal and external) on the relationship between contextual ambidexterity and SME performance. We found support for both hypotheses in model 3. First, the interaction effect between contextual ambidexterity and internal rivalry on SME performance was negative and significant ($\beta = -0.107, p < 0.05$). To understand the nature of the interaction, we plotted the effects of contextual ambidexterity on SME performance for high and low levels of internal rivalry in Fig. 2, panel A (Cohen et al. 2003). As this plot suggests, the contextual ambidexterity–performance relationship was positive at low levels of internal rivalry, but it became negative at high levels. Second, the interaction effect between contextual ambidexterity and external rivalry was positive and significant ($\beta = 0.137, p < 0.05$), and the plot in Fig. 2, panel B, indicates that the contextual ambidexterity–performance relationship was positive at high and negative at low levels of external rivalry.

6 Discussion

6.1 Theoretical implications

Success in the simultaneous pursuit of alignment and adaptability requires that firms acknowledge the importance of the ways in which their managers interact and communicate (Corso et al. 2003; Dutton and Ashford 1993; Jansen et al. 2009; Kyriakopoulos and Moorman 2004; Palacios et al. 2009). Although research on the performance outcomes of ambidexterity (see Raisch and Birkinshaw 2008) and the role of intrafirm knowledge exchange in enabling ambidexterity (Jansen et al. 2006, 2009) has offered key insights, it provides only a limited theoretical understanding of how rivalry conditions (internal and external to the firm) that shape the extent of internal collaboration influence the performance outcomes of a firm's ambidextrous posture. Our main contribution lies in highlighting the conditions in which the simultaneous pursuit of alignment and adaptation may, or may not, benefit the firm; we do so in the context of SMEs that often face great challenges in

Table 1 Summary statistics and correlation matrix ($N = 146$)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. SME performance													
2. Contextual ambidexterity	-0.048												
3. Internal rivalry	-0.217	0.228											
4. External rivalry	-0.073	0.137	0.049										
5. Company size	0.103	0.005	0.131	0.101									
6. Industry: manufacturing	0.055	-0.088	-0.116	-0.071	0.041								
7. Industry: services	-0.003	0.048	0.050	0.045	-0.030	-0.610							
8. Industry: mining	-0.152	-0.012	0.041	0.221	-0.178	-0.295	-0.237						
9. Industry: construction	0.246	-0.025	-0.157	-0.028	-0.029	-0.103	-0.082	-0.040					
10. Industry: transportation	0.036	-0.065	0.013	-0.185	0.085	-0.164	-0.132	-0.064	-0.022				
11. Industry: wholesale	0.045	0.000	-0.054	-0.015	0.089	-0.210	-0.169	-0.081	-0.028	-0.045			
12. Industry: retail	-0.065	0.140	0.183	0.048	0.146	-0.126	-0.101	-0.049	-0.017	-0.027	-0.035		
13. Marketing-oriented function	0.236	-0.001	0.079	0.087	0.242	-0.029	0.077	-0.167	0.132	0.059	0.027	-0.033	
Mean	3.506	11.262	2.452	3.171	128.452	0.432	0.329	0.103	0.014	0.034	0.055	0.021	0.445
Standard deviation	0.740	5.034	1.016	0.736	112.959	0.497	0.471	0.305	0.117	0.182	0.228	0.142	0.499

Correlations above |0.163| are significant at $p < 0.05$

Table 2 Regression results (dependent variable: SME performance) ($N = 146$)

Variable	Model 1	Model 2	Model 3
Company size (log employed)	0.044	0.070	0.069
Industry: manufacturing ^a	0.957 [†]	0.814	0.153
Industry: services	0.892 [†]	0.783	0.130
Industry: mining	0.682	0.653	-0.105
Industry: construction	2.252**	1.914*	1.387 [†]
Industry: transportation	0.989	0.801	0.065
Industry: wholesale	1.019	0.859	0.154
Industry: retail	0.479	0.473	-0.259
Marketing-oriented function ^b	0.264*	0.304**	0.208 [†]
Contextual ambidexterity		0.010	0.054
Internal rivalry		-0.134*	-0.041
External rivalry		-0.094	-0.182 [†]
H1: contextual ambidexterity × internal rivalry			-0.107*
H2: contextual ambidexterity × external rivalry			0.137*
R^2	0.149	0.184	0.252
ΔR^2		0.035 [†]	0.068**

[†] $p < 0.10$; * $p < 0.05$; ** $p < 0.01$ (two-tailed test)

^a Base case = finance industry

^b Base case = technology-oriented function

implementing an ambidextrous posture because of their resource constraints (Fauchart and Keilbach 2009; Lubatkin et al. 2006).

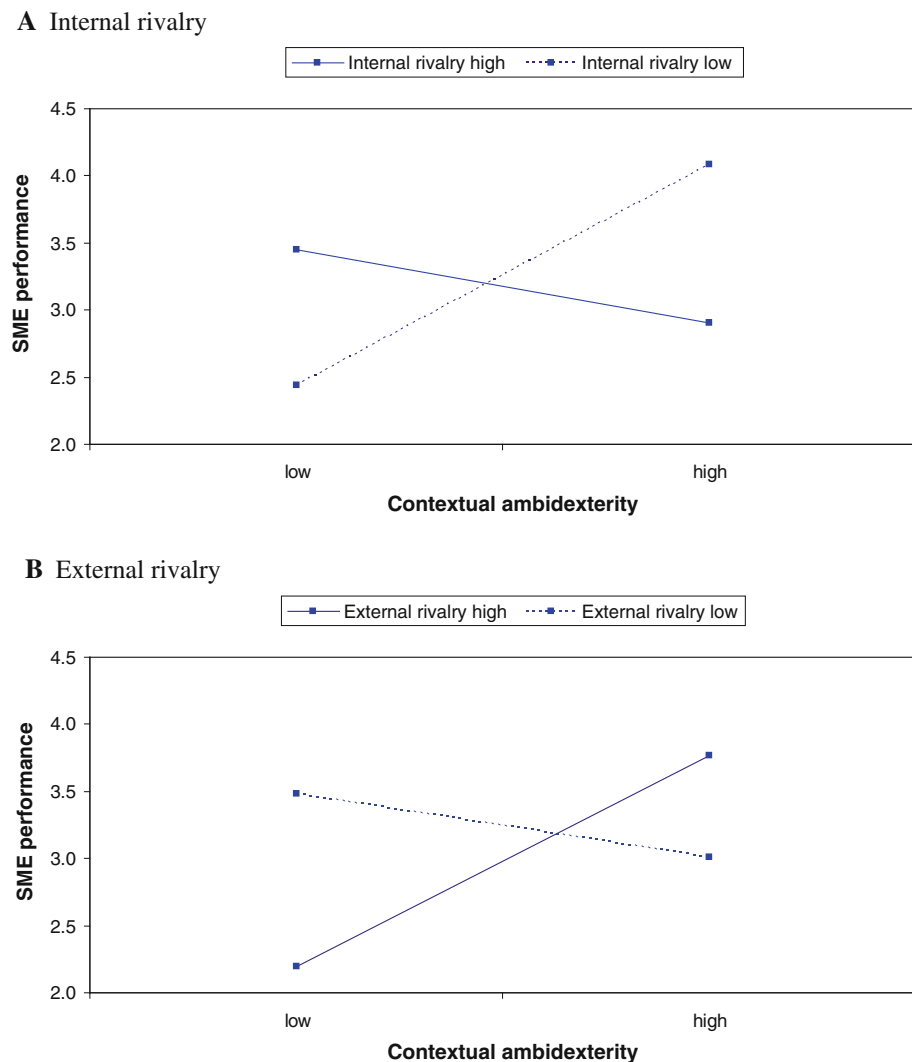
Although contextual ambidexterity implies that intrafirm knowledge exchange can bear elements of both incremental and radical knowledge development (Gibson and Birkinshaw 2004; He and Wong 2004), the effectiveness of these elements does not materialize easily. Internal hurdles to effective knowledge combination may exist, particularly in the extent to which managers aim to protect their own turf to ensure their preferential access to company resources (Luo et al. 2006). Further, external market circumstances may affect managers' perceptions of the need to involuntarily combine and leverage their knowledge base with those of others (Lahiri et al. 2008). To this end, we considered the moderating roles of two dimensions of SMEs' competitive environment (internal and external) in the relationship between their contextual ambidexterity and performance.

First, we found a negative interaction effect between contextual ambidexterity and internal rivalry on SME

performance. When individual managers perceive a need to compete for the same resources and protect their own functional turf, they may invest less in productive exchanges that could unlock and leverage function-specific knowledge, as demanded by contextual ambidexterity, because they believe other areas will take advantage of this knowledge (Maltz and Kohli 1996; Tsai 2002). In conditions of strong internal rivalry, managers may be reluctant to share knowledge with "competing" functional areas, which prevents them from gaining access to new knowledge or integrating their own knowledge with that of others (Gupta and Govindarajan 2000). Figure 2 shows that strong internal rivalry may make an ambidextrous posture detrimental to SME performance: High levels of internal rivalry and the associated hesitance to relinquish power through knowledge integration can exacerbate the uncertainty inherent to contextual ambidexterity and cause its implementation costs to exceed its inherent benefits (Adler et al. 1999). This study thereby extends previous research on the acclaimed benefits of internal competition in terms of generating positive firm-level outcomes (Luo et al. 2006); we find that such competition actually hampers the implementation of a complex, knowledge-intensive strategic posture, such as contextual ambidexterity.

Second, the relationship between contextual ambidexterity and SME performance became negative when the firm confronts low levels of external rivalry. The complexity associated with maintaining high levels of contextual ambidexterity thus appears to outweigh the benefits of this posture for SMEs operating in external environments that require lower levels of intrafirm knowledge exchange. Yet the performance outcomes of contextual ambidexterity are positive, especially to the extent that the firm operates in highly competitive external environments. High levels of external rivalry and associated perceptions of external threats to the firm may bring managers together, across the firm's ranks, such that these conditions motivate them to openly share knowledge with one another, with the ultimate goal of defending the firm as a whole against outside threats (Lahiri et al. 2008). Similarly, previous research acknowledges the interplay between external competitive rivalry and firms' strategic actions, such that external competitive intensity increases the need to leverage and renew the existing knowledge base by exhibiting a strong market orientation (Kohli and Jaworski 1990). Our finding thus complements strategy literature that

Fig. 2 Moderating effects on the contextual ambidexterity–SME performance relationship



indicates that strategic postures that require strong knowledge integration mechanisms are particularly useful in hostile external circumstances (Dess et al. 1997). Finally, it is generally acknowledged that an ambidextrous posture is useful when firms operate in competitive markets (Birkinshaw and Gibson 2004; Raisch and Birkinshaw 2008), yet the specific interplay between ambidexterity and the level of external rivalry has not been investigated.

6.2 Limitations, further research, and practical implications

This study contains some limitations that offer opportunities for further research. First, by focusing on two specific contextual dimensions, this study ignores

other factors that may be relevant to the successful conversion of contextual ambidexterity into SME performance, such as owner and top management team characteristics (Brunninge et al. 2007), the extent to which managers depend on colleagues in other functional areas to accomplish their jobs (Fisher et al. 1997; Tushman and O'Reilly 1996), or the level of competitive dynamism in the external market (Jaworski and Kohli 1993). For example, internal task interdependence and external exposure to dynamic markets may fuel internal knowledge mobilization and thereby invigorate the potential of contextual ambidexterity to enhance SME performance. Future research could apply configuration approaches (Dess et al. 1997) to investigate the moderating roles of complex constellations of multiple internal and external factors.

Second, 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 perceived internal and external circumstances affect firm-wide performance. Such research designs also could account for the presence of intrafirm variation in the extent to which individual managers engage in alignment- and adaptability-oriented activities concurrently. In a related vein, further research could apply multilevel approaches (Hitt et al. 2007) and examine how individual- and firm-level 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) and which characteristics of the firm’s internal and external contexts help unlock their performance potential.

Third, the cross-sectional research design demands some caution in drawing causal inferences, because the theoretical relationships we examine may be susceptible to reverse causality. Our hypotheses have a strong theoretical grounding, but it is also possible that high-performing firms use their slack resources to simultaneously promote economies of scope through alignment *and* undertake more risky activities through adaptability. Longitudinal designs could elucidate and distinguish among various internal causal processes by studying the relationships among contextual ambidexterity, SME performance, and internal and external contingencies over time. Such research designs also could systematically uncover how certain factors might function as both antecedents and performance enablers of contextual ambidexterity, while others play only one role. An additional avenue for further research would be to investigate how the development and performance consequences of an ambidextrous posture depend on how the firm manages its *external* relationships, including relationships with spin-off firms in clusters (Karlsen 2011).

Fourth, 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 position toward intrafirm knowledge exchange (Hofstede

2001). Future research could collect data from multiple countries and investigate how the relationships hypothesized herein work differently, depending on the broader cultural context. For example, it may be that in collectivistic countries, which emphasize common goals rather than individual interests (Hofstede 2001), the ambidexterity–performance relationship is relatively immune to whether there is strong internal competition for company resources.

From a practical perspective, this study shows that to maximize the benefits that can result from the simultaneous pursuit of alignment and adaptability activities, SMEs should be aware of the circumstances, both internal and external to the firm, that determine whether these activities are exploited fully. Beyond the effort required to develop conditions that enhance an ambidextrous posture (e.g., Birkinshaw and Gibson 2004), SMEs must ensure that this posture actually leads to increased performance. A “one-size-fits-all” approach can undermine the potential benefits of an ambidextrous posture, so ambidextrous firms instead should take into account the appropriate contextual conditions that can maximize their performance.

SMEs must particularly consider the competitive context surrounding their intrafirm knowledge exchange. Managers in ambidextrous firms marked by high levels of internal resource competition may believe that knowledge sharing with colleagues will reduce their access to company resources, which may prompt destructive power games. Such power games then reduce the knowledge support available for a successful, firm-wide implementation of the different activities that underlie an ambidextrous posture. A lack of external competition also may limit the perceived need to combine and integrate knowledge with other areas, even if such knowledge exchanges are demanded for the successful implementation of ambidexterity. In all, SMEs aiming to implement an ambidextrous posture should reduce perceptions of internal rivalry among their managers and heighten their awareness of possible external competitive threats.

To conclude, by considering the roles of two rivalry-based contextual factors that inform intrafirm knowledge exchange, we have sought to direct greater attention to the boundary conditions in the relationship between contextual ambidexterity and SME performance. In so doing, we hope to have offered a clearer understanding of how SMEs might translate their

simultaneous pursuit of alignment and adaptability into stronger competitive positions in the marketplace. Becoming ambidextrous should not be a goal in itself; rather, SMEs should be cognizant of what constitutes compatible internal and external environments, such that the performance potential inherent to their ambidextrous posture is fully exploited.

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