

Top Management Team Behavioral Integration, Organizational Ambidexterity, and Firm Performance: Empirical Evidence from Small Businesses

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Abstract

The present research examines organizational ambidexterity (OA) in its relationships with a managerial antecedent and an organizational consequence in the context of small businesses. More specifically, this study proposes a research model that explains the relationship between top management team (TMT) behavioral integration in the interaction with the firm's entrepreneurial nature and either of the two dimensions of OA—balance or combined—that is more likely to become dominant. Each OA dimension, in turn, has a different impact on organizational performance: while the *combined dimension* is hypothesized to be positively associated with firm performance, the *balance dimension* is more likely to have an inverted U-shaped relationship with the performance of the firm. Data from TMT members of 82 small firms in Pennsylvania and Texas partially support the hypotheses. The present study, therefore, sheds more light on the conceptualization of OA as well as its relationships with TMT behavioral integration and organizational performance.

Keywords: exploration, exploitation, organizational ambidexterity, top management team behavioral integration, entrepreneurial orientation

1. Introduction

Research on exploration, exploitation, and organizational ambidexterity (OA) has burgeoned in the past two decades. While organizations strive to improve their operational efficiency by utilizing and fine-tuning their current capabilities and processes, they must also develop new competencies and expand their market scope to stay ahead of competition.

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Therefore, being ambidextrous—balancing between exploration and exploitation—is crucial for a firm's survival and prosperity (March, 1991). The extant literature on OA is fragmented with a number of critical limitations, however. First, the existence of a wide variety of conceptualizations and operationalizations of OA leads to weak and mixed empirical findings on the relationship between OA and its organizational consequences. Second, the extant literature seems to focus much more on various modes of OA than on its antecedents. Third, while a great deal of research investigates OA in a context of large, publicly traded corporations, there have been few studies that focus on such a phenomenon in the context of small businesses. Interestingly, scholars argue that an appropriate unit of analysis for OA research should be small organizations or divisions of a multi-business corporation (Gibson & Birkinshaw, 2004). Finally, prior studies seem to focus too much on trade-offs rather than possible synergies between exploration and exploitation. Researchers have called for the shift from an *either/or* to a *both/and* perspective (Gibson & Birkinshaw, 2004; Joao, 2015; Piao, 2010).

The present study highlights the role of top management team (TMT) in deciding whether small firms should pursue OA. Conceptualizing OA as a multidimensional construct, this study suggests that the entrepreneurial nature of the firm, demonstrated through its entrepreneurial orientation (EO), plays a significant role in predicting which dimension of OA—*combined* dimension or *balance* dimension—is more likely to become dominant. This study also posits that the relationship between OA and organizational performance is not a simple one since each dimension of OA has a different impact on firm performance.

The present research, therefore, contributes significantly to the literature on OA. First, besides focusing on the direct effects of TMT behavior on the decision whether the organization becomes ambidextrous, the present research examines entrepreneurial characteristics of the firm (Lumpkin & Dess, 1996; Miller, 1983) as a contingency variable that affects the TMT's decision of achieving OA as continuity or orthogonality of exploration and exploitation. More specifically, a highly entrepreneurial firm tends to excel in both exploration and exploitation simultaneously while a more conservative firm is more likely to manage exploration and exploitation as a trade-off. Second, the present research explicitly examines both continuity and orthogonality perspectives of OA.

Prior studies usually take either approach for granted in conceptualizing OA. Adopting Cao and his colleagues' (2009) conceptualization of OA, the present research extends their work by investigating the interaction of TMT behavior and the firm's entrepreneurial orientation (EO) that predicts which dimension—*balance* or *combined*—is more likely to become dominant.

Third, the present research focuses on the existence (or nonexistence) of OA in the context of small businesses. Large corporations can simply manage an organizational structure in which each division focuses only on either exploration or exploitation so that the organization is ambidextrous at the corporate level. Small businesses, on the other hand, lack resources and typically have quite simple, single business organizational structure (Lubatkin, Simsek, Ling, & Veiga, 2006). This raises intriguing questions: *Is this feasible and beneficial for small businesses to be ambidextrous? And how do those organizations attain ambidexterity?* The present research addresses these issues by investigating both antecedents and consequences of OA. Finally, the present research sheds more light on the controversial relationship between OA and organizational performance. It argues that while the combined dimension of OA is positively associated with firm performance, the balance dimension has an inverted U-shaped relationship with firm performance.

2. Theory and Hypotheses

2.1. Definitions of Exploration and Exploitation

The present study adopts Benner and Tushman's (2003) notion of exploration and exploitation. Examining technological innovations as the mediator in the relationship between process management activities and organizational adaptation, the two scholars classify innovations along two dimensions: (1) how radical the innovation is, compared with current technological trajectory; and (2) the newness of customer groups or markets that innovation is designed to serve. Benner and Tushman (2003) suggest that *exploitation* involves incremental innovations that are close to the current knowledge base of the firm and innovations designed to meet the needs of current customers or markets. *Exploration*, however, refers to radical innovations or innovations aimed to meet the needs of emerging customers or markets. Such definitions of exploration and exploitation are consistent with Levinthal and March's (1993) perspective on organizational learning.

These two researchers posited that exploration is concerned with “the pursuit of new knowledge, of things that might come to be known” and exploitation refers to “the use and development of things already known” (Levinthal & March, 1993, p. 105).

2.2. What is Organizational Ambidexterity?

Organizational ambidexterity (OA) was originally associated with the situation in which a firm maintains dual structures simultaneously: one focuses on initiating and the other on executing innovations (Duncan, 1976). Therefore, structural separation has been considered as a traditional means for a firm to achieve OA (Duncan, 1976; Tushman & O’Reilly, 1996). Later, other modes of OA, such as contextual ambidexterity (Gibson & Birkinshaw, 2004) and domain separation (Joao, 2015; Lavie, Kang, & Rosenkopf, 2009), have been investigated. Drawing on the literature of punctuated equilibrium (Romanelli & Tushman, 1994), temporal separation suggests that in order to avoid the tensions between exploration and exploitation the firm should focus on either of the two at any point in time. Thus, over time the firm can be considered ambidextrous (Lavie, Stettner, & Tushman, 2010).

In the present study, organizational ambidexterity (OA) refers to an interaction between exploration and exploitation when the firm pursues exploration and exploitation simultaneously. Taking into account the continuity-versus-orthogonality issues between exploration and exploitation, this study adopts Cao and his colleagues’ (2009) conceptual framework of OA as a meta-construct with two dimensions: balance dimension (i.e., exploration and exploitation present direct trade-offs) and combined dimension (i.e., exploration and exploitation are orthogonal). Furthermore, this study focuses on the co-existence of exploration and exploitation, rather than the transformation between the two over time. It is definitely intriguing to examine how small businesses—with a small organizational size and a simple organizational structure—pursue exploration and exploitation simultaneously.

2.3. Small Businesses as a Context for OA Research

Small businesses offer an interesting and appropriate context for organizational ambidexterity research (Gibson & Birkinshaw, 2006; O’Reilly & Tushman, 2008).

For large, multi-division companies, OA may take the form of structural separation in which each subunit focuses on either exploration or exploitation and, thus, at the corporate level the firm achieves ambidexterity because it involves in both exploration and exploitation simultaneously. Consequently, it is possible for large corporations to be ambidextrous just by maintaining structurally independent units, each of which focuses on either exploration-oriented or exploitation-oriented activities.

Taking dynamic capabilities perspective, O'Reilly and Tushman (2008), however, argue that ambidexterity should not be simply a matter of organizational structure. Furthermore, small businesses typically do not have such a complex organizational structure with multiple divisions to be ambidextrous this way. Due to their simple organizational structure and lack of resource slack, it is even more challenging for small businesses, compared to large ones, to handle both exploration and exploitation simultaneously. Small businesses, therefore, offer an intriguing context for organizational ambidexterity research (Lubatkin et al., 2006).

2.4. TMT Behavioral Integration and OA

Behavioral integration is defined as “the degree to which the group engages in mutual and collaborative interaction” (Hambrick, 1994, p. 188). In the context of the top management team (TMT), behavioral integration consists of three elements: (1) the quantity and quality of information exchange among team members, (2) the level of collaborative behavior among team members, and (3) the extent to which team members emphasize joint decision making.

Through their extensive and intensive interaction, a behaviorally integrated TMT will well recognize both pros and cons of having too much of either exploration or exploitation. They, therefore, try to balance between the two practices. In addition, being ambidextrous requires the organization to do both kinds of activities simultaneously, and this is a challenging task not only due to the increase in the variation of activities that the organization has to carry out at the same time but also because of the resultant tensions caused by these contradictory activities (March, 1991). Therefore, a behaviorally integrated TMT is a necessary condition for achieving OA (Carmeli & Halevi, 2009; Lubatkin et al., 2006; Simsek, 2009).

Prior research has found that exploration and exploitation are path-dependent and self-reinforcing (Buyl & Boone, 2011; Gupta et al., 2006). This means that OA cannot be attained without managerial attempts to 'break' organizational inertia and path dependence. Drawing on strategic choice (Child, 1972) and upper echelons theory (Hambrick & Mason, 1984), we suggest that the highly integrated TMT can lead the organization to overcome organizational inertia and path dependence and eventually achieve OA. We, therefore, propose that

Hypothesis 1a: TMT behavioral integration is positively associated with the combined dimension of OA.

Hypothesis 1b: TMT behavioral integration is positively associated with the balance dimension of OA.

2.5. The Moderating Effect of Entrepreneurship

According to Miller and Friesen (1982), entrepreneurial firms are those which have a natural tendency to innovate. These two authors' characterization of entrepreneurial firms was based upon the notion of prospectors (Miles & Snow, 1978), innovators and entrepreneurs (Miller & Friesen, 1978), and entrepreneurial organizations (Mintzberg, 1973). TMT members of entrepreneurial firms understand that developing innovation capabilities is at the center of their firm's competitive advantage and they should not easily give them up to pay more attention to exploitative activities. Entrepreneurial firms, furthermore, are risk taking and proactive in pursuing high-return opportunities (Covin & Slevin, 1991). As a result, entrepreneurial firms tend to look for ways to significantly increase exploitation while not compromising too many exploratory activities. We, therefore, propose that

Hypothesis 2a: The entrepreneurial nature of the firm positively moderates the relationship between TMT behavioral integration and the combined dimension of OA such that highly entrepreneurial firms tend to focus more on this OA dimension than do low entrepreneurial counterparts.

Conservative firms, on the other hand, tend to postpone innovation because they are risk averse and their TMT must be clearly aware of the need for change by effective information exchange and decision making processes before any change to be realized.

Miller and Friesen's (1982) notion of conservative firms is in line with that of defenders (Miles & Snow, 1978), stagnating firms (Miller & Friesen, 1978), and adapters (Mintzberg, 1973). A highly integrated TMT may also recognize that perhaps they currently focus too much on exploitation at the expense of exploration and that the firm needs to involve in more exploratory activities to develop new products or to enter new markets. However, due to the conservative nature of the firm, the TMT does not want to face a risky situation in which the company is stretched too much by both exploration and exploitation. Nor are they likely to think very creatively about possible alternative ways to handle such a high-performance but risky circumstance. Therefore, conservative firms tend to consider exploration and exploitation as trade-offs. We, therefore, propose that

Hypothesis 2b: The entrepreneurial nature of the firm negatively moderates the relationship between TMT behavioral integration and the balance dimension of OA such that highly entrepreneurial firms tend to focus less on this OA dimension than do low entrepreneurial firms.

2.6. Organizational Ambidexterity and Firm Performance

Empirical evidence on the relationships between OA and organizational performance has been mixed. Some studies find supportive evidence for a positive association between OA and innovation initiatives (O'Reilly & Tushman, 2004), technology commercialization (Ho, Fang, & Lin, 2011), and organizational performance (e.g., He & Wong, 2004; Lubatkin et al., 2006; Schulze, Heinemann, & Abedin, 2008; O'Reilly & Tushman, 2004). Some other studies report a negative relationship between OA and its organizational outcomes (e.g., Ebben & Johnson, 2005; Lin, Yang, & Demirkan, 2007). Kim and Huh (2015), however, observe an inverted U-shaped curvilinear relationship between the extent of exploration and organizational longevity.

We argue that depending on whether the firm focuses more on either the balance dimension or the combined dimension, OA will have a different effect on organizational performance. This is in line with Gupta and his colleagues' (2006) notion that there is no universal argument which can be made in favor of either continuity or orthogonality and that depending on which dimension is emphasized, the test for performance implications of pursuing both exploration and exploitation should be chosen accordingly.

Specifically, these researchers suggest that if exploration and exploitation are considered to be orthogonal (combined dimension of OA), then one should test for a positive interaction effect of the two on organizational performance. On the other hand, if exploration and exploitation are deemed to be two ends of a continuum (balance dimension of OA), then “the correct test for the beneficial effects of balance would be to test for an inverted U-shaped relationship between degree of exploration (or exploitation) and organizational performance” (Gupta et al., 2006, p. 697).

When exploration and exploitation are considered as two separate options, the firm has more flexibility to pursue the two types of activities. OA may mean that the firm excels in both of the two simultaneously, which may result in higher organizational performance. For example, the firm attempts to strengthen its competitiveness in the current market segments while aggressively looking for new product-market combinations for further growth opportunities at the same time.

When exploration and exploitation are considered as trade-offs, however, the firm has to make a choice between the two. That is, to increase exploratory activities, the firm must compromise exploitative ones, and vice versa. This may be due to the firm’s conservative nature (Miller & Friesen, 1982) or lack of organizational slack (Bourgeois, 1981) so that the firm does not want or is not able to handle both exploration and exploitation at high levels simultaneously. If the firm is conservative, it focuses more on present procedures, processes, and capabilities and tends to be less creative in finding ways to unlock the tension between exploration and exploitation and, thus, it has to forgo some growth opportunities. We, therefore, propose that

Hypothesis 3a: The combined dimension of OA is positively associated with firm performance.

Hypothesis 3b: The balance dimension of OA has an inverted U-shaped relationship with firm performance.

3. Methods

3.1. Data Sample and Collection

Data were collected from the CEO/President (hereafter the CEO) and other TMT members of small businesses in two geographic areas—South Texas and East Pennsylvania—using paper-based survey questionnaires.

Target organizations were at least three years old (He & Wong, 2004), had twenty or more full-time employees (Lubatkin et al., 2006), and met the size standards for small business (SBA, 2013). Data were first collected from the TMT of five small companies in Texas. Drawing on the feedback by the respondents, the author improved the two questionnaires, one for the CEO and the other for other TMT members, and made them ready for large-sample data collections. The author used his business contacts in Texas and attended networking events organized by a Chamber of Commerce and Industry in Pennsylvania to meet with a large number of top managers of local businesses to deliver the questionnaires either directly in person or via postal mail services.

Mitigating effects of common method variance and single-respondent issue, the author collected data on the independent variable and the dependent variable from different respondents (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). While the CEOs answered the questions on the dependent variable (sales growth rates) and the moderator (EO), other top managers responded to the questions on the independent variable (TMT behavior integration) and OA.

In total, the author sent out 109 CEO questionnaires and 356 questionnaires for TMT members who were not the CEO in their firms. Ninety-eight CEO questionnaires and 136 other-TMT-member questionnaires were returned. After removing cases with extensive missing data and mismatched data (i.e., those cases without both responses from the CEO and at least one TMT member), the final sample included 82 CEOs and 103 other TMT members of 82 small firms. The effective response rate for CEOs was 75.23% and for other TMT members 28.93%.

The final sample contains 82 small companies, including 30 from South Texas and 52 from East Pennsylvania. The youngest firm in the sample was five years old and the oldest one 113 years old; the average firm age was 32.12 years. Regarding firm size, the sampled firms on average had 41 employees and \$4.75 million in total sales (in 2012). On the basis of the first two digits of the North American Industry Classification System (NAICS) code, top four industries primarily represented in the overall sample include professional, scientific and technical services (20.73%), healthcare and social assistance (18.29%), manufacturing (12.20%), and finance and insurance services (10.98%).

Potential non-response bias was addressed using independent-samples t-tests which compared early and late respondents in terms of firm age, firm size (i.e., number of employees), and firm performance (i.e., the compound average annual sales growth rate). This was based on the assumption that the subjects who responded late were more similar to those who did not respond than those who responded early (Armstrong & Overton, 1977; Kanuk & Berenson, 1975). No significant difference was found between early and late respondents, suggesting that nonresponsive bias was not a problem.

3.2. Measures

Organizational performance. The dependent variable was measured as self-reported compound annual average sales growth rate during the past three years (He & Wong, 2004). Although organizational performance is a multidimensional construct (Carton & Hofer, 2006), it was measured in terms of the firm's total sales growth in this study for three reasons. First, the sample firms represented a wide variety of industries without any evidence that a high proportion of the industries were either capital-intensive or labor-intensive. Weinzimmer and his colleagues (1998) suggest that when various industries are present in the sample, sales growth may be a more appropriate measure of organizational growth than growths in the number of employees or in firm assets. Second, a firm can grow in terms of sale revenues without a significant increase in the number of employees or quantity of organizational assets. Third, sales growth is clearly a better indicator—compared to the increase in the number of employees or quantity of firm assets—of the firm's success in commercializing technical innovations and/or entering new markets/segments.

TMT behavioral integration. Capturing the three dimensions of TMT behavioral integration (i.e., information exchange, collaborative behavior, and joint decision making), we adopted the nine-item scale developed and validated by Simsek and his colleagues (2005). This specific measure has been adopted in several other studies such as Carmeli, Schaubroeck, and Tishler (2011) and Lubatkin and his colleagues (2006). Each of the behavioral integration dimensions was measured using three items on a seven-point Likert-typed scale (ranging from 1 = "strongly disagree" to 7 = "strongly agree") which was included only in the questionnaire for top managers who were not the CEO of their firm. As TMT behavioral integration was conceptualized as a team-level construct, the individual scores should be aggregated.

A one-way analysis of variance (ANOVA) was performed on each of the nine items, using firm affiliation as the independent variable to examine whether there was greater variability in the ratings across firms than within firms (Ling & Kellermanns, 2010; Lubatkin et al., 2006). For each item, the F-ratio was significant ($p < 0.001$), thus supporting aggregation. We also employed an interrater agreement coefficient, developed by James, Demaree, and Wolf (1984&1993), to investigate the intra group agreement (r_{wg}) of responses. All of the r_{wg} values were greater than or equal to .90, and the average r_{wg} of the TMT behavioral integration scale was .98, suggesting very strong agreement among the respondents within each team and further legitimizing the aggregation of individual TMT member scores to the team level (George & Bettenhausen, 1990; Lance, Butts, & Michels, 2006; LeBreton & Senter, 2008).

Cronbach's alphas for the aggregated subscale of information exchange, collaborative behavior, and joint decision making were .94, .93, and .89, respectively. The Cronbach's alpha for the overall measure of TMT behavioral integration was .91.

Organizational Ambidexterity. The present research adopts the measures of exploration and exploitation developed by Lubatkin and colleagues (2006). The items measuring exploration and exploitation were included only in the questionnaire for top managers who were not the CEO of their firm. We asked the TMT members to evaluate their firm's exploration and exploitation during the past three years using a seven-point Likert-typed scale ranging from 1 (strongly disagree) to 7 (strongly agree).

In the present study, exploration and exploitation were conceptualized as firm-level latent variables. Before aggregation, a one-way ANOVA test was performed for each of the 12 items of exploration and exploitation. All F-ratios for the 12 one-way ANOVA tests, ranging from 2.246 to 11.803, were significant ($p < 0.05$); nine of them were significant at $p < 0.01$ while three significant at $p < 0.001$. Thus, the ANOVA results supported aggregation. The intra-group agreement (r_{wg}) values for exploratory and exploitative orientations ranged from .75 to .99, all exceeded the minimum threshold value of .70 (George & Bettenhausen, 1990; Lance, Butts, & Michels, 2006; LeBreton & Senter, 2008). This suggests very strong agreement among the raters within each organization and, thus, supports the aggregation of the individual data to the firm level. Cronbach's alphas for six-item subscales of exploration and exploitation were .89 and .82, respectively.

The balance dimension of OA is first measured as the absolute difference between exploration and exploitation (Cao et al., 2009; He & Wong, 2004) and then as an exploration/exploitation index by dividing exploration by the sum of the two (Lin et al., 2007; Uotila et al., 2009). The combined dimension of OA is first measured as a sum of exploration and exploitation (Lubatkin et al., 2006) and then as a multiplication between the two (Cao et al., 2009; Gibson & Birkinshaw, 2004; Jansen, Van den Bosch, & Volberda, 2005).

Entrepreneurial orientation (EO). In this study, EO is conceptualized as an organizational-level variable (Covin & Slevin, 1991; Miller, 1983) and measured by a scale developed by Wang (2008). Eleven EO items were only included in the questionnaire for the CEOs. Wang's (2008) scale of EO was adopted in this study for several reasons. Cronbach's alphas for innovativeness, risk taking, proactiveness, and aggressiveness subscales were .86, .74, .76, and .82, respectively. The EO measure was then calculated by averaging the four indicators of these four dimensions and had an overall Cronbach's alpha of .83.

Control variables. We controlled for *organizational tenure of TMT members* which was measured as the arithmetic mean of the number of years they had been working in their organization (Finkelstein & Hambrick, 1990; Michel & Hambrick, 1992). *TMT size* was measured as the total number of TMT members (including the CEO) which was reported by the CEO (Cao et al., 2010; Jansen et al., 2009; and Lubatkin et al., 2006). The natural logarithm of the number of full-time employees was included to account for *firm size* (Cao et al., 2010; Jansen et al., 2005, 2006). We controlled for *firm age* by taking the natural logarithm of firm age (He & Wong, 2004; Jansen et al., 2009). As *industry* characteristics may have effects on a firm's motivation in pursuing exploratory and exploitative innovation (Sidhu et al., 2007), five industries were dummy coded: scientific and technical services, healthcare and social assistance, manufacturing, finance and insurance services, and others.

4. Results

Table 1 summarizes means, standard deviations, and correlations among all variables in the present study.

Table 1: Means, Standard Deviations, and Correlations among Study Variables

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. TMT behavioral integration	5.25	1.09	(.91)													
2. EO	4.85	0.98	.78***	(.83)												
3. OA ₁ ^a	10.97	1.75	.76***	.86***	–											
4. OA ₂ ^b	30.67	9.20	.75***	.86***	.99***	–										
5. OA ₃ ^c	0.52	0.58	-.17	-.19 [†]	-.24*	-.27*	–									
6. OA ₄ ^d	0.49	0.04	-.01	.29**	.17	.17	-.31**	–								
7. Firm performance	7.12	6.71	.38***	.41***	.29**	.32**	-.27**	.28*	–							
8. Organizational tenure	16.99	9.82	.04	.01	.02	.02	-.05	-.14	-.32**	–						
9. TMT size	4.15	1.48	-.13	-.01	.03	.02	-.01	.11	-.03	-.03	–					
10. Firm size (natural log)	3.56	0.49	.04	.07	.13	.12	-.01	-.05	-.02	-.01	.57***	–				
11. Firm age (natural log)	3.24	0.70	-.18	-.17	-.11	-.12	.01	.05	-.40***	.57***	.20 [†]	.26*	–			
12. Scientific & technical services	0.21	0.41	.04	.04	.04	.04	-.14	.09	-.06	-.05	.07	-.07	-.08	–		
13. Healthcare & social services	0.18	0.39	-.03	-.18	-.14	-.14	-.07	.09	.29**	-.34**	.13	.09	-.17	-.24*	–	
14. Manufacturing	0.12	0.33	-.03	-.02	.01	.01	.01	.05	-.13	.19 [†]	.06	.21 [†]	.22 [†]	-.19 [†]	-.18	–
15. Finance & insurance	0.11	0.31	.07	.02	.08	.07	.02	-.12	.03	-.13	-.09	-.18	-.19 [†]	-.18	-.17	-.13

Notes: N = 82; [†] p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001, 2-tailed

The number in parentheses on the diagonal is the Cronbach’s alpha of the respective composite scale.

- ^a OA₁ = Exploration + Exploitation
- ^b OA₂ = Exploration × Exploitation
- ^c OA₃ = | Exploration – Exploitation |
- ^d OA₄ = Exploration / (Exploration + Exploitation)

The unidimensionality of factors in this study was assessed using exploratory factor analysis (EFA). Principal Axis Factoring (PAF) was used because it did not require the data to strictly meet the assumption of multivariate normality (Costello & Osborne, 2005; Fabrigar et al., 1999; Field, 2005). Three separate analyses were conducted. In the first analysis, the items of TMT behavioral integration scale were factor analyzed.

As three constructs exploration, exploitation, and EO are all innovation-related to some extent, the items for these measurement scales could be factor analyzed together. However, doing so would lead to unreliable factor solutions because there would be a total of 23 variables (six items for exploration, another six for exploitation, and 11 for EO) while there were only 82 cases in the sample; thus, the case-to-variable ratio would fall below the minimum threshold of 5:1 (Hair et al., 2006).

Therefore, the author decided to conduct two separate factor analyses for these three constructs: one for exploration and exploitation, and the other for exploration and EO. In each factor analysis, an oblique rotation (direct oblimin or promax) was performed as it allowed correlation between factors. The items in each factor analyses loaded highly in appropriate factors (i.e., three dimensions of TMT behavioral integration, exploration and exploitation, and four dimensions of EO), suggesting the unidimensionality and convergent and discriminate validity of the constructs in this study. Therefore, the use of the measurement scales for those constructs was justified. Table 2 summarizes the regression results for the combined dimension of OA. The coefficient of TMT behavioral integration in both Model 2 ($b = 1.235$, $p < 0.001$) and Model 4 ($b = 6.431$, $p < 0.001$) were positive and statistically significant. Therefore, Hypothesis 1a, which predicted a positive relationship between TMT behavioral integration and the combined dimension of OA, is strongly supported.

Table 2: Regression Results of the Combined Dimension of OA

	Exploration + Exploitation		Exploration x Exploitation	
	Model 1	Model 2	Model 3	Model 4
Constant	9.728(1.702)***	3.678(1.275)**	25.317(8.965)**	-6.182(6.818)
Control variables				
TMT members' firm tenure	0.022(0.026)	-0.010(0.017)	0.120(0.138)	-0.047(0.094)
TMT size	-0.041(0.166)	0.151(0.111)	-0.238(0.875)	0.759(0.592)
Firm size	0.856(0.505)†	0.158(0.339)	4.377(2.661)	0.745(1.814)
Firm age	-0.600(0.362)	-0.010(0.245)	-3.308(1.904)†	-0.237(1.309)
Scientific & technical services	0.093(0.551)	-0.169(0.363)	0.238(2.902)	-1.128(1.940)
Healthcare & social services	-0.654(0.608)	-0.744(0.399)†	-3.585(3.200)	-4.056(2.134)†
Manufacturing	-0.151(0.655)	-0.092(0.430)	-0.888(3.447)	-0.580(2.298)
Finance & Insurance	0.398(0.697)	0.030(0.459)	1.390(3.673)	-0.527(2.457)
Independent variable TMT behavioral integration		1.235(0.125)***		6.431(0.670)***
R ²	0.086	0.611	0.085	0.599
Adjusted R ²	-0.014	0.563	-0.016	0.549
Change in R ²	0.086	0.525***	0.085	0.514***

Note: N = 82. Unstandardized coefficients were reported with standard errors in parentheses.† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Hypothesis 1b predicted that TMT behavioral integration would be positively associated with the balance dimension of OA. Table 3 shows regression results for the two measures of the balance dimension of OA. Model 2 and Model 4 in Table 3 show no significant relationship between TMT behavioral integration and the balance dimension of OA. The coefficient of TMT behavioral integration in Model 2 is negative, which is opposite to what is suggested in Hypothesis 1b. Consequently, Hypothesis 1b is not supported.

Hypotheses 2a and 2b predicted the moderating effect of EO on the relationship between TMT behavioral integration and OA. To reduce the multicollinearity among the independent variable (TMT behavioral integration), the moderator (EO), and the product term (the former times the latter) and to facilitate the interpretation of the findings, we first mean centered the independent variable and the moderator at the actual mean of their raw scores (Jaccard & Turrissi, 2003; Lambert, 2011). As the coefficient of the product term in the regression model for each of the four measures of OA was not statistically significant, there was no evidence for the existence of the moderating effect of EO on the relationship between TMT behavioral integration and the respective dimension of OA. Hypotheses 2a and 2b, thus, are not supported.

Table 4 shows positive and significant ($p < 0.01$) relationships between the two measures of the combined dimension of OA and firm performance (see the coefficient of the independent variable in Model 2 and Model 3 of Table 4). Therefore, Hypothesis 3a, which predicts a positive association between the combined dimension of OA and firm performance, is supported.

Table 3: Regression Results of the Balance Dimension of OA

	Exploration –Exploitation		Exploration/(Exploration + Exploitation)	
	Model 1	Model 2	Model 3	Model 4
Constant	0.782(0.574)	1.212(0.651) †	0.519(0.038)***	0.505(0.044)***
Control variables				
TMT members' firm tenure	-0.009(0.009)	-0.007(0.009)	-0.001(0.001) †	-0.001(0.001) †
TMT size	0.013(0.056)	-0.001(0.057)	0.005(0.004)	0.005(0.004)
Firm size	-0.045(0.170)	0.005(0.173)	-0.020(0.011) †	-0.021(0.012) †
Firm age	0.039(0.122)	-0.003(0.125)	0.011(0.008)	0.013(0.008)
Scientific & technical services	-0.302(0.186)	-0.283(0.185)	0.008(0.012)	0.007(0.012)
Healthcare & social services	-0.268(0.205)	-0.261(0.204)	0.007(0.014)	0.007(0.014)
Manufacturing	-0.091(0.221)	-0.095(0.219)	0.014(0.015)	0.014(0.015)
Finance & Insurance	-0.131(0.235)	-0.105(0.234)	-0.013(0.016)	-0.014(0.016)
Independent variable		-0.088(0.064)		0.003(0.004)
TMT behavioral integration				
R ²	0.047	0.072	0.109	0.115
Adjusted R ²	-0.057	-0.044	0.11	0.005
Change in R ²	0.047	0.024	0.109	0.006

Note: N = 82. Unstandardized coefficients were reported with standard errors in parentheses.

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Regression Results of Firm Performance on the Combined Dimension of OA

	Model 1	Model 2	Model 3
Constant	15.902(6.055)*	4.324(6.912)	9.811(6.000)
Control variables			
TMT members' firm tenure	-0.038(0.093)	-0.065(0.089)	-0.067(0.088)
TMT size	-0.021(0.591)	0.028(0.561)	0.037(0.556)
Firm size	0.703(1.797)	-0.316(1.738)	-0.350(1.722)
Firm age	-3.350(1.286)*	-2.636(1.243)*	-2.554(1.235)*
Scientific & technical services	-0.769(1.960)	-0.880(1.860)	-0.826(1.844)
Healthcare & social services	3.136(2.161)	3.914(2.067) †	3.999(2.051) †
Manufacturing	-0.593(2.328)	-0.413(2.210)	-0.379(2.192)
Finance & Insurance	-0.425(2.481)	-0.899(2.359)	-0.760(2.336)
Independent variable Combined OA (Exploration + Exploitation)		1.190(0.395)**	
Combined OA (Exploration x Exploitation)			0.241(0.074)**
R ²	0.215	0.303	0.315
Adjusted R ²	0.129	0.216	0.229
Change in R ²	0.215*	0.088**	0.100**

Note: N = 82. Unstandardized coefficients were reported with standard errors in parentheses.

† p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001

Table 5 shows the regression results for firm performance on the balance dimension of OA. Although the coefficient of the squared term in Model 2 was not significant and positive (opposing to expectation), the coefficients of the individual variable and the squared term in Model 3 were both significant ($p < .01$ and $p < .10$, respectively). Moreover, the coefficient of the squared term in Model 3 was negative which was in expected direction, suggesting an inverted U-shaped relationship between this measure of OA balance dimension and firm performance. Therefore, Hypothesis 3b is partially supported.

Table 5: The Curvilinear Relationship between the Balance Dimension of OA and Firm Performance

	Model 1	Model 2	Model 3
Constant	5.902(6.055)*	16.572(5.885)**	16.152(5.787)**
Control variables			
TMT members' firm tenure	-0.038(0.093)	-0.71(0.091)	-0.008(0.090)
TMT size	-0.021(0.591)	0.023(0.570)	-0.218(0.560)
Firm size	0.703(1.797)	0.543(1.734)	1.334(1.734)
Firm age	-3.350(1.286)*	-3.186(1.247)*	-3.732(1.227)**
Scientific & technical services	-0.769(1.960)	-1.698(1.933)	-1.839(1.879)
Healthcare & social services	3.136(2.161)	2.249(2.108)	2.309(2.045)
Manufacturing	-0.593(2.328)	-0.843(2.253)	-1.545(2.197)
Finance & Insurance	-0.425(2.481)	-0.729(2.436)	-0.540(2.380)
Independent variables			
Exploration – Exploitation		-3.710(2.006) †	
(Exploration – Exploitation) ²		0.468(1.662)	
Exploration/(Exploration + Exploitation)			47.395(17.617)**
[Exploration/(Exploration + Exploitation)] ²			-289.148(168.169) †
R ²	0.215	0.291	0.331
Adjusted R ²	0.129	0.191	0.236
Change in R ²	0.215*	0.076*	0.115**

Note: N = 82. Unstandardized coefficients were reported with standard errors in parentheses. † p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001

5. Discussion

The supportive evidence for Hypothesis 1a is in line with the findings in some prior empirical studies that investigated TMT behavioral integration as a direct antecedent of an organizational consequence (e.g., Lutbatkin et al., 2006; Raes et al., 2013). In the present study, TMT behavioral integration, as a team process, is an antecedent of OA that enables the firm to excel both exploration and exploitation at high levels simultaneously.

Hypothesis 1b, which proposed that TMT behavioral integration would be positively associated with the balance dimension of OA, was not supported, however. This might be due to the small sample size (N = 82) which did not have enough statistical power to detect a small effect-size impact of TMT behavioral integration on the balance dimension of OA.

The author strived to reach out to local business communities in South Texas and East Pennsylvania in order to increase the access to target firms and improve the response rates. He, however, had to admit that collecting data from top managers was not only challenging but also time consuming with extensive follow-ups (e.g., email and phone call reminders).

Hypotheses 2a and 2b predicted that EO moderated the relationship between TMT behavioral integration and the combined dimension and the balance dimension of OA, respectively. Both of these hypotheses were not supported, however. This result might also be due to the small sample size of this study that limited the power to detect a small effect-size relationship (Aguinis, 1995; Champoux & Peters, 1987; Knofczynski & Mundfrom, 2008). The scale coarseness of the criterion variable (i.e., the combined dimension and the balance dimension of OA) in these analyses might also play some role (Aguinis, 1995; Frazier, Tix, & Barron, 2004; Russell & Bobko, 1992). Such scale coarseness resulted in a loss of the information regarding the relationship between the outcome variable and the product term, which underestimated the true population moderating effect.

Finally, the failure to detect the moderating effect of EO on the relationship between TMT behavioral integration and each of the OA dimensions might be due to convenience sampling; that is, the sample might not be representative of the respective local business population. To mitigate the effect of range restriction, the author made a lot of efforts to recruit firms from a wide variety of industries. Although it was, unfortunately, not able to detect the moderating effect of EO, the present research for the first time, to the author's best knowledge, has examined EO in an exploration-exploitation research. In this sense, EO has played a role of contextual conditions in which TMT members decided which dimension of OA should be emphasized. The current study, therefore, promotes future research to investigate the relationship of organizational EO and team-level (e.g., TMT behavioral integration) and organizational-level (e.g., firm performance) variables.

The present research also reveals an opportunity to shed more light on the debate on the relationship between EO and firm performance (Hughes & Morgan, 2007; Lumpkin & Dess, 1996; Moreno & Casillas, 2008; Wang, 2008; Wiklund, 1999).

With a bigger and more representative sample of data, the moderating effect of EO on the relationship between TMT behavioral integration and OA might be detected, which would strengthen the notion that managing paradoxes between exploration and exploitation is not a sole responsibility of the TMT but should be taken place across organizational levels (Andriopoulos & Lewis, 2009; Gibson & Birkinshaw, 2004).

Hypothesis 3a, which proposed that the combined dimension of OA would be positively associated with firm performance, was strongly supported. This result is consistent with the findings in prior studies (Cao et al., 2009; Gibson & Birkinshaw, 2004; He & Wong, 2004; Lubatkin et al., 2006). It also 'confirms' the conjecture in theoretical research about a positive association between OA (combined dimension) and firm performance (Gupta et al., 2006; Simsek, 2009). Therefore, the present study strengthens the extant literature on the relationship between OA and organizational performance. The supportive evidence for Hypotheses 1a and 3a suggested that TMT members had an active and substantive role in managing the interaction of exploration and exploitation in order to achieve higher firm performance.

Hypothesis 3b, which predicted an inverted U-shaped relationship between the balance dimension of OA and firm performance, was partially supported. This finding supports the conjecture by Gupta and his colleagues (2006) regarding such a curvilinear relationship between the exploration-exploitation tradeoff and firm performance. It also 'confirms' Kim and Huh's (2015) finding of an inverted U-shaped curvilinear relationship between the level of exploration and organizational longevity. Perhaps the OA balance dimension does not have a straightforward linear relationship with organizational performance. This is probably why Cao and his colleagues could not find supportive evidence for their hypothesis on a linear relationship between OA balance dimension and firm performance (Cao et al, 2009).

The current research also contributes to organizational ambidexterity (OA) literature by supporting the notion that OA is not an exclusive phenomenon of large and multi-division organizations. With a highly behavior integrated TMT, small businesses can achieve and manage OA successfully. In line with O'Reilly and Tushman (2008), this study reinforces the notion that OA is not simply an organizational structure issue; exploratory and exploitative innovations can coexist in the same spatial organizational context.

5.1. Practical Implications

The present research emphasizes the importance of the way TMT members work together. The more behaviorally integrated they are, the higher the likelihood that their firm can improve performance through the positive impact of the combined dimension of OA. When TMT members extensively and intensively exchange information about their business, help each other to complete their job successfully, and take into account potential cross-functional impacts of their decisions, they are more likely to find innovative ways to reconcile possible contradictions between exploratory and exploitative orientations.

However, there may be situations in which the firm has to make a choice due to the trade-offs between exploration and exploitation. In such cases, it would better for the firm to maintain a relative balance of the two tendencies rather than emphasizing too much on one over the other. Focusing heavily on one tendency over the other may threaten the firm's performance in a longer term (March, 1991, Levinthal & March, 1993). In addition, practitioners are encouraged to boost their firm's entrepreneurial characteristics (e.g., innovation capabilities, risk taking orientation, proactiveness, and so forth) since entrepreneurship may act as an 'organizational catalyst' that helps improve firm performance (e.g., higher sales growth).

5.2. Limitations and Future Research

The present research employed cross-sectional data and, therefore, could not show the causal relationships among variables in the research model. Although we discussed the 'causal' relationships between the antecedent and the outcome in the research model, we could only show the correlates of these variables. Another limitation of the present study is that it used a retrospective approach to data collection. Indeed, retrospective bias has been considered as one of the major limitations in most organizational research which examines organizational performance as a dependent variable (March & Sutton, 1997). With cross-sectional data and retrospective issues, although we tried to address the sustainability of the growth of the firm by asking the informants to think 'back' in the past three years, we could not directly investigate the sustainability of the firm's growth in the future.

Although the author had put forth his best efforts in accessing firms from a wide variety of industries, the sample was more convenient than representative. Furthermore, the sample only included for-profit organizations. Partly due to the operationalization of the dependent variable as sales growth, the researcher did not recruit not-for-profit organizations for his data sample. However, future research may take nonprofit organizations into account because OA is relevant for these organizations as well.

Lastly, the present study did not propose and test a mediation effect of OA on the relationship between TMT behavioral integration and firm performance. A mediation effect implies causal relationships between the predictor (TMT behavioral integration), the mediator (OA), and the outcome variable (firm performance) (Baron & Kenny, 1986; Frazier et al., 2004). Several prior studies examined OA as a mediator between its antecedents and organizational performance (Chang & Hughes, 2012; Gibson & Birkinshaw, 2004). Due to the cross-sectional nature of the data collected, we can at most discuss the association between the variables, not the causal relationship. Future research may employ a mixed-method design, combining quantitative and qualitative analyses, to discover more insights into the firm's motive for pursuing either orthogonality or continuity dimension. More specifically, future research may adopt a two-step design: the first is a quantitative study (like the present one) and the second will be a qualitative study in which the researcher may interview informants to validate and extend the results of the quantitative research in the previous stage.

6. Conclusion

The present research examined the relationship between top management team (TMT) behavioral integration, entrepreneurial entrepreneurship (EO), organizational ambidexterity (OA), and firm performance. It calls for a more comprehensive perspective in conceptualizing and operationalizing the construct of OA. The findings confirmed a positive relationship between TMT behavioral integration and the combined dimension of OA and, in turn, the combined dimension was positively associated with firm performance. The supportive evidence for an inverted U-shaped relationship between the balance dimension of OA and firm performance was interesting as well.

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