Ambidextrous organizations and firm performance: the role of marketing function implementation

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Managers continue to struggle with implementing a firm's approach to its market. Many potential pitfalls exist, particularly at the functional level. For firms that pursue an ambidextrous approach, simultaneously exploiting existing markets while exploring new opportunities, implementation is perhaps even more critical. Interestingly, the implications of functional implementation on multiple dimensions of financial and non-financial performance in the context of an ambidextrous approach are unknown. In light of these challenges, we examine the mediating effect of the implementation of the marketing function strategy in the ambidextrous organization–performance relationship. We find that the implementation of marketing strategy fully mediates the ambidextrous organization–performance relationship on important dimensions of firm performance, including key outcomes such as profits and customer satisfaction. Our results demonstrate that the benefits of developing an ambidextrous organization that can balance both exploitation and exploration are enhanced when the role of function implementation is incorporated into theory and research designs.

Keywords: ambidextrous; exploitation; exploration; implementation; marketing

Firms that effectively balance the tension between efficiently managing today's markets while simultaneously exploring future markets are thought to be 'ambidextrous' (Gibson & Birkinshaw, 2004; Tushman & O'Reilly, 1996, 1997). Exploiting the benefits of efficiencies in existing operations allows firms to extract greater benefits from existing markets (Kyriakopoulos & Moorman, 2004). Alternatively, exploration is focused on increasing the firm's ability to adapt quickly and appropriately to market changes through radical change, experimentation and risk (Katila & Ahuja, 2002).[1] Arguments for the ambidextrous approach are well established (Benner & Tushman, 2002; Gibson & Birkinshaw, 2004; Levinthal & March, 1993; Raisch & Birkinshaw, 2008). When used effectively, an ambidextrous approach limits organizational inertia and management myopia (Levinthal & March, 1993). It also promotes a positive self-reinforcing cycle that benefits both exploitation and exploration (e.g. Moorman & Slotegraaf, 1999).

More recently, the focus is on not *if* firms can balance exploitation and exploration but on the methods, processes or activities that help firms achieve and sustain an ambidextrous approach (e.g. Atuahene-Gima, 2005; Danneels, 2002; Kyriakopoulos & Moorman, 2004). It is the challenge of making ambidexterity work that is proving vexing for

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managers (e.g. Danneels, 2002; He & Wong, 2004; Levinthal & March, 1993). The differing processes and capabilities required of exploitation and exploration can readily overwhelm many firms (e.g. Benner & Tushman, 2002; Katila & Ahuja, 2002). Interestingly, discussions of the role of functional implementation in the context of the ambidextrous approach have been largely absent (Atuahene-Gima, 2005; Gupta, Smith, & Shalley, 2006; Raisch & Birkinshaw, 2008). This is surprising given the inherent challenges of executing ambidextrous strategies among the various levels of the firm (Jansen, George, van den Bosch, & Volberda, 2008; March, 1991). Research has focused on related but narrow issues such as problem solving (Katila & Ahuja, 2002) and team project strategies (Kyriakopoulos & Moorman, 2004) for new product outcomes but has ignored the broader issue of functional implementation. We begin to address this issue by examining whether the functional implementation of an ambidextrous approach mediates the ambidextrous strategy–performance relationship.

We also turn our attention to dimensions of performance impacted by an ambidextrous approach. Ambidextrous firms are thought to have superior performance (e.g. Gupta et al., 2006; Tushman & O'Reilly, 1996). Yet, an analysis of multiple organizational-level performance outcomes in the same context is limited in the ambidextrous literature, particularly with respect to marketing outcomes such as customer satisfaction, creating the potential for managerial bias in decision making (e.g. Gibson & Birkinshaw, 2004; Raisch & Birkinshaw, 2008). The few studies that examine links between the ambidextrous approach and firm performance have focused on historical financial measures and associated ratios (e.g. revenue, sales growth, or return on assets). We include multiple measures of performance. This approach also allows us to explore within the context of our mediating model the ongoing debate in strategy related to tradeoffs in the selection of financial and non-financial performance indicators.

The remainder of the paper is organized as follows. First, we discuss how dimensions of performance are affected by an ambidextrous approach, and argue that its implementation at the functional level mediates the effects of organizational ambidexterity on these performance dimensions. We selected the marketing function as marketing is a downstream value chain activity focusing on customers and thus more temporally proximate to short-term performance outcomes than, say research and development. This approach makes sense given our limited knowledge of the mediating role of functional implementation for the ambidextrous strategy–performance relationship. We then conduct empirical tests of the proposed relationships using data from a survey of senior marketing managers in publicly traded US firms, complemented by objective financial, company and industry data. We use a cross-industry setting to shed a different light on these relationships given the extensive emphasis on single industry contexts in past research on ambidexterity (e.g. Auh & Menguc, 2005; Danneels, 2002; He & Wong, 2004; Jansen et al., 2008; Katila & Ahuja, 2002; Kyriakopoulos & Moorman, 2004). Finally, we discuss the results, implications, and suggestions for future research.

Theory and hypotheses

Ambidextrous strategy and performance

Our theoretical conceptualization is that exploitation and exploration are contextual, complementary and orthogonal constructs whereby firms have the capacity to simultaneously demonstrate both approaches, thus achieving ambidexterity, rather than the perspective that the two are conflicting ends of a continuum (Gibson & Birkinshaw, 2004; Jansen et al., 2008; Katila & Ahuja, 2002; Moorman & Slotegraaf, 1999). An effective management of an

ambidextrous approach balances exploitation and exploration, uses the benefits derived from resource investments in each (e.g. economic, information, knowledge) to complement and support the other, and recognizes the linkages and interdependencies across levels of the organization (e.g. Siggelkow & Rivkin, 2006). For example, returns generated by exploiting current products and services can be allocated to resource investments that explore new product development. New products and services then generate returns that sustain investments in day-to-day operations. Therefore, firms that pursue a high degree of both exploitation and exploration should ultimately realize greater benefits than competitors who overemphasize one approach.

An over-emphasis on exploitation can stifle a firm's ability to alter its course in a changing market (Cyert & March, 1992). Core capabilities that contribute to success in exploitation can quickly turn into core rigidities (Leonard-Barton, 1992), and initially favorable strategic choices can subsequently become inferior processes (Herriott, Levinthal, & March, 1985). At the same time, a heavy emphasis on exploration can lead firms to take too many risks and innovate without extracting profits (Levinthal & March, 1993). Over-emphasis in either strategic direction results from the firm's past successes in using a particular approach. As firms successfully improve their capabilities and efficiencies in – for example – exploitation, the desire to change focus diminishes (Levitt & March, 1988).

The empirical work examining linkages between an ambidextrous approach and firm performance is limited (see Raisch & Birkinshaw, 2008 for a review). Most research has focused on revenue and revenue-oriented outcomes, finding positive relationships (e.g. Gibson & Birkinshaw, 2004; He & Wong, 2004). For example, in a small number of firms at the business unit level, Gibson and Birkinshaw (2004) found that an ambidextrous approach enhances performance, using subjective measures of organizational effectiveness as a proxy for performance. Similarly, in a study of ambidextrous innovative processes in Asian manufacturing firms, He and Wong (2004) found that firms that successfully pursue both incremental and radical innovations enjoy greater revenue growth rates than other firms. Interestingly, their study showed that an overemphasis on either approach negatively affects revenue growth.

Although increased revenue generation provides some comfort that an ambidextrous approach is working, it is a potential success trap. A sole focus on revenue or revenue-oriented performance ratios impacted may be misleading in that it neither reflects the overall profitability of the firm nor its on-going business health (e.g. as reflected by customer satisfaction or new product introductions). For example, an over-emphasis on sales revenue goals might be detrimental to scale efficiencies, negatively affecting profits needed for investments to maintain the firm's ambidexterity. It is important, given the focus of past research to use a dashboard approach with multiple financial and non-financial firm performance measures in the same context. Based on manager interviews and past literature, we selected four self-report, subjective performance indicators that represent a spectrum of outcomes relevant for studying the ambidextrous strategy–performance relationship as it relates to the mediating role of marketing functional strategy. We develop hypotheses for each firm performance indicator.

Ambidexterity and revenue

The focus on refinement and efficiency gained from exploitation helps the firm to deliver its products and services in a manner that satisfies its current customer base. This increases the potential for repeat purchases as well as positive word-of-mouth, which can generate

additional revenue (e.g. Oliver, 1997). Simultaneously, if resources are allocated to experimental or innovative activities that help the firm to capture the next wave of customers, future revenue opportunities also exist. This dual focus on current and future customers helps the firm to continuously find new ways to meet customers' needs (Kyriakopoulos & Moorman, 2004). Firms that overemphasize exploitation may increase revenue from the existing customer base, but miss new revenue opportunities in emerging segments. The opposite can be said for exploration-focused firms that capture revenues as early market movers, but cannot exploit their benefits as well as fast follower competitors that enter with better scale capabilities.

Hypothesis 1a: There is a positive relationship between the extent to which the firm utilizes an ambidextrous firm strategy and its revenue.

Ambidexterity and profits

An ambidextrous strategy can also positively impact profits. Exploitation improves the firm's current routines (March, 1991) and capabilities (Leonard-Barton, 1992), enabling the delivery of products and services at lower costs (making them more profitable even in the short term), and the release of resources for the firm's use elsewhere. These resources can then be used for investments in innovation, in experimentation with new methodologies, or in risky endeavors such as alliances or acquisitions (i.e. exploration), helping to renew the firm's knowledge and ward off inertia. Different from exploitation-focused firms, ambidextrous firms proactively use extra resources to explore opportunities that not only generate additional revenues but also allow for scale or scope efficiencies. Although some negative impact may arise in the short term from using resources gained from exploitation for exploration (Hutt, Reingen, & Ronchetto, 1988), as the ambidextrous firm puts its learning to work, profitability will increase as exploitation and exploration become a self-reinforcing cycle. Firms that are highly focused on exploitation may be more profitable in the short term, but their failure to explore hurts them in the long run.

Hypothesis 1b: There is a positive relationship between the extent to which the firm utilizes an ambidextrous firm strategy and its profitability.

Ambidexterity and customer satisfaction

Customer satisfaction is a measure of a customer's relationship with the firm (Gruca & Rego, 2005). At the heart of firm strategy is the desire to develop and to maintain close relationships with customers (e.g. Prahalad & Ramaswamy, 2000). Typically, firms attempt to create long-term relationships that are beneficial for both parties (Garbarino & Johnson, 1999). An effective ambidextrous strategy, with a high degree of both exploitation and exploration, should meet the wants and needs of customers in the short and long term, thus increasing overall customer satisfaction. For example, extensive customer service capabilities allow firms to be close to the customer and to sense potential shifts in preferences. Different from exploitation- or exploration-focused firms, the ambidextrous firm has the resources and the knowledge to effectively translate what they learn from customers into value for both parties in the relationship. An imbalanced firm misses potential opportunities to increase customer satisfaction because it either lacks the resources (exploration-focused) or the knowledge (exploitation-focused) to take advantage of shifting customer preferences and competitor challenges.

Hypothesis 1c: There is a positive relationship between the extent to which the firm utilizes an ambidextrous firm strategy and its customer satisfaction level.

Ambidexterity and new product introductions

Although new product introductions are commonly perceived as an outcome of exploration, many new products involve extensions and upgrades of current products (Griffin, 1997). Therefore, the effects of both exploitation and exploration are seen in new product introductions (Kyriakopoulos & Moorman, 2004). New products allow firms to change and renew themselves in the face of changing environmental conditions (Schoonhoven, Eisenhardt, & Lyman, 1990). Firms that innovate well can win market share from competitors that are content to focus on attaining greater efficiencies from existing operations (Shanker, Carpenter, & Krishnamurthi, 1998). Conversely, dominant firms can maintain their market positions through ongoing investments in innovation (Sorescu, Chandy, & Prabhu, 2003). The ambidextrous approach encourages managers and employees to challenge outdated practices, and rewards those who take calculated risks (Gibson & Birkinshaw, 2004). This environment is conducive to knowledge creation and innovation that drives not only new products but also value-added improvements on existing products. Furthermore, ambidextrous firms have resources to invest in new product development as well as an efficient mindset to move innovations to market. Thus, firms using an ambidextrous strategy introduce more new products than those that over-emphasize exploitation or exploration (Katila & Ahuja, 2002).

Hypothesis 1d: There is a positive relationship between the extent to which the firm utilizes an ambidextrous firm strategy and new product introduction volume.

Mediating effect of functional implementation

It is one thing to formulate an approach and it is quite another to successfully implement it (e.g. Thorpe & Morgan, 2007; Wong & Merrilees, 2007). As a result of this inherent uncertainty flowing from strategy to implementation, a focus falls on the functional units (e.g. Noble & Mokwa, 1999; Nutt, 1987). These groups typically carry out activities that, among other things, create efficiency advantages, promote cross-functional coordination and knowledge sharing, expand customer relationships and sense market insights that lead to new products. Without a strong execution orientation at the functional level, the firm's translation of its strategy into effective action can be lost, severely hindering its chances of market success (Day, 1994; Nutt, 1987). Miscalculations in execution, the presence of information 'silos', and poor mid-level management can all derail the successful implementation of a sound strategy.

The concern for functional implementation would seem to be particularly relevant for the management of ambidextrous organizations (Atuahene-Gima, 2005). The firm must be able to readily shift its focus back and forth between exploitation and exploration to successfully implement an ambidextrous strategy (Gibson & Birkinshaw, 2004). To facilitate these shifts, functional units must become 'jugglers', able to successfully keep multiple initiatives moving forward without losing sight of either competitors or customers (Kyriakopoulos & Moorman, 2004; Tushman & O'Reilly, 1996). Furthermore, the activities that the functional units such as marketing engage in generate feedback from key stakeholders (e.g. customers, suppliers). This information must be considered and

integrated into the functional units' actions, allowing them to adapt to changing market conditions and thereby stay competitive. Without well-developed skills, processes, and capabilities at the functional level, an ambidextrous firm risks functional inertia or myopia that can create an imbalance between exploitation and exploration.

The marketing function is uniquely positioned as the primary link between a firm and its customers (e.g. Day, 1994; Moorman & Rust, 1999). It ensures that the flow of revenue into the firm from customers is uninterrupted (e.g. Harrison-Walker & Perdue, 2007). Marketing activities such as positioning, distribution, and customer service are critically important to many of the functions and processes within most firms (Webster, 1992). For example, extensive customer service capabilities allow for information flows about products and services, enhancing a firm's view of changing customer demands. Furthermore, marketing plays a prominent role in driving decision making in areas such as manufacturing, pricing and new product development (Homburg, Workman, & Krohmer, 1999). Thus, the marketing function is positioned to engage in a high degree of both marketing exploitation- and exploration-oriented activities. Examples of marketing exploitation include product positioning, refining current products and services, enhancing distribution channels to benefit current markets, and efficiently working across the organization (Kyriakopoulos & Moorman, 2004). Marketing functions that emphasize exploration take risks with new products and services and invite the potential for failure through a broad range of options for their markets. Marketing exploration also involves such activities as extensive market research and expansive customer service touch points to spot new trends. Balancing the tension between pursuing new directions in marketing without taking away from actions that secure current benefits is difficult (Cespedes, 1990). However, if the marketing function can configure its activities to support the strategy, firm performance will be enhanced (Vorhies & Morgan, 2003). Thus:

Hypothesis 2:   Functional implementation of the firm's strategy will mediate the relationship between its ambidextrous strategy and:

(a) its revenue;
(b) its profitability;
(c) its customer satisfaction levels; and
(d) its volume of new product introductions.

Method

Data collection

Data were collected via a mail survey of senior marketing managers in publicly traded US firms, an approach that allowed respondents time to complete the survey and return it without pressure from the researchers. To ensure response consistency across a variety of companies, attention was focused on how the marketing function implements firm strategies. We conducted both in-depth interviews and pre-tests with a dozen senior-level marketing managers to develop and refine the instrument. The survey included questions relating to key constructs, as well as firm-specific and key respondent information.

We drew a random sample of 1200 US publicly traded firms from a proprietary database maintained by a market research firm that includes full corporate details for approximately 600,000 companies with annual revenues of at least $2.5 million. We concentrated on publicly traded US firms, allowing us to collect and analyze publicly available secondary data (profit) for comparison purposes with the survey responses.

The target respondent was a senior marketing manager who had extensive knowledge of the marketing function as well as an understanding of the firm-wide approach to the market. Past studies have demonstrated that senior managers – if selected with care – can provide information as reliable as that obtained from multiple firm respondents (Tan & Litschert, 1994).

The survey was mailed to the key respondent at each of the 1200 firms in the sampling frame, along with a postage-paid return envelope. In our cover letter, we encouraged the respondents to answer the questions truthfully noting that there are no 'right or wrong' answers (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Approximately four weeks after the initial mailing, non-respondents received a postcard reminder. Eight weeks after the first mailing, a second letter was again mailed to non-respondents to encourage response. Approximately 25% of the surveys were undeliverable for various reasons. One hundred and thirty-five usable surveys were returned yielding an overall response of 15%. Menon, Bharadwaj, and Howell (1996) found that the average top management survey response rates are in the range of 15–20%. Our response rate is in line with that of prior surveys of managers despite increasingly stringent corporate privacy policies (e.g. Thorpe & Morgan, 2007; Wong & Merrilees, 2007).

Responses were obtained from both manufacturing (38%) and service (62%) firms. Firms were approximately evenly distributed with respect to revenues and number of employees. There were no significant differences on key measures from early versus later respondents (Armstrong & Overton, 1977). Also, no significant differences were found between respondents and non-respondents in terms of total assets or profits.

The key respondents held titles such as chief marketing officer, vice president and director. To check the validity of the respondents, we asked them to provide information about their position, how long they have been in that position and how long they have worked at their firm. On average, survey respondents had held their positions for approximately five years. They indicated extensive knowledge of strategy (4.55/5.0 scale) and implementation (4.54/5.0 scale).

Independent construct measures

Ambidextrous firm strategy

We conceptualize ambidexterity as contextual and use the approach proposed by Gibson and Birkinshaw (2004) to develop a measure of ambidextrous firm-level strategy. First, separate scales were constructed for exploitation and exploration using measures adapted from Gibson and Birkinshaw (2004) (see Appendix 1). Six items were measured using a seven-point Likert scale format (1 = 'strongly disagree', 7 = 'strongly agree'). The three items for exploitation (α = .83) loaded strongly on a single factor. The three items for exploration (α = .84) also loaded strongly on a single factor. We also performed confirmatory factor analysis using LISREL 8 (Jöreskog & Sörbom, 1996) to compare a two-factor model (exploitation and exploration) to a one-factor model. Fit indices for the two-factor model (χ^2 = 27.07, d.f. = 8, p < .001, GFI = .94, CFI = .95, IFI = .96) were superior to those observed for the one-factor model (χ^2 = 76.61, d.f. = 9, p < .001, GFI = .84, CFI = .87, IFI = .87). A chi-squared difference test for the two-factor versus the one-factor model was significant, indicating that the two-factor model provides a superior fit to the data. We then calculated the average scores for each factor. Finally, we multiplied the average score for firm exploration by the average score for firm exploitation to create an overall measure of ambidextrous firm strategy. Use of this method allows a comparison of our results with those found in previous studies, and is consistent with our

conceptualization of organizational ambidexterity as a two-dimensional complementary construct. Prior research has conceptualized exploitation and exploration as complementary in nature with increasing returns (Gibson & Birkinshaw, 2004; Levinthal & March, 1993; March, 1991; Moorman & Slotegraaf, 1999). Therefore, a multiplicative model is appropriate as it accounts for the relative combinations of exploitation and exploration resources (Gibson & Birkinshaw, 2004; Gupta et al., 2006; He & Wong, 2004; Jansen et al., 2008).

Marketing function implementation

We reclassified items from Menon et al. (1999) to assess how a firm implements an ambidextrous strategy at the marketing function level (see Appendix 1). We augmented the original set with additional items that were conceptually similar, and that survived both the managerial feedback and pre-test stages of the survey design. After the refinement, there were four items measuring implementation of an exploitation strategy ($\alpha = .76$) and four items measuring exploration implementation ($\alpha = .68$). Similar to the procedure used for firm strategy, a confirmatory factor analysis using LISREL 8 comparing a two-factor model of marketing implementation ($\chi^2 = 39.36$, d.f. $= 19$, $p < .01$, GFI $= .93$, CFI $= .93$, IFI $= .93$) to a one-factor model ($\chi^2 = 67.49$, d.f. $= 20$, $p < .0001$, GFI $= .89$, CFI $= .82$, IFI $= .83$) showed that the former was statistically superior to the latter. We followed the same method used at the firm strategy level to calculate the implementation of an ambidextrous strategy at the marketing function level. We calculated the average scores for the exploitation and exploration dimensions separately, and then multiplied them to arrive at an overall functional implementation score.

Dependent construct measures

Firm performance

Respondents self-reported four dimensions of performance using a seven-point Likert scale format. They were asked to indicate the extent to which they agreed that their firm's performance exceeds that of their key competitors (Conant, Mokwa, & Varadarajan, 1990) in terms of sales revenue, profitability, customer satisfaction, and number of new product introductions.

A number of past studies focusing on ambidexterity and firm performance utilize subjective measures while not *directly* testing objective ones (e.g. Auh & Menguc, 2005; He & Wong, 2004). Self-report, subjective measures of business performance have been shown to be generally consistent with objective performance measures (e.g. Hart & Banbury, 1994). However, collecting objective data is important in survey research to validate the responses (Han, Kim, & Srivastava, 1998; Rindfleisch, Malter, Ganesan, & Moorman, 2008). Drawing on the Compustat financial database, we collected net profit for the fiscal year for each firm.

Control variables

Firm size

Studies have demonstrated that larger firms are more advanced in terms of organizational processes and knowledge than smaller firms (e.g. Hage, 1980). The economies of scale and scope found in larger firms place them in a position to reap the benefits of greater efficiencies, providing resources for exploration (Klepper, 1996). However, larger

scale/scope and advanced organizational development may create rigidities (Leonard-Barton, 1992) and competency traps (Levitt & March, 1988) that can inhibit exploration as compared to smaller firms. Firm size is measured by the natural logarithm of the number of firm employees reported in the Compustat database.

Firm age

Younger firms may have less time to develop the processes, personnel and knowledge necessary to become ambidextrous. Alternatively, organizational inertia may prevent older firms from achieving this same goal (Klepper, 1996). Four categories for firm age were created, calculated as time in business since inception: (1) less than five years; (2) five to 10 years; (3) 10 to 25 years; and (4) greater than 25 years.

Manufacturing versus services

Gupta et al. (2006) question whether all firms should be ambidextrous, or whether important, industry-specific differences exist. Research suggests that manufacturing and service firms require different resources, skills, cultures and organizational structures, implying potential differences in performance outcomes (e.g. Brouthers & Brouthers, 2003). This control was dummy-coded (0 = service firm, 1 = manufacturing firm).

Business segments

More business segments can create distractions for managers as they attempt to allocate resources between exploitation and exploration, thus negatively affecting an ambidextrous strategy. Using the Compustat Business Segment database, we counted the number of reported business segments for each firm in the sample.

Years public

We controlled for the number of years that each firm was a publicly traded company. Publicly traded companies undergo more detailed scrutiny and the managerial desire to make earnings estimates may result in a more exploitation-oriented approach. Alternatively, longtime publicly traded firms may be better able to balance resource allocation between exploitation and exploration.

International business

The challenges of doing business globally can result in an overemphasis on exploitation or exploration as firms attempt to manage emerging opportunities in foreign countries while balancing domestic customers (e.g. Hutzschenreuter & Guenther, 2008). We dummy-coded this control based on reported revenues by geographic segment (0 = less than 20% international revenues, 1 = equal or greater than 20% international revenues).

CEO background

The primary background of the CEO (accounting, finance, sales and marketing, etc.) may discourage exploration in favor of exploitation or vice versa (Barker & Mueller, 2002). Following Barker and Mueller (2002), based on executive management backgrounders

and other publicly available sources, this control variable was dummy-coded ($0 =$ accounting/finance, $1 =$ sales/marketing, operations/other).

Market turbulence, intensity of competition, and technological turbulence

Given the different industries in our sample, we controlled for environmental factors as potential boundary conditions for ambidextrous firms (Auh & Menguc, 2005; Jansen et al., 2008). First, market turbulence creates constant, often rapid, changes in customer preferences that affect demand. If customer preferences change little over time, then the need for innovation is minimized as it requires resource investment with higher risk (Sorescu et al., 2003). Second, in intensely competitive markets, the potential for firms to capture future opportunities through exploration can be negatively affected (Moorman & Miner, 1998). Firm-specific advantages are short-lived as competitive and environmental pressures quickly undermine any resource value or heterogeneity (Foss, 1998). Finally, a turbulent technological environment places the emphasis on innovating and future ideas, with less of a focus on exploiting current ideas.

   Market turbulence, intensity of competition, and technological turbulence are assessed via the survey. We adapted scales developed by Miller (1987) and validated in the literature using the recommended criteria (e.g. Han et al., 1998). For this study, we use a seven-point Likert scale format ($1 =$ strongly disagree and $7 =$ strongly agree as the anchors). Respondents are asked the degree to which they agree with each item. There are four questions each related to market turbulence, technological turbulence, and intensity of competition. An average score was created for each control for each firm (Appendix 2).

Discriminant validity

To assess the discriminant validity between the two latent variables, firm strategy and marketing implementation, we determined that the average variance extracted for strategy (.78) and implementation (.57) are both higher than the squared correlation between the two constructs ($.67*.67 = .45$) (Fornell & Larcker, 1981). This provides evidence that there is reasonable discriminant validity between the two latent variables.

Common method bias

We checked for potential issues with common method bias using the Harman one-factor test (Podsakoff & Organ, 1986). A principal components factor analysis of all measures yielded seven factors with eigenvalues greater than 1.0, with total explained variance of 70%. Because several factors were uncovered common method bias may not be a serious problem (Menon et al., 1999). Recognizing the potential limitations of the Harman one-factor test, we also identified a 'marker variable' that is not theoretically related to at least one other variable in the study (Lindell & Whitney, 2001; Podsakoff et al., 2003). We used the respondent identification number as the marker variable. The marker variable was not significantly related to any of the model variables. Finally, similar regression results found using the self-reported and objective profit dependent variables both without and with the mediator suggests that common method bias is not a serious problem.

Analysis and results

Means, standard deviations, and correlations among the variables are reported in Table 1. The hypotheses are tested using regression analysis. The control variables were included

Table 1.   Descriptive statistics and correlations.

Measure	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Ambidextrous firm strategy[a]	21.11	10.37																
2. Marketing implementation[b]	25.72	8.91	.67															
3. Revenue (self-reported)	4.79	1.81	.45	.40														
4. Profit (self-reported)	4.78	1.88	.41	.48	.65													
5. Customer satisfaction (self)	4.91	1.35	.42	.46	.38	.50												
6. New product introductions (self)	4.31	1.49	.30	.36	.26	.25	.15											
7. Objective fiscal year profit[c]	133.50	389	.23	.28	.24	.25	.24	.15										
8. Age of firm	51.70	44.59	.05	.09	.12	.22	.17	−.03	.25									
9. Number of employees	7.32	25.49	.14	.19	.20	.14	.14	.09	.65	.39								
10. Manufacturing/Services[d]	–	–	−.03	−.03	.02	−.02	−.09	.18	−.01	−.11	−.06							
11. Business segments	1.81	1.34	.01	.14	.06	−.01	.00	.09	.24	.06	.36	.10						
12. International focus[d]	–	–	.07	.01	.15	.04	−.09	.06	.31	.00	.30	.34	.41					
13. Years public	11.66	7.37	.11	.15	.21	.26	.13	.22	.18	.33	.38	.00	.29	.16				
14. CEO background[d]	–	–	−.13	−.16	−.02	−.14	−.23	−.05	.12	−.05	.04	−.03	−.11	.09	.07			
15. Market turbulence	4.21	1.16	.09	.14	.14	.04	.19	.13	.05	.01	.07	−.02	.11	.11	−.04	.08		
16. Competitive intensity	4.41	1.32	.02	.10	−.03	.02	.14	−.11	−.05	.22	.08	−.30	−.17	−.13	.01	.01	.15	
17. Technological turbulence	5.08	1.25	.27	.25	.03	.04	.16	.18	.12	−.01	.08	−.25	.03	.06	.04	.05	.18	.25

Note: Correlations over +/−.17 are significant at $p < .05$.
[a] Construct reliability, average variance extracted, and range of loadings are .88, .78, and .81 to .92 respectively.
[b] Construct reliability, average variance extracted and range of loadings are .77, .57, and .63 to .82 respectively.
[c] Some firms had negative profit in the latest fiscal year and natural logarithms of those numbers cannot be calculated. As a result, we used 113 of 135 observations for this variable. 'Objective' indicates data drawn from Compustat.
[d] Dummy coded variables.

in each regression. Multicollinearity was not a problem (i.e. all variance inflation factors were less than two). Furthermore, Brown-Forsythe tests for the threat of unequal variances were not significant ($p > .10$), confirming homoscedasticity.

Effect of ambidextrous strategy on performance

We hypothesized that an ambidextrous firm strategy should have a positive effect on business performance. A separate regression was run for each of the four self-report dependent performance variables. The results are reported in Table 2. In support of Hypotheses 1a through 1d, all of the main effects of organizational ambidexterity on the various facets of performance were significant. More specifically, an ambidextrous firm strategy has a significant positive effect on both revenue ($\beta = .08$, $p < .001$) and profit ($\beta = .07, p < .001$), supporting Hypothesis 1a and Hypothesis 1b, respectively. Similarly, customer satisfaction ($\beta = .04$, $p < .001$) and new product introductions ($\beta = .03$, $p < .05$) are also significantly and positively related to the extent to which the firm employs an ambidextrous strategy, supporting Hypotheses 1c and 1d.

An additional regression equation was estimated using the reported profit from Compustat financial data. (The measure was transformed using the natural logarithm to normalize its distributions.) The results are shown in the last column of Table 2. Profit ($\beta = .04$, $p < .01$) is significantly and positively related to the firm's use of an ambidextrous firm strategy.[2]

Mediating effect of marketing implementation

We hypothesized that functional implementation mediates the relationship between ambidextrous firm strategy and performance. Following the procedures recommended by Baron and Kenny (1986), as discussed above (and in Table 2) when the mediator is not considered, ambidextrous firm strategy has a positive and significant relationship with all self-reported performance measures as well as the objective measure of profit. Next, there is a significant relationship between ambidextrous firm strategy and the mediator, marketing function implementation ($\beta = .57$, $p < .0001$). Finally, to show that a full mediation effect exists, we need to show that the significant relationship found in step 1 becomes insignificant when the mediator is added to the analysis. These results are shown in Table 3. Contrary to Hypothesis 2a, the link between ambidextrous firm strategy and revenue is not mediated by marketing implementation. However, marketing implementation does mediate the relationship between an ambidextrous firm strategy and self-reported measures of profit ($\beta = .08$, $p < .01$), customer satisfaction ($\beta = .04$, $p < .05$), and new product introductions ($\beta = .05$, $p < .05$), supporting Hypothesis 2b, Hypothesis 2c and Hypothesis 2d. Importantly, marketing implementation mediates the relationship between an ambidextrous firm strategy and objective profit ($\beta = .05$, $p < .05$); indicating that bias from common method variance is mitigated (Griffith & Lusch, 2007). We also examined both the direct and mediating relationships using revenues from financial statements (log of sales) for each firm and found results similar to those in Tables 2 and 3 for self-reported revenues as the dependent variable, further assisting in confirming the respondent perspectives.

We also found several significant effects among the control variables in the mediation tests. For example, market turbulence has a positive effect ($\beta = .20$, $p < .05$). Interestingly, CEOs with a background in accounting or finance do the least damage to the ambidextrous strategy–functional implementation–customer satisfaction relationship

Table 2. Effect of ambidextrous firm strategy on performance.

Dependent variable	Controls only					Ambidexterity with controls				
	Survey or self-report			Objective		Survey or self-report			Objective	
	Revenue	Profit	Customer satisfaction	New product intros	Log 2005 profit	Revenue	Profit	Customer satisfaction	New product intros	Log 2005 profit
Hypotheses						H1a:	H1b:	H1c:	H1d:	H1b:
Ambidextrous firm strategy						Supported .08***	Supported .07***	Supported .04***	Supported .03*	Supported .04**
Log firm size	.12	.04	.08	.05	.63***	.06	−.01	.05	.03	.65***
Firm age	.07	.40	.15	−.20	.38	.10	.42	.16	−.19	.36
Manufacturing/Services	.11	−.10	.05	.72*	−.07	.01	−.17	.00	.68*	−.05
Business segments	.07	−.25°	−.07	−.01	−.03	.07	−.25°	−.07	−.01	−.02
Years public	.04	.06**	.02	.05*	−.02	.03	.06*	.02	.05*	−.02
CEO background	−.06	−.37	−.38**	−.12	.15	.07	−.25	−.30*	−.07	.08
International	−.22	.30	−.36	−.38	.67	−.08	.43	−.28	−.33	.59
Market turbulence	.23	.13	.24*	.19	−.11	.19	.10	.22*	.17	−.08
Competitive intensity	−.08	.04	.04	−.14	−.11	−.04	−.06	.06	−.13	−.12
Technological turbulence	.03	−.14	.13	.29**	−.03	−.16	−.14	.02	.21°	.10
R²	.09	.13	.18	.17	.45	.26	.27	.28	.22	.48
ΔR²						.17	.14	.10	.05	.03

$^O p < .10$; $*p < .05$; $**p < .01$; $***p < .001$.

Table 3. Mediating effects of marketing implementation.

Dependent variable	Survey or self-report			Objective	
	Revenue	Profit	Customer satisfaction	New product introductions	Log 2005 profit
Hypotheses	H2a: Not supported	H2b: Supported	H2c: Supported	H2d: Supported	H2d: Supported
Ambidextrous firm strategy	.06*	.03	.02	.01	.02
Marketing implementation	.03	.08**	.04*	.05*	.05*
Log firm size	.06	−.03	.04	.01	.61***
Organizational age	.13	.42	.16	−.19	.39
Manufacturing/Services	.00	−.24	−.03	.65*	−.24
Business segments	.05	−.29*	−.10	−.04	−.06
Years public	.03	.05*	.02	.04*	−.02
CEO background	.10	−.19	−.27*	−.03	.20
International	−.03	.54	−.22	−.26	.79$^{\text{O}}$
Market turbulence	.17	.05	.20*	.15	−.13
Competitive intensity	−.06	−.09	.04	−.15	−.13
Technological turbulence	−.18	−.18	.00	.19$^{\text{O}}$	−.06
R^2	.27	.34	.32	.25	.50
ΔR^2	.02	.07***	.04*	.03*	.02*

Note: The change in r-squared (ΔR^2) for the four dependent variables is the difference between the r-squared found in Table 2 and that found in Table 3. The asterisks denote a statistically significant change in the r-squared based on an *F*-test for each dependent variable. Additional analysis was then performed using Sobel tests to see if each of these mediator effects was significant (Sobel, 1982). As expected, the mediator facilitates the relationship between an ambidextrous firm strategy and self-reported measures of profit (3.36, $p < .001$), customer satisfaction (2.35, $p < .05$), new product introductions (2.26, $p < .05$), and objective profit (2.03, $p < .05$) but not for self-reported revenue (1.41, $p > .10$). $^{\text{O}}p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$.

($\beta = -.27, p < .05$). Perhaps those who are more grounded in those disciplines can better allocate resources between exploitation and exploration. In another example, manufacturing firms generate more new product introductions than service firms and that effect is enhanced by the marketing function carrying out an ambidextrous strategy ($\beta = .65, p < .05$). The longer a firm was publicly traded also benefitted firms in terms of new product introductions ($\beta = .04, p < .05$).

Discussion, limitations, and future research

Using marketing as an example of functional implementation, we found that important financial and non-financial dimensions of firm performance in an ambidextrous strategy are enhanced. This reconfirms the critical role that functional units play as translators and implementers of the firm's approach (Bourgeois & Brodwin, 1984; Nutt, 1987), but does so for the first time in the context of organizational ambidexterity. Critical to both marketing and firm actions as a whole customer satisfaction was positively affected through strong marketing implementation. This outcome speaks not only to the marketing function's close customer relationships essential to enhancing firm value (Prahalad & Ramaswamy, 2000); but also to its ability to balance competing demands on its resources. In an ambidextrous firm, these close interactions allow firms to sense and respond to customers' future requirements while also improving the quality of its current products. It sends a signal across the firm that employees in other functional areas should be sensitive to the needs of marketing in translating the ambidextrous strategy into action.

Interestingly, no mediating effect was found for functional implementation in the relationship between ambidextrous firm strategy and self-reported revenue. It is possible that a different mediator may play a more important role in taking the strategy and translating it into actions that result in revenue enhancements. However, the results related to revenue underscore that it is important for managers and researchers to take a broad view. To this point, most research has focused on revenue including growth and ratios that incorporate revenues. In this regard, our study demonstrates the marketing function's contribution to the success of an ambidextrous strategy would be overlooked, to the firm's detriment, if revenue were the sole focus of managers. This perspective is consistent with the conclusion drawn by Raisch and Birkinshaw (2008, p. 400) that 'studies should consider multiple performance dimensions'.

Much of strategy research, including our study, has turned to using objective indicators of performance. While the rationale is often based on common method bias and 'objectivity', a more reasoned approach is to ask if subjective and objective performance indicators tap into different phenomena. There are two theoretical and methodological challenges in the context of our study worth noting. First, there are different types of potential 'noise' that affect the performance relationships in our model. Proximate outcomes may be preferable to distant outcomes in certain situations (Ray, Barney, & Muhanna, 2004). When examining processes, parts of strategies or actions such as an alliance, proximate outcomes are less noisy than distant outcomes such as return on investment. In our study, disentangling the role of one function in impacting distant outcomes is difficult. The second, even more interesting challenge is whether subjective assessments interpreted through cognitive mechanisms (Hedstrom & Swedberg, 1998) focus on qualitatively different aspects of a phenomenon than objective indicators. While our subjective and objective indicators of profit were significantly correlated at a modest level ($r = .25; p < .01$) the fact that functional ambidextrous strategy is fully mediated by functional implementation for the subjective performance indicators (with the exception of

revenue) indicates that the managers 'think' ambidexterity positively helps performance regardless of the objective indicators. This is a fruitful area for future research.

One other issue worthy of further investigation is an examination of the moderating effects of environmental variables on the relationship between ambidexterity and performance.[3] In an attempt to address this issue, we used median splits for each of our environmental variables, and then re-estimated our model separately for the low and high levels of each variable. No significant differences were found, but we have also limited our study to focus on the marketing function's implementation of strategy. Using a broader, company-wide perspective in future work may reveal important environmental differences.

Conclusion

Drawing on a cross-industry sample of firms, we found that the ambidextrous firm approach significantly affects performance only when successful implementation of that approach is evident at the functional level. Furthermore, we decomposed firm performance into four sub-facets and showed strong, positive links between an ambidextrous firm strategy and self-reported revenue, profit, customer satisfaction and new product introductions while also linking it to objective profit. This work demonstrates that organizational ambidexterity can be beneficial to firms, and that functional implementation is a key determinant of success. Further theorizing of how lower levels of an organization mediate the effects of a higher level ambidextrous approach is needed.

Notes

1. We use the terms exploitation and exploration as the two key components of an ambidextrous firm. Other terms have been utilized in prior research (e.g. alignment and adaptation), all referring to essentially the same underlying concept – that firms can simultaneously engage in two fundamentally different sets of activities (Raisch & Birkinshaw, 2008).
2. In addition to looking at the reported interaction-only (plus controls) model, we also estimated an exploitation and exploration main-effects-only model, and a main-effects plus interaction model. The results are substantively similar in all three cases. However, the model that includes both the main effects and the interaction term suffers from problems of multi-collinearity, even after the main effects are mean-centered. Rather than report the results from this misleading model, we focus here on the ambidexterity interaction-only model. We do this for two main reasons. First, we are looking the impact of *ambidexterity* on various dimensions of performance. We are less interested in the effects of exploration and of exploitation *per se*. Second, much of the past work in the ambidexterity area has employed the same perspective – a multiplicative approach – that is used here (e.g. see Gibson & Birkinshaw, 2004; He & Wong, 2004; Jansen et al., 2008). Thus, our results are directly comparable to findings from past research.
3. We thank an anonymous reviewer for raising this suggestion.

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Appendix 1. Survey measures

Construct	Items
Ambidextrous firm strategy[a]	
Firm exploitation	This organization works coherently to support its overall objectives
	This organization uses its resources effectively
	Management provides clear goals and objectives for the functional units
Firm exploration	We are encouraged to challenge outdated traditions and practices
	This organization is flexible enough to allow us to respond quickly to market changes
	This organization evolves rapidly in response to shifts in our business priorities
Marketing implementation[b]	
Marketing exploitation	We focus on refining our existing products/services
	We are very efficient in serving our current customers
	We work well with other functional units in this organization
	We apply knowledge from other functional units to better serve our current customers
Marketing exploration	We interact regularly with customers in emerging market segments
	We focus on developing new product/services for our customers
	We have a broad range of products/services
	We have extensive customer service capabilities
Subjective business performance measures	
Revenue	Our firm's revenue was higher last year than our major competitors
Profit	Our profit was higher than our major competitors
Customer satisfaction	Customer satisfaction levels were higher than our major competitors
New product intros	We introduced more new products/services into the market than our competitors

Note: Items are scored on a seven-point Likert scale with '1' = strongly disagree and '7' = strongly agree as the anchors. Respondents were asked to indicate the extent to which they agree or disagree with the statements focusing on performance dimensions.
[a] Items are adapted from Gibson and Birkinshaw (2004).
[b] Items reclassified from Menon, Bharadwaj, Adidam, and Edison (1999) and self-developed for this study.

Appendix 2. Survey control variables: market turbulence, intensity of competition, and technological turbulence scales

Instructions: Please indicate the extent to which you agree with each of the following statements.

Construct	Items
Market turbulence[a]	In our business, customers' preferences change all of the time
CR = .73	We are witnessing demand for our products and services from customers who never bought them before
AVE = .49	New customers tend to have needs that are different from those of our existing customers
Range of loadings = .55–.79	Our customers tend to look for new products all of the time
Intensity of competition[a]	There are many 'promotion wars' in our industry
CR = .76	Any offer that one competitor makes to the market, others can readily match
AVE = .53	Price competition is a cornerstone of our industry
Range of loadings = .71–.75	One hears of a new competitive move almost every day
Technological turbulence[a]	The technology in our industry is changing rapidly
CR = .82	Technological changes provide big opportunities in our industry
AVE = .64	A large number of new product ideas have been made possible through technological breakthroughs in our industry
Range of loadings = .59–.89	It is difficult to predict how far technology will advance in our industry over the next several years

Note: Items are scored on a seven-point Likert scale with '1' = strongly disagree and '7' = strongly agree as the anchors.
[a] Items are adapted from Miller (1987).