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Learning to Innovate: How Does Ambidextrous Learning Matter to Radical and Incremental Innovation Capabilities?

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Abstract

The notion that ambidextrous learning will improve firm performance and survival has become prominent in the organizational learning literature. Arguing that innovation capabilities are central to the ambidexterity hypothesis, we investigate how the two dimensions of ambidextrous learning (synergy and balance) affect firms? incremental and radical innovation capabilities. Based on organizational learning theory and the dominant logic literature, we develop the theoretical arguments that the synergy of ambidexterity drives incremental innovation capability and the balance dimension of ambidexterity influences radical innovation capability. We conjecture that also there is an interaction effect between synergy and balance on both radical and incremental innovation capabilities. We base our empirical analysis on a survey of a wide range of high-tech firms in China. We find broad support for our theoretical arguments.

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To manage evolutionary and revolutionary change, firms need to engage in ambidextrous learning: exploitation extends current knowledge enabling greater efficiency and reliability and exploration refers to the development of new knowledge to increase novelty and flexibility (March, 1991; O'Reilly and Tushman, 2004; Atuahene-Gima, 2005). Following Tushman and O’Reilly (1996), ambidexterity, meaning the simultaneous pursuit of both exploration and exploitation, has been hypothesized to improve firm performance and survival (e.g., Gibson and Birkinshaw, 2004; He and Wong, 2004; Lin et al., 2007; Rothaermel and Alexandre, 2008; Cao et al., 2009). Although our knowledge of the phenomenon of ambidexterity has increased greatly as a result of the Tushman and O’Reilly’s contribution and subsequent academic work, this literature has two important limitations.

The first limitation is related to the fundamental argument of the ambidexterity hypothesis that, as suggested by Tushman and O’Reilly (1996), ambidextrous firms achieve competitive advantage based on continuous innovation—both incremental and radical (also, see He and Wong, 2004). However, little evidence has been provided on the role played by ambidexterity in the building of firms’ innovation capabilities. An exception is Tushman et al. (2010), which examines the link between ambidextrous organization design and the number of innovations. Relatedly, He and Wong (2004) acknowledge the significant relevance of innovation outcomes. However, they use innovation outcomes, measured as intensity of product and process innovation, as path controls not dependent variables.

The second limitation concerns how ambidexterity and innovation should be linked. Interestingly, although the link between ambidexterity and innovation has not been examined explicitly, there is an implicit assumption of this relationship in the ambidexterity literature (He and Wong, 2004; Jansen et al., 2006; Lin et al., 2007; Cao et al., 2009). In particular, while arguing that exploration is related to the development of radical innovation and exploitation to the development of incremental innovation, the ambidexterity literature assumes that ambidextrous firms can pursue different types of innovation effectively, and thus operationalize ambidexterity in terms of exploitative and explorative innovation (He and Wong, 2004; Cao et al., 2009; Jansen et al., 2012).

However, this operationalization has raised some concern. In keeping with March (1991), He and Wong (2004: 485) state explicitly that "exploration and exploitation should be used with reference to a firm's ex-ante strategic objectives in pursuing innovation, whereas the radical versus incremental innovation is often used in an ex-post outcome sense". Treating exploitation and exploration as equivalent respectively to incremental innovation and radical innovation overlooks at least two effects. First, in addition to the link between exploitation and firms' incremental innovation capability, and exploration and firms' radical innovation capability paths there might be other influential links. For example, exploitation might affect firms' radical innovation capability by promoting a competency trap (Leonard-Barton, 1992) or reduced absorptive capacity (Cohen and Levinthal, 1990); exploration might have an impact on incremental innovation capability through the contributions of multiple sources to the "fine-tuning" of new products (Laursen and Salter, 2006) and keeping the firm "abreast of development for improving current operations" (Dewar and Dutton, 1986: 1424). Second, beyond the direct effects of exploration and exploitation, the ambidexterity literature highlights the interaction effect between exploration and exploitation on performance outcomes (e.g., Gibson and Birkinshaw, 2004; He and Wong, 2004; Cao et al., 2009). Several scholars have argued that exploitation and exploration are non-substitutable and interdependent constructs, providing strong empirical evidence that their co-existence means they should be treated as an integral concept, i.e., ambidexterity. Accordingly, it can be seen that the links between ambidexterity and firm's innovation capabilities are more complex than has been acknowledged.

Given that ambidexterity is regarded as an emerging research paradigm in organizational theory (Raisch and Birkinshaw, 2008) and is part of the many prescriptions for firm performance (Tushman and O'Reilly, 1996; Gibson and Birkinshaw, 2004; He and Wong, 2004; Cao et al., 2009), explicit investigation of its impacts on the incremental and radical innovation capabilities of firms would be beneficial. In distinguishing between the two dimensions of ambidexterity, i.e. synergy and balance, the present study links ambidexterity to firms' incremental and radical innovation capabilities. Our central argument is that synergy between exploitation and exploration facilitates technological opportunity discovery for the development of incremental innovation, and a balance between them questions the dominant logic in the development of radical innovation. Specifically, we argue that firms' incremental innovation capability is driven by the synergy of ambidexterity and firms' radical innovation capability benefits from a balance of ambidexterity. We argue also for interaction effects between synergy and balance on incremental and radical innovation capabilities. Using survey data from a sample of high technology firms in China, we find overall support for our theory and hypotheses.

This study makes novel theoretical and empirical contributions to the ambidexterity and innovation literatures. The ambidexterity literatures generally takes a contingency approach to the ambidexterity-firm performance link in order to understand the limitations to the effect of ambidexterity on firm success (e.g., Lin et al., 2007; Cao et al., 2009). Although the contingency approach provides rich insights, it has a major limitation. Investment in ambidexterity *per se* may not have a profound effect on firm performance, unless this investment is translated into an innovation advantage (Tushman and O'Reilly, 1996). In this paper, we theoretically and empirically link ambidexterity directly with innovation outcomes, i.e. we show the effect of ambidexterity on firm innovation. In our view, an approach that links ambidexterity with innovation outcome measures reduces the confounding effects, and potentially offers a more fine-grained account of the effects of ambidexterity. This study responds to the call in Raisch and Birkinshaw (2008) for more research on the problems related to knowledge integration in ambidextrous organizations.

Secondly, this paper introduces into the innovation literature the concept of a dominant logic for explaining the development of radical innovation. To our knowledge, this is the first study that extends the concept of dominant logic to the field of innovation. Radical innovation has been studied from various perspectives, ranging from the motivational dimension (e.g., Chandy and Tellis, 1998) to the knowledge dimension (e.g. Zhou and Li, 2012). Within the framework of the dominant logic, we can combine these different perspectives, e.g., the willingness to cannibalize in Chandy and Tellis (1998), and the interplay between knowledge bases and knowledge integration in Zhou and Li (2012). Thus the approach in this paper could be applied to research on radical innovation.

THEORETICAL BACKGROUD

Incremental and radical innovation capabilities

In dynamic environments, sustained organizational performance is rooted in the firm's capabilities to host incremental and radical innovation simultaneously (Christensen, 1997). An incremental innovation is a product improvement and/or line extension that involves small changes to the technology and minor deviations from the firm's existing product-market experience. A radical product innovation is a new product that disrupts an existing technological trajectory and involves major transformations to existing product (Atuahene-Gima, 2005; Subramaniam and Youndt, 2005). Incremental innovation capabilities offer short-term efficiencies by allowing the firm to capture the ongoing benefits from existing operations; while radical innovation capabilities facilitate long-term effectiveness by moving the firm onto new technological trajectories for adaptation and change (Tushman and O'Reilly, 1996; Smith and Tushman, 2005).

Firms that overemphasize their incremental innovation capabilities or their radical innovation capabilities can be trapped into producing suboptimal outcomes. On the one hand, short-term success from the development of incremental innovations may be ephemeral and unsustainable in the face of significant market and technological change. Several studies describe how once successful companies lost their "edge" in the face of environmental changes, e.g., disk drive industry by Christensen and Bower (1996). On the other hand, firms that put too much emphasis on radical innovation capabilities run the risk of not capitalizing on costly investments in searching and developing new products and markets. For example, Teece (1986) describes how radical innovators, including EMI with its CAT scanner and Xerox with its office computer business, failed to profit from their radical innovations.

Thus, it is important for firms achieve incremental and/or radical innovation capabilities. Previous research on antecedents associated with multiple innovation types falls into two broad categories: organizational coordination and organizational learning. Within organizational coordination, theoretical work suggests that different coordination mechanisms exert different influences on the firm's capabilities to pursue different types of innovation (Benner and Tushman, 2003); however, the results of empirical studies are inconclusive (Dewar and Dutton, 1986; Damanpour, 1991; Cardinal, 2001; Jansen et al., 2006). For instance, Cardinal (2001) and Damanpour (1991) conclude that the predictors of both radical and incremental innovation capabilities are similar, while Jansen et al. (2006) finds that a formal hierarchical structure influences exploratory and exploitative innovation differently.

Within organizational learning, prior studies highlight the relevance of March's (1991) distinction between exploitation and exploration. Assuming that innovation is a function of technological opportunities, this literature generally links exploitation with incremental innovation, and exploration with radical innovation. However, the empirical work again yields mixed results. For example, Laursen and Salter (2006) in a sample of U.K. firms find that the breadth of external search enhances the development of both incremental and radical innovation, external search depth supports radical innovation but has no effect on incremental innovation, while Dewar and Dutton (1986) report exploitation as driving both types of innovation, but no effects of exploration.

Our argument combines both perspectives. We argue that the development of incremental innovation is driven by the discovery of technologies along a trajectory, while the development of radical innovation is enabled by disrupting the firm's dominant logic (Prahalad and Bettis, 1986). At the heart of this argument is the distinction between how different types of innovation capabilities draw on organizational knowledge:

> …incremental innovative capabilities draw upon reinforced prevailing knowledge, with consequent innovations taking advantage of and improving upon prevailing knowledge, whereas radical innovative capabilities draw upon transformed

> prevailing knowledge, with innovations making prevailing knowledge obsolete and "morphing" old knowledge into something significant new. (Subramaniam and Youndt, 2005: 452)

Thus the development of incremental innovation is relatively more technologically challenging and the development of radical innovation is more organizationally challenging. This view is consistent with the innovation literature. For example, Christensen and Bower (1996) described how the logic imposed by customers was so strong that leading firms in the disk drive industry were able to successfully undertake technologically difficult innovations for the most powerful customers, while at the same time finding it difficult to sustain resource allocations to technologically straightforward innovations for emerging markets. Indeed, Tushman and Anderson (1986: 462) conclude that "(S)haping technological advance may be a critical organizational issue, since technology affects both intra- and interorganizational bases of power".

Ambidexterity: concepts and dimensions

March (1991) refers to terms variation-seeking, risk-taking, and experimentation-oriented learning activities as exploration, and variety-reducing and efficiency-oriented learning activities as exploitation. Applying March's (1991) view to the domain of product innovation, we define exploitative learning (exploitation) as the use of and refinements to existing product development knowledge and skills and explorative learning (exploration) as the search for and pursuit of completely new knowledge and skills for product development (see also, Benner and Tushman, 2003). March (1991) argues that to survive environmental changes firms need to balance exploitation and exploration. Too much exploitation results in inertia; too much exploration results in reduced efficiency (March, 1991; Levinthal and March, 1993). Thus, the firm's long-term survival depends on its capacity simultaneously to pursue exploration and exploitation (Raisch et al., 2009), which is defined as firm ambidexterity.

Fundamental to ambidextrous learning (ambidexterity) is the ability to manage strategic contradiction, which shifts managerial attention away from discrete choice processes ("either/or") to paradoxical ("both/and") thinking (Smith and Tushman, 2005). Smith and Tushman (2005) consider the management of strategic contradiction to be associated with two distinct cognitive processes—differentiation and integration. Differentiation involves categorizing differences between exploitation and exploration such that resources can be allocated clearly to each activity. Integration involves identifying opportunities offered by the linkages and synergies between exploitation and exploration. Thus, ambidexterity can be considered in two dimensions. From an empirical perspective, Cao et al. (2009) similarly argue that ambidexterity encompasses the differences between exploitation and exploration, and the product of exploitation and exploration.

Inspired by these authors, this paper considers both dimensions and disentangles their different effects to examine how ambidexterity matters for the firm's innovation capabilities. The first dimension, which reflects the balance between exploitation and exploration, we describe as the *balance of ambidexterity*. Achieving balance involves recognizing, articulating, and exploiting the differences between exploitation and exploration (Smith and Tushman, 2005). Balanced ambidexterity suggest that the cognitive commitment to exploitation is reduced, and that differentiation helps managers to develop complex behaviors that allow exploitation and exploration activities to evolve within the organization (Smith and Tushman, 2005). The second dimension of ambidexterity is termed *synergy of ambidexterity* and captures the cross-fertilization effect between exploitation and exploration. Whereas balance of ambidexterity refers to differentiating between exploitation and exploration, synergy of ambidexterity shifts managerial attention to their mutual benefits. Synergy of ambidexterity reflects an opportunistic framing that shifts the threats of and competition between exploitation and exploration to their potential synergies (Smith and Tushman, 2005). Central to synergy of ambidexterity is the idea that exploitation and exploration might be mutually supportive based on shared resources and knowledge (Cao et al., 2009).

HYPOTHESIS

Dimensions of ambidexterity and the firm's incremental innovation capabilities

Incremental innovation capability is rooted in the firm's ability to discover new technologies through improvement to and reinforcement of the application of existing knowledge (Subramaniam and Youndt, 2005). We expect the firm's incremental innovation capability to benefit more from synergy of ambidextrous learning than balance of ambidextrous learning. Katila and Ahuja (2002) provide theoretical and empirical support for this point. Departing from the premise that exploitation (depth) enhances innovation effectiveness, and exploration (scope) enriches innovation possibilities, these authors argue that exploitation and exploration are mutually beneficial. Exploitation facilitates assimilation and the further development of new knowledge generated through the process of exploration because of absorptive capacity, and exploration increase the likelihood of creating new and unique recombinations of heterogeneous knowledge. In sum, the interaction between exploitation and exploration increases the efficiency and effectiveness of knowledge creation in the firm, which increases the likelihood of technological discoveries and development of incremental innovation.

However, balance of ambidexterity implies that the weights of the two learning modes are more or less equal and not that exploration and exploitation are synergistic. We posit that balance of ambidexterity reflects the dominance of a certain logic within the firm (Prahalad and Bettis, 1986; Bettis and Prahalad, 1995). A dominant logic is defined as "a mindset or a world view or conceptualization of the business and the administrative tools to accomplish goals and make decisions in that business" (Prahalad and Bettis, 1986: 491), and a dominant logic "is stored as a shared cognitive map (or set of schemas) among the dominant coalition. It is expressed as a learned, problem-solving behavior" (Prahalad and Bettis, 1986: 492). The dominant logic among the dominant coalition of organizational members in the firm will determine the firm's inclination towards explorative or exploitative learning modes. In a complex world, a dominant logic provides the heuristics for problem-solving, but has the disadvantage that it can lock the firm into a particular problem-solving direction. If the opportunities or the environment change so that the course dictated by the dominant logic becomes "out of step", then this can be problematic (Bettis and Prahalad, 1995). In some firms, dominant coalitions may be less strong and dominant logics less powerful resulting in balanced ambidexterity. Balance of ambidexterity allows managers to avoid cognitive commitment to and reliance on the prior ways of solving problems. Thus, lack of balanced ambidexterity will lead to incremental innovation capabilities. In sum:

> H1: The synergy from ambidextrous learning contributes more to the firm's incremental innovation capability than does the balance of ambidextrous learning

Ambidextrous learning dimensions and radical firm innovation capabilities

Incremental innovation capability is built on the firm's existing knowledge; radical innovation capability depends on the firm's ability to transform its existing knowledge and disrupt the dominant technological trajectory (Subramaniam and Youndt, 2005). We posit that the firm's radical innovation capability is driven more by balance than by synergy of ambidextrous learning based on the premise that radical innovation depends on the firm's ability to break from a certain dominant logic. A strong dominant logic can retard development of radical innovations that challenge existing schema (Prahalad and Bettis, 1986). The dominant logic works as a selection mechanism that filters out ideas and behaviors that are not congruent with existing beliefs. Innovation based on the dominant logic exhibits path-dependent features such as are found in typesetting (Tripsas, 1997), and disk drive industries (Christensen, 1997). We have explained that balance of ambidextrous learning reflects the firm's dominant logic: better balance means that neither exploitation nor exploration is dominant and the chances of the firm producing radical innovation are increased.

In contrast, synergy of ambidexterity is not expected to have a positive influence on radical innovation capabilities because radical innovation is an uncertain activity (Dosi, 1988). This means that its origins are difficult to predict and may emerge as the result of large-scale exploratory R&D activities or be arise unexpectedly out of relatively routine search activities. Therefore there is little synergy between explorative and exploitative learning in the case of radical innovations. In sum:

H2: Balance of ambidextrous learning benefits the firm's radical innovation capability more than synergy of ambidextrous learning

Effect of high levels of both dimensions on the firm's innovation capabilities

We propose that the effects of the two dimensions of ambidexterity combined will be mutually beneficial and will have positive interactive effects on the firm's innovation capabilities. In relation to incremental innovation capability, the positive effect of synergy of ambidexterity on the firm's incremental innovation capability will be stronger when ambidexterity is well balanced. Cao et al. (2009) posits that a poor balance of ambidexterity can result in limited absorptive capacity (significantly lower level of exploitation than exploration), less novel knowledge (significantly lower level of exploration than exploitation). In both cases, the likelihood of new technological discoveries is reduced. In contrast, when there is well balanced ambidextrous learning, the pool of complementary knowledge expands and the newly acquired knowledge can be fully utilized, thereby increasing the possibility of new technological discoveries.

In relation to radical innovation capability, the positive effect of balance of ambidexterity on radical innovation will be stronger with high levels of synergy of ambidexterity. The implication of high levels of synergy of ambidexterity is that the firm can leverage organizational knowledge to benefit exploitation and exploration. The benefits from a departure from the dominant logic will be applied to exploitation and exploration activities, and will promote radical innovation. In contrast, when synergy of ambidexterity is low and balance of ambidexterity is high, the focus will be on neither exploitation nor exploration (He and Wong, 2004); levels of innovation are reduced and there are low levels of organizational learning. Thus:

H3a: The interaction between the synergy and the balance of ambidextrous learning has a positive effect on the firm's incremental innovation capability

H3b: The interaction between the synergy and the balance of ambidextrous learning has a positive effect on radical innovation capability of a firm

RESEARCH METHODS

Sample and Data Collection

To test our propositions, we collected data from high technology firms in China. The Chinese market environment is changing rapidly and new products from incremental and radical innovation are being introduced to the market at an unprecedented pace. Meanwhile, the high degree of uncertainty in the task environment means there is substantial variability in Chinese high technology firms' degree of engagement in exploitation and exploration, which is producing wide variation in levels of ambidexterity (Cao et al., 2009).

The sample includes 568 firms selected randomly from a consulting firm's directory of 2500 high technology firms. We followed the traditional double-translation method to develop our research instrument. We pre-tested the instrument with 17 managers to ensure face validity of the constructs and clarity of the survey questions. The data were collected on site and the instrument was delivered to informants personally by a trained interviewer, who collected them after completion. To ensure the integrity of the response data, after the completed questionnaires were collected, each informant was contacted by phone to confirm that he/she had completed the questionnaire.

Our data collection strategy followed the recommendations in Podsakoff et al. (2003) to reduce common method variance. Primary data on different constructs were collected from different informants. The data for all the variables except the dependent variables were provided by the first respondents; these respondents were predominantly marketing managers (97%) and chief executive officers (CEOs) (3%). They had a mean industry experience of 11.22 years and a mean knowledge level of 6.2 (1 "not-at-all-knowledgeable", 7 "extremely-knowledgeable"). Our first respondent nominated a second knowledgeable informant to provide data on the dependent variable. The informants were: CEOs (45%), business development managers (35%), marketing managers (4%), and R&D managers (16%). These informants had a mean industry experience of 8.99 years and a mean knowledge level of 5.1.

The final sample consists of 204 firms (408 questionnaires) and a response rate of 35.9%, which compares well with response rates reported for similar surveys (e.g., De Luca and Atuahene-Gima, 2007; Zhou et al., 2008). Since we conducted on-site data collection, testing response bias by comparing early and late respondents was not appropriate. We compared a sample of 150 participating firms with a sample of non-participating firms for which we had data on R&D expenses and the number of employees. Comparing the mean of R&D investments and number of employees shows no significant differences between the two groups.

Common Method Bias

Our research design involves cross-sectional data, which tend to be vulnerable to common method bias. We alleviated potential concerns first by using different sources for the independent and dependent variables and second by examining a single-factor model in which all items were loaded onto one factor to check for presence of common method bias (Podsakoff et al., 2003). The single factor model shows a poor fit (comparative fit index CFI=.344, root mean squared error of approximation RMSEA=.146), suggesting that common method bias is unlikely to be a major concern. Finally, we tested for several interaction effects that could not be explained by common method bias because the informants were unlikely to guess the complex relationships involved (Aiken and West, 1991).

Measures

Dependent variables. Following Subramaniam and Youndt (2005), we capture *incremental innovation capability* by asking managers to assess their firms' capability to reinforce and extend their current expertise and product lines in the previous three years. Firms' *radical innovation capability* is captured by responses to the question asking managers to assess their firms' capability to generate innovation that rendered current product/service lines obsolete in the previous three years. Our design for a three-year time frame is supported by two practical considerations. Firstly, Miller et al. (1997) suggest restricting the recall time frame to three years or less to minimize the burden on respondents related to recalling data. Secondly, He and Wong

(2004) argue that a three-year period is appropriate for studying innovation in dynamic Asian economies where most firms carry out innovation projects with short project duration and payback periods.

Independent variables. As already argued, ambidexterity is seen as an integrative exploration and exploitation construct. In line with the literature we measure ambidexterity based on the measures of its underlying exploration and exploitation dimensions. To measure *exploitation*, we followed Zahra et al. (2000) to capture the extent to which learning activities in the previous three years were focused on the acquisition of information in the neighborhood of the firm's market and product knowledge base, for the purpose of improving productivity and efficiency. To measure *exploration*, we used the five item list due to Zahra et al. (2000), which asked respondents to indicate the extent to which the firm had learned skills that were unrelated to its current market and product experience and knowledge, for the purposes of experimentation in the previous three years. Using a 7 point scale, we found that the average firm conducts 4.87 exploitation and 4.69 exploration activities, providing further evidence of the ambidextrous orientation of Chinese high technology firms (see also, Cao et al., 2009, for similar findings).

Recall that *synergy of ambidexterity* is defined as the interaction between exploration and exploitation. We measured it as the product of exploitation and exploration. As defined earlier, *balance of ambidexterity* refers to the relative extents of exploration and exploitation. We measured it as the absolute difference between exploration and exploitation (He and Wong, 2004; Cao et al., 2009). To facilitate interpretation, we follow Cao et al (2009) and reverse this measure by subtracting the difference score from 7 such that a higher value indicates a better balance between exploration and exploitation.

Control variables. In addition to the main explanatory variables, innovation capability may be affected by several other firm-specific and environmental factors. At firm level, we control for *organizational slack, inter-functional coordination, intelligence failure reward system, willingness to cannibalize, firm size,* and *R&D intensity*, all of which could affect firm's innovation activities. The measure of organizational slack is borrowed from De Luca and Atuahene-Gima (2007) and reflects the availability of excess resources to fund new initiatives at short notice. Inter-functional coordination is adopted from Li and Calantone (1998) and Zahra and Nielsen (2002) and captures the extent of tight links among functions. Intelligence failure reflects concern for immediate success or failure of creative and learning-oriented activities. We use measure from Joshi and Sharma (2004) to measure intelligence failure reward system, which captures the firm's incentive to learn from mistakes. Willingness to cannibalize is measured by items adapted from Chandy and Tellis (1998), and firm performance is the firm's performance relative to that of its main competitor in six areas including profit growth and return on assets. Firm size is the logarithm of the number of full time employees. R&D intensity is the percentage of R&D to sales in a particular year. Two dummy variables are included to indicate *ownership* and *industry*. Ownership takes the value 1 if a firm is state-owned, and zero otherwise. Finally, to capture environmental dynamics that might affect how firms perceive and respond to environmental events, we control for *technology, customer,* borrowed from Jaworski and Kohli (1993), and *competitor uncertainties*, taken from Atuahene-Gima and Li (2002).

Validation of Measures

We refined the measurements using STATA 12. First, we ran an exploratory factor analysis for each set of focal constructs, which resulted in the expected factor solutions. Second, we submitted all the items for confirmatory factor analysis to assess the validity of the latent constructs. To ensure acceptable parameter estimate-to-observation ratios, we grouped measures of theoretically related constructs and run two sub-models. This approach is well established in the literature (e.g., Moorman and Miner, 1997; Li and Atuahene-Gima, 2001). The first CFA groups items measuring exploration, exploitation, incremental innovation capability, and radical innovation capability. The second CFA analyzes organizational slack, inter-functional coordination, willingness to cannibalize, technology uncertainty, customer uncertainty and competitor uncertainty measures.

The fit indices presented in the Appendix indicate that in both models the data fit is good. All item standardized loadings for each construct are significant (p=.000) and strong (.58 - .89) with no major cross-loadings emerging, which supports the unidimensionality of the constructs. The R-squared value (.34 to .79) is well above the usual threshold of .20 (Hair et al., 1995), providing support for linearity. To assess convergent validity, we obtained the Cronbach's Alpha for each set of constructs (.73 - .87), which were above the .70 threshold for the test of reliability. We calculated composite reliability using the procedures in Fornell and Larcker (1981) (.76 - .88), and calculated average variance extracted (AVE) using the procedures in Anderson and Gerbing (1982) (.51 - .71). Comparing composite reliability with the recommended threshold of .70, and AVE with the recommended threshold of .50, we can conclude that the models pass the tests and demonstrate good convergent validities for the constructs. Finally, we test for discriminant validity using the AVE method recommended by Fornell and Larcker (1981): for each construct the square root of its AVE is greater than the highest correlation with any other construct. All constructs pass the discriminant validity test.

[Insert Table 1 about here]

ANALYSIS AND RESULTS

Table 2 presents the descriptive statistics and bivariate correlation matrix. Note first that no correlation is above the 0.65 threshold, suggesting that our estimations are unlikely to be affected by multicollinearity problems, and second that Chinese firms compete on both incremental (4.91 on a 7-scale) and radical innovation (3.74 on a 7-scale), confirming the appropriateness of our empirical context. Also, the incremental and radical innovation capabilities are not correlated (.05), supporting the orthogonal conceptualization of these two constructs.

[Insert Table 2 about here]

We conducted ordinary least squares regression analysis to test our hypotheses. We applied a Huber-White sandwich estimator, which corrects for heteroskedasticity and provides robust standard errors, and is thus considered to be a more conservative estimation procedure (Greene, 2000). The analysis is performed as follows. In step 1, we include all the control variables, including exploitation and exploration, in the baseline models (Model 1 and Model 7). In step 2, we add synergy of ambidexterity to the baseline models (Model 2 and Model 8). In step 3, we add balance of ambidexterity to the models attained in step 2 (Model 3 and Model 9). Model 4 and Model 10 are the full models including synergy and balance of ambidexterity. We explore the interaction effect between synergy and balance in steps 4 and 5. Since the interaction between synergy and balance involves a three-way interaction among exploitation, exploration, and balance, in step 4 we add two two-way interaction terms, exploitation×balance and exploration×balance (the interaction between exploitation and exploration is captured by synergy of ambidexterity). Model 5 and Model 11 present the results from step 4. In step 5, we add the interaction term between synergy and balance to the models obtained in step 4 (Model 6 and Model 12). We mean-centered the independent variables prior to the creation of the interaction terms to reduce multicollinearity (Aiken and West, 1991). Also, we calculated variance inflation factors (VIFs) for each of the regression equations to assess the threat of multicollinearity. The maximum VIF within the models is 4.78, which is well below the rule-of-thumb cutoff of 10 (Cohen et al., 2003).

Tables 3 and 4 present the results of the regression analysis for the hypotheses. Model 1 and Model 7 are the baseline models with control variables only. The two learning variables, exploration ($p<0.10$) and exploration (n.s.) both have positive signs for affecting incremental innovation capabilities, confirming our proposition that both exploration and exploitation may be sources of incremental innovation. For radical innovation capability, both exploration and exploitation are negative and insignificant, suggesting that either exploration or exploitation on their own do not have an impact on radical innovation capability. Again, this result supports our argument that technological discoveries generated through exploitation or exploration are not drivers of radical innovation capability.

Models 2–4 investigate hypothesis 1 that synergy of ambidexterity benefits a firm's incremental innovation capability more than balance of ambidexterity. Model 2 and Model 3 show that synergy of ambidexterity has a positive effect on incremental innovation capability while balance of ambidexterity has a negative effect on incremental innovation capability. We focus on Model 4 which includes both synergy and balance of ambidexterity. First, adding synergy and balance of ambidexterity to the model increases the adjusted R^2 from 19.9% to 23.4%. Second, synergy of ambidexterity has a positive effect on incremental innovation capability ($p<0.10$) while balance of ambidexterity has a negative effect ($p<0.05$). As predicted by H1, the development of incremental innovation benefits more from synergy of ambidexterity than from balance of ambidexterity.

Models 8–10 investigates hypothesis 2 that the balance of ambidexterity benefits a firm's radical innovation capability more than the synergy of ambidexterity. Model 8 shows a positive but insignificant effect of synergy of ambidexterity on radical innovation capability while model 9 shows a positive effect (weak at $p<0.15$) of balance of ambidexterity on radical innovation. The full model (10) shows consistent results. Adding synergy and balance of ambidexterity to the model increases the adjusted R^2 from 24% to 25%. Both synergy and balance of ambidexterity positively affect radical innovation. The size effect of balance of ambidexterity is 19 times greater than that of synergy of ambidexterity, supporting H2 that the development of radical innovation benefits more from balance of ambidexterity than from synergy of ambidexterity. However, the significance level of balance of ambidexterity is weak, despite the size of its effect.

The interaction between synergy and balance of ambidexterity is tested in Model 6 and Model 12 after accounting for all the lower-order effects. For incremental innovation capability, the interaction term synergy×balance increases the explanatory power of the model by 5.4%. As predicted by H3a, the interaction between synergy and balance positively influences the incremental innovation capability ($p<0.01$). Note also that the size of the effect of the interaction between synergy and balance is moderately high (coef.=0.347, second to exploitation), suggesting practical significance of the interaction term. For radical innovation capability, the interaction term synergy×balance increases the explanatory power of the model by 12.4%. In line with H3b, the interaction term is positive and significant ($p<0.01$), suggesting that the interaction between synergy and balance of ambidexterity has a positive effect on the firm's radical innovation capability. For effect size, we note that the interaction between synergy and balance has a very strong effect on radical innovation capability (coef.=0.752, the highest), providing strong evidence of practical significance of the interaction term. In sum, Model 6 and Model 12 provide strong support for H3a and H3b respectively.

Robustness checks

Endogeneity. Ambidextrous learning is a choice variable since firms decide whether and how to engage in ambidextrous learning. It introduces into our models concerns about endogeneity. Specifically, we could argue that the correlation between ambidexterity and innovation capabilities might reflect the firm's innovation strategy and the learning behavior chosen to support that strategy. We proxy for innovation strategy to test for potential endogeneity using R&D intensity strategy, based on the argument that the firm's innovation strategy will dictate the level of engagement in R&D so that a radical innovation strategy will be accompanied by high intensity R&D and an incremental innovation strategy will be accompanied by low R&D intensity. Applying split group analysis to high and low R&D intensity firms, our results hold for both groups.

Alternative explanations. Given the cross-sectional nature of our data, we are concerned about whether our results are driven by cross-firm heterogeneities. For example, high performance firms may be better able to bear the costs of ambidexterity and pursue certain types of innovation, and large sized firms may be more suited to ambidexterity and innovation. We conduct a series of split group analyses to rule out these possibilities. Two split-group analyses based on performance and size produce results that are consistent, suggesting that the results are not driven by differences in firm performance and size.

CONCLUSION AND DISCUSSION

Ambidexterity is seen as an emerging research paradigm in organizational theory (Raisch and Birkinshaw, 2008) and is a topic of debate on significant organizational phenomena (Gibson and

Birkinshaw, 2004; He and Wong, 2004; Lubatkin, 2006; Cao et al., 2009; Jansen et al., 2009). As noted above, the importance of ambidexterity for practice is part of the many prescriptions for improved firm performance and survival (Tushman and O'Reilly, 1996; Gibson and Birkinshaw, 2004; He and Wong, 2004; Cao et al., 2009). However, although innovative outcomes are at the heart of ambidexterity hypotheses, the literature on ambidexterity pays little attention to the ambidexterity–innovation link. In differentiating between the two dimensions of ambidexterity—synergy and balance-our study yields novel insights.

First, we establish theoretically and corroborate empirically that synergy of ambidexterity drives incremental innovation capability and balance of ambidexterity influences radical innovation capability. As synergy of ambidexterity increases the firm is likely to be exposed to more and better technological opportunities to produce new and refined products. Balance of ambidexterity is required to challenge existing assumptions about the development of radical innovation. These findings question the wisdom of "more is better" for organizational learning (Cohen and Levinthal, 1990; Zahra et al., 2000). High levels of ambidextrous learning may benefit the development of incremental innovation by adding discrete pieces of knowledge but in the case of radical innovation "more" learning does not help. What matters is balanced learning to break the dominant firm logic. These results have important theoretical implications. The organizational learning literature focuses mainly on types of learning (i.e., exploitation and exploration) for predicting types of innovative outcomes, without explicit consideration of how balance of learning might play a role in affecting innovative outcomes. We have established theoretically and empirically that the balance of learning is a central aspect in this context.

Second, in addition to the main effects, there is a strong interaction effect between synergy and balance of ambidexterity on both radical and incremental innovation capabilities. Despite a consensus that maintaining a balance between exploitation and exploration is critical for survival and prosperity (March, 1991), the appropriate degree of balance between exploration and exploitation is important (March, 1991; Lavie et al., 2010). Some authors suggest a skew between maintaining one at the minimum threshold and investing heavily in the other (e.g., Nerkar, 2003; Atuahene-Gima, 2005); others propose an synergistic effect while ignoring the balance (e.g., Gibson and Birkinshaw, 2004; He and Wong, 2004). Indeed, He and Wong (2004) show a negative effect of balance of ambidexterity on sales growth. However Cao et al. (2010) discuss the interaction between synergy and balance of ambidexterity in influencing firm performance. This study follows Cao et al. (2010) and suggests that a combination of synergy and balance of ambidexterity is most beneficial for innovation outcomes.

This study has important implications for the ambidexterity literature and innovation research. First, the debate on organizational ambidexterity is disconnected and complex, and would benefit from the dominant relationships between the most relevant variables being specified (Raisch and Birkinshaw, 2008). By addressing the link between ambidextrous learning and innovation, this study links organizational learning and technological innovation, the main literature streams related to organizational ambidexterity. Although some scholars have theorized about this linkage (Tushman and O'Reilly, 1996), this relationship is poorly understood from a theoretical point of view and there is little empirical evidence of it. This study contributes to the ambidexterity literature by revealing the critical relationship between ambidexterity and innovation. Second, this study raises question about how exploitation and exploration should be operationalized. There is ambiguity and inconsistency in the interpretation and operationalization of exploration and exploitation in the ambidexterity literature (Li et al., 2008). In line with March (1991), some studies investigate exploration and exploitation in terms of learning activity (e.g., He and Wong, 2004). However, some authors refer to exploration and exploitation as synonymous with "radical innovation" and "incremental innovation" (e.g., Benner and Tushman, 2003; Jansen et al., 2006; Jansen et al., 2009). Our results suggest that the differences between the two approaches are significant and important, and thus it is inappropriate to equate exploration and exploitation with radical and incremental innovation. It is hoped that future research will be more cautious about operationalization of exploitation and exploration.

Finally, our study has important implications for the innovation literature. Although theory predicts that the antecedents to incremental and radical innovation differ, the existing empirical works does not support this view. For example, Damanpour (1991) in a comprehensive meta-analytic review, concludes that the predictors of radical and incremental innovation are the same. Similarly, Cardinal (2001) suggests that the difference between radical and incremental innovation may be one of magnitude rather than direction. In line with the theory, we propose two different mechanisms for these two types of innovation, i.e., technological search along a trajectory for incremental innovation capability and breaking dominant logic for radical innovation capability. The empirical results of this study confirm our propositions, thus our study has the potential to contribute to a new framework for understanding incremental and radical innovation.

LIMITATIONS AND FUTURE WORK

This study has several limitations. First, innovation capability may be shaped by knowledge acquisition and also the existing knowledge base (Zhou and Li, 2012). Our data do not allow us to assess the existing knowledge base. Future work could try to give a more complete account of the ambidexterity-innovation relationship. Second, the cross-sectional nature of our data does not allow us to test for causality. Future research should adopt a longitudinal approach to examine the causal relationships. Third, although we use technological opportunity discovery and dominant logic to frame our hypotheses, we do not measure them directly. Future research on innovation could assess these variables directly. Finally, our measures rely on managers' judgments. Although our research design was chosen with care, we cannot completely rule out the effects of subjectivity. Objective measures could be applied to validate our propositions. Despite these limitations, we believe that this study reveals the critical relationship between ambidexterity and innovation capabilities and provides suggestions for fruitful future research on ambidexterity.

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Table 1: Confirmatory Factor Analysis of Measures

Construct and Source	Operational Measures of Construct	SFL[a]
Fit of Model 1: $\chi 2/df$ = 2.11; Root mean squared error of approximation (RMSEA)=0.063; Comparative fit index (CFI)=0.948; Tucker-Lewis index (TLI)=0.938		
Incremental innovation capability (Subramaniam and Youndt 2005) α=.87, AVE= .52, CR=.84	Compared with your major competitors, how would you rate your firm's capability to generate the following types of innovations in the last 3 years?	
	Incremental innovation	
	1. Innovations that reinforce your prevailing product/service lines	.82
	2. Innovations that reinforce your existing expertise in prevailing products/services	.83
	3. Innovations that reinforce how you currently compete	.70
	4. Innovations that build on your existing knowledge and expertise	.67
Radical innovation capability (Subramaniam and Youndt 2005) α=.87, AVE= .71, CR=.88	Radical innovation	.85
	1. Innovations that make your prevailing product/service lines obsolete	
	2. Innovations that fundamentally change your prevailing products/services	.89
	3. Innovations that make your existing expertise in prevailing products/services obsolete	.79
Product development competence exploitation (Zahra et al. 2000) α=.87, AVE= .58, CR= .87	Over the last 3 years, to what extent has your firm:	
	1. Upgraded current knowledge and skills for familiar products and technologies?	.70
	2. Invested in enhancing skills in exploiting mature technologies that improve productivity of current innovation operations?	.78
	3. Enhanced competencies in searching for solutions to customer problems that are near to existing solutions rather than completely new solutions?	.72
	4. Upgraded skills in product development processes in which the firm already possesses significant experience?	.82
	5. Strengthened our knowledge and skills for projects that improve efficiency of existing innovation activities?	.79
Product development competence exploration (Zahra et al. 2000) α=.87, AVE= .58, CR= .87	1. Acquired manufacturing technologies and skills entirely new to the firm?	.78
	2. Learned product development skills and processes (such as product design, prototyping new products, timing of new product introductions, and customizing products for local markets) entirely new to the industry?	.85
	3. Acquired entirely new managerial and organizational skills that are important for innovation (such as forecasting technological and customer trends; identifying emerging markets and technologies; coordinating and integrating R&D; marketing, manufacturing, and other functions; managing the product development process)?	.73
	4. Learned new skills in areas such as funding new technology, staffing R&D function, training and development of R&D, and engineering personnel for the first time?	.78
	5. Strengthened innovation skills in areas where it had no prior experience?	.65
Fit of Model 2: $\chi 2/df$ = 1.79; Root mean squared error of approximation (RMSEA)=0.054; Comparative fit index (CFI)=0.937; Tucker-Lewis index (TLI)=0.924		
Intelligence failure reward system (Joshi and Sharma 2004)	In this firm,	
	1. People are rewarded from investigating and learning from failed products and ideas.	.71
	2. People are frequented recognized from documenting the learning from failed projects	.77

α=.73, AVE= .51, CR= .76	3. People are not punished for failure if they performed efficiently and effective and failed regardless.	.66
Organizational slack (Luca and Atuahene-Gima 2007) α=.83, AVE= .64, CR= .84	1.This firm has uncommitted resources that can quickly be used to fund new strategic initiatives 2. We are able to obtain resources at short notice to support new strategic initiatives 3. We have substantial resources at the discretion of management for funding new strategic initiatives.	.73 .78 .88
Inter-functional coordination (Zahra and Nielson, 2002) α=.87, AVE=.65, CR=.88	In this firm 1. The activities of functional units are tightly coordinated to ensure better use our market knowledge. 2. People from marketing, R&D, and other functions play important roles in major strategic market decisions. 3. R&D and marketing and other functions regularly share market information about customers, technologies, and competitors. 4. There is a high level of cooperation and coordination among functional units in setting the goals and priorities for the organization to ensure effective response to market conditions.	 .77 .79 .85 .81
Technology uncertainty (Jaworski and Kohli 1993) α=.83, AVE=.56; CR=.84	Please indicate the extent to which each of the statements describes your firm's environment in the past 3 years. 1. It was very difficult to forecast technology developments in our industry 2. Technology environment was highly uncertain 3. Technological developments were highly unpredictable 4. Technologically, our industry was a very complex environment.	 .70 .69 .88 .73
Competitor uncertainty (Atuahene-Gima and Li 2002) α=.76, AVE=.54; CR=.77	1. Market competitive conditions are highly unpredictable 2. Competition is quite intense in this industry 3. Competitor activities tended to change quite rapidly	.61 .79 .79
Customer uncertainty [b] (Atuahene-Gima and Li, 2002) α=.74, AVE=.52; CR=.76	1. Customer product demands and preferences were highly uncertain. 2. It was difficult to predict changes in customer needs and preferences. 3. Changes in customers' needs were quite unpredictable.	.63 .70 .83

All items were measured on a seven-point scale

Table2: Descriptive statistics and correlation

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Radical Innovation Capability															
2 Incremental Innovation Capability	0.05														
3 Synergy of Ambidexterity	0.02	0.10													
4 Balance of Ambidexterity	0.14*	-0.07	0.19*												
5 Exploration	-0.13	0.37*	-0.21*	0.30*											
6 Exploitation	-0.11	0.33*	-0.22*	0.003	0.62*										
7 Failure Reward	0.36*	-0.08	-0.17*	0.22*	0.25*	0.21*									
8 Organizational Slack	0.25*	0.23*	-0.11	0.18*	0.44*	0.46*	0.41*								
9 Inter-functional Coordination	-0.23*	0.33*	0.06	0.088	0.52*	0.51*	0.13	0.30*							
10 Firm Size	0.08	0.08	0.09	-0.05	0.03	0.08	0.02	0.11	0.01						
11 R&D Intensity	0.05	-0.07	0.03	-0.08	-0.02	0.03	0.003	0.07	0.01	0.007					
12 Willingness to Cannibalize	-0.0002	-0.04	-0.25*	0.11	0.27*	0.33*	0.31*	0.14*	0.27*	-0.05	-0.06				
13 Competitor Uncertainty	-0.16*	0.24*	0.07	0.03	0.31*	0.36*	0.02	0.23*	0.43*	-0.03	0.11	0.04			
14 Technology Uncertainty	-0.02	-0.02	-0.07	-0.06	0.03	0.04	0.10	-0.06	0.22*	-0.15*	0.09	0.34*	0.34*		
15 Customer Uncertainty	0.05	0.04	0.03	0.13	0.19*	0.18*	0.31*	0.16*	0.25*	-0.004	0.06	0.33*	0.46*	0.40*	
Mean	3.74	4.91	9.56	7.42	4.69	4.87	3.28	4.32	5.04	5.89	11.47	4.45	5.19	4.69	4.69
S.D.	1.29	0.88	1.59	0.54	0.89	0.88	0.83	1.18	0.98	1,00	11.49	1.1	0.87	1.01	0.92

Table 3: Results of Regression Analysis for Incremental Innovation Capability

	(1)	(2)	(3)	(4)	(5)	(6)
Failure Reward	-0.227**	-0.213**	-0.208**	-0.178**	-0.206**	-0.178**
	(0.0900)	(0.0910)	(0.0898)	(0.0871)	(0.0855)	(0.0838)
Organizational Slack	0.0919	0.0891	0.101	0.101	0.118*	0.143**
	(0.0722)	(0.0728)	(0.0727)	(0.0726)	(0.0711)	(0.0709)
Functional Coordination	0.143+	0.111	0.141	0.0915	0.0785	0.0625
	(0.0953)	(0.0893)	(0.0983)	(0.0897)	(0.0911)	(0.0847)
Firm Size	0.0576	0.0442	0.0458	0.0195	0.0203	-0.0174
	(0.0651)	(0.0612)	(0.0671)	(0.0603)	(0.0605)	(0.0552)
R&D Intensity	-0.00830	-0.00850	-0.00882+	-0.00936+	-0.00944+	-0.01000+
	(0.00597)	(0.00602)	(0.00591)	(0.00595)	(0.00629)	(0.00657)
Willingness To Cannibalize	-0.148*	-0.128+	-0.137*	-0.0996	-0.0924	-0.114+
	(0.0771)	(0.0816)	(0.0754)	(0.0772)	(0.0745)	(0.0749)
Competitor Uncertainty	0.0303	0.0263	0.0356	0.0316	0.0203	0.0625
	(0.0977)	(0.0986)	(0.0969)	(0.0974)	(0.0966)	(0.0882)
Technology Uncertainty	0.0203	0.0308	0.00464	0.0146	0.00545	0.0306
	(0.0622)	(0.0619)	(0.0625)	(0.0630)	(0.0630)	(0.0590)
Customer Uncertainty	-0.000933	-0.0171	0.00945	-0.0117	-0.0129	-0.0247
	(0.0925)	(0.0912)	(0.0897)	(0.0870)	(0.0859)	(0.0827)
Ownership Dummy	Y	Y	Y	Y	Y	Y
Industry Dummy	Y	Y	Y	Y	Y	Y
Exploration	0.223*	0.247**	0.281**	0.344***	0.189+	0.0979
	(0.115)	(0.112)	(0.124)	(0.114)	(0.129)	(0.127)
Exploitation	0.137	0.161+	0.0872	0.104	0.309**	0.354***
	(0.115)	(0.111)	(0.110)	(0.106)	(0.137)	(0.133)
Synergy of Ambidexterity		0.0815		0.129*	0.138**	0.00909
		(0.0695)		(0.0674)	(0.0618)	(0.0743)
Balance of Ambidexterity			-0.233*	-0.333**	-0.394***	-0.204+
			(0.138)	(0.133)	(0.133)	(0.128)
Exploration×Balance					-0.353**	-0.275**
					(0.168)	(0.121)
Exploitation×Balance					0.179	0.256**
					(0.143)	(0.120)
Synergy×Balance						0.347***
						(0.107)
_cons	3.195***	3.085***	4.579***	5.002***	5.352***	4.261***
	(0.613)	(0.643)	(1.018)	(1.007)	(0.972)	(0.861)
N	204	204	204	204	204	204
adj. R^2	0.199	0.206	0.212	0.234	0.254	0.308

Standard errors in parentheses; + $p < 0.15$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; two-tailed tests

Table 4: Results of Regression Analysis for Radical Innovation Capability

	(7)	(8)	(9)	(10)	(11)	(12)
Failure Reward	0.475***	0.486***	0.447***	0.451***	0.430***	0.490***
	(0.134)	(0.136)	(0.133)	(0.135)	(0.134)	(0.117)
Organizational Slack	0.339***	0.336***	0.325***	0.325***	0.340***	0.395***
	(0.0947)	(0.0960)	(0.0949)	(0.0955)	(0.0938)	(0.0865)
Functional Coordination	-0.276**	-0.302**	-0.275**	-0.281**	-0.284**	-0.318***
	(0.138)	(0.138)	(0.135)	(0.138)	(0.136)	(0.115)
Firm Size	0.0929	0.0822	0.111	0.107	0.115+	0.0332
	(0.0813)	(0.0773)	(0.0796)	(0.0765)	(0.0792)	(0.0750)
R&D Intensity	0.00213	0.00197	0.00290	0.00282	0.00244	0.00122
	(0.00762)	(0.00770)	(0.00738)	(0.00747)	(0.00757)	(0.00802)
Willingness To Cannibalize	-0.0764	-0.0601	-0.0936	-0.0885	-0.0803	-0.127
	(0.111)	(0.120)	(0.114)	(0.123)	(0.120)	(0.108)
Competitor Uncertainty	-0.200	-0.203	-0.208	-0.209	-0.221+	-0.130
	(0.155)	(0.156)	(0.154)	(0.154)	(0.152)	(0.139)
Technology Uncertainty	0.0873	0.0957	0.111	0.112	0.104	0.158*
	(0.104)	(0.102)	(0.101)	(0.100)	(0.102)	(0.0915)
Customer Uncertainty	0.0695	0.0566	0.0540	0.0511	0.0514	0.0258
	(0.114)	(0.114)	(0.115)	(0.116)	(0.115)	(0.104)
Industry Dummy	0.0215	0.0472	-0.00313	0.00472	-0.0436	-0.00820
Ownership Dummy	(0.242)	(0.243)	(0.248)	(0.247)	(0.252)	(0.233)
Exploration	-0.205	-0.186	-0.292+	-0.283+	-0.294+	-0.491***
	(0.167)	(0.162)	(0.181)	(0.174)	(0.182)	(0.161)
Exploitation	-0.0960	-0.0766	-0.0215	-0.0192	0.0235	0.122
	(0.166)	(0.164)	(0.168)	(0.170)	(0.209)	(0.186)
Synergy of Ambidexterity		0.0654		0.0175	0.0124	-0.266***
		(0.118)		(0.124)	(0.118)	(0.0950)
Balance of Ambidexterity			0.348+	0.335+	0.266	0.677***
			(0.221)	(0.217)	(0.220)	(0.177)
Exploration×Balance					-0.235	-0.0639
					(0.305)	(0.183)
Exploitation×Balance					-0.0731	0.0933
					(0.265)	(0.179)
Synergy×Balance						0.752***
						(0.122)
_cons	3.672***	3.583***	1.602	1.660	2.048	-0.316
	(0.950)	(0.987)	(1.748)	(1.715)	(1.672)	(1.269)
N	204	204	204	204	204	204
adj. R^2	0.240	0.239	0.254	0.250	0.255	0.379

Standard errors in parentheses; + $p < 0.15$, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; two-tailed tests