

Strategic Ambidexterity in Small and Medium-Sized Enterprises: Implementing Exploration and Exploitation in Product and Market Domains

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Balancing exploration and exploitation is a critical challenge that is particularly difficult for smaller, nascent organizations that lack the resources, capabilities, and experience necessary to successfully implement ambidexterity. To better understand how small and medium-sized enterprises achieve ambidexterity, we develop theoretical arguments that link organizational performance to strategic combinations of exploration and exploitation in both product and market domains. We test the hypotheses with a longitudinal study in a dynamic industry that combines objective measures of competition, firm size, age, and revenue performance with self-reported measures of product and market exploration and exploitation. The empirical results offer new insights with respect to several tensions at the heart of the ambidexterity challenge: (1) pure strategies that combine product exploration with market exploration or product exploitation with market exploitation have complementary interaction effects on revenue, (2) cross-functional ambidexterity combining product exploitation with market exploration also exerts complementary interaction effects on revenue, (3) product ambidexterity has positive effects on revenue for older and larger—but not younger and smaller—firms, and (4) market ambidexterity has positive effects on revenue for larger—but not smaller, younger, or older—firms. Two ambidexterity paradoxes emerge: (1) larger, older firms have the resources, capabilities, and experience required to benefit from a product ambidexterity strategy, but larger, older firms are less likely to implement product ambidexterity; and (2) only larger firms have the resources and capabilities required to benefit from a market ambidexterity strategy, but developing and sustaining market ambidexterity is necessary to drive long-term growth.

Key words: ambidexterity; product exploration; product exploitation; market exploration; market exploitation

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Introduction

There is growing consensus that organizational ambidexterity (i.e., simultaneous exploration of new capabilities and exploitation of current capabilities) is both critical to long-term success and difficult to achieve (He and Wong 2004, Lubatkin et al. 2006). Ambidexterity ensures long-term success by balancing the need to innovate and adapt to environmental changes while simultaneously refining and extending existing processes and technologies (March 1991). Despite intensive scholarly scrutiny, “the empirical evidence of the organizational ambidexterity–performance relationship remains limited and mixed” (Raisch and Birkinshaw 2008, p. 393).

Implementing ambidexterity is difficult because exploration and exploitation involve different organizational learning models (e.g., Argyris and Schön 1978, Benner and Tushman 2003, Eisenhardt and Martin 2000), require different and inconsistent organizational architectures and processes (Smith and Tushman 2005), and ultimately compete for resources, leading to tensions and trade-offs (March 1991, 2006). Given

these organizational complexities, questions arise as to whether ambidextrous strategies are necessarily more successful than simpler strategies that focus either on exploration or on exploitation (Van Looy et al. 2005). The complexities of an ambidextrous strategy are particularly problematic for smaller firms (Ebben and Johnson 2005), prompting calls for additional research linking ambidexterity—especially in small firms—to strategic performance outcomes (Simsek et al. 2009).

We contribute to this conversation by examining when and how exploration, exploitation, and ambidexterity influence small and medium-sized enterprise (SME) performance. We distinguish between exploration and exploitation in product and market domains. As the two most basic business functions, product development and marketing represent distinct dimensions for exploration and exploitation (e.g., O’Reilly and Tushman 2008, Tushman and Smith 2002, Tushman et al. 2010). This perspective builds on research demonstrating the independence of product- and market-oriented learning (e.g., Voss and Voss 2008). Within the product domain,

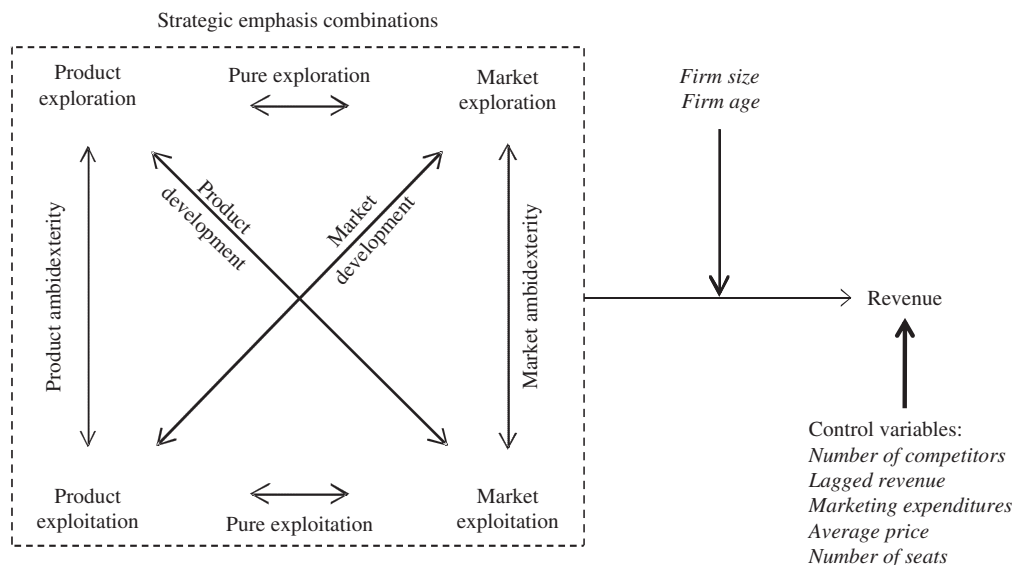
product exploration emphasizes developing new products, technologies, and product capabilities, and *product exploitation* emphasizes increasing returns from existing product capabilities. Within the marketing domain, *market exploration* emphasizes marketing programs that attract new customers, and *market exploitation* emphasizes marketing programs designed to retain and increase purchases from current customers.

Our study responds to calls for research examining different intraorganizational domains and multiple levels of analysis (Lavie et al. 2010, Raisch and Birkinshaw 2008). We conceptualize and measure exploration and exploitation at the functional level, but our theory focuses on how strategic combinations within and across functions affect organizational performance. As shown in Figure 1, the functional-level strategic emphases combine into organizational-level strategic vectors (Abernathy and Clark 1985, Burgelman 2002). A pure exploration strategy explores new product capabilities and new customer markets, and a pure exploitation strategy exploits current product capabilities and current customer markets. Firms can achieve strategic ambidexterity by combining exploration and exploitation across or within functional domains. The cross-functional combinations exhibit ambidexterity across product and market domains to (1) exploit current product capabilities with the goal of attracting new customer markets, which corresponds to a market development growth strategy, or (2) explore new product capabilities that target current customers, corresponding to a product development growth strategy (Ansoff 1965). Within functional domains, product ambidexterity simultaneously explores new product capabilities and exploits current product capabilities, whereas market ambidexterity simultaneously explores new customer markets and exploits current customers.

We propose that revenue performance depends on whether strategic emphases complement one another, producing a positive interaction, or conflict with one another, creating tensions and trade-offs. Tensions and trade-offs escalate when SMEs attempt to implement product or market ambidexterity, which are executed within a single functional domain. Larger, mature organizations likely have the resources, capabilities, and experience that are necessary to successfully implement within-function ambidexterity, whereas smaller, nascent organizations may lack the requisite resources, capabilities, and experience to reap the benefits. This focus on organizational characteristics that enable—or inhibit—the successful implementation of strategic ambidexterity uncovers boundary conditions for the ambidexterity–performance relationship. The implication is that the pursuit of ambidexterity can actually attenuate performance if firms lack the necessary resources, capabilities, and experience.

We test our hypotheses using three years of data for SMEs in the nonprofit professional theater industry, a dynamic, rapid-cycle industry that amplifies organizational learning effects associated with exploration, exploitation, and ambidexterity (Levinthal and March 1993, March 1991). The empirical results provide compelling support for the proposed contingency effects. Firms realized positive, complementary effects when they pursued pure exploitation or pure exploration strategies. The cross-functional combination of product exploitation and market exploration also exerted complementary effects on revenue performance. Because product and market ambidexterity occur within a single business function, they lead to tensions and trade-offs. Firm size and age positively moderated the relationship between product ambidexterity and revenue performance and between market ambidexterity and revenue

Figure 1 Conceptualizing the Impact of Product and Market Exploration and Exploitation on Revenue Performance



performance. Post hoc analyses also point to two interesting paradoxes: (1) larger, mature firms benefit most from product ambidexterity but are less likely to implement product ambidexterity, whereas smaller, nascent firms are more likely to implement product ambidexterity but performance actually suffers as a result; and (2) only larger firms have the resources and capabilities required to benefit from a market ambidexterity strategy, but developing and sustaining market ambidexterity capabilities—especially market exploration—is necessary to drive long-term growth. The implication is that firms may grow older but not larger if they fail to develop market ambidexterity as a core competency.

In the following section, we develop hypotheses that link combinations of product and market exploration and exploitation to revenue performance. We then describe our research program, which features SMEs competing in a single artistic industry. The study combines longitudinal measures of competition, firm size, age, and revenue performance with self-reported measures of product and market exploration and exploitation. We conclude with a discussion of the implications and insights generated by the theory and empirical results.

Exploration and Exploitation in Product and Market Domains

We focus on SMEs to generate a fine-grained examination of exploitation and exploration in product and market domains. Exploitation emphasizes the refinement and incremental extension of existing product and market capabilities. Because product and market characteristics are dynamic, ongoing exploitation of current product markets features incremental learning, continuous improvement of product features, and enhanced satisfaction for current customers (Tushman and Smith 2002). Exploration focuses on developing new product or market capabilities. Product exploration can lead to architectural innovations that change linkages between subsystems or discontinuous innovations that change the product's core subsystem (Tushman et al. 2010). Market exploration targets new customers outside of the currently served market. New customers may represent an emerging market or an existing but nontargeted market—for example, a new geographic market or a broadening of the target market to include additional sociodemographic (e.g., retirees versus yuppies) market segments.

We propose a fully contingent model, so that firm performance depends on combinations of strategic emphases, at times moderated by firm size and age. We use congruence logic to develop hypotheses for the strategic emphasis combinations (Fry and Smith 1987). Organizational performance improves when strategic combinations are internally congruent or when strategic combinations achieve congruence with the external environment. Strategic combinations are internally congruent if the presence of one complements the other, and they

are externally congruent if they enable organizational learning and adaptation to external customer markets. We assume that achieving both internal and external congruence may not be necessary (Meyer 1982) and that the complexity required to achieve both levels of congruence can overwhelm small organizations (Ebben and Johnson 2005).

With pure strategies, exploration and exploitation are internally congruent across functional areas, producing organization-wide consensus and clarity about what to do. The two cross-functional combinations—i.e., product development and market development—exhibit ambidexterity across loosely coupled functional domains so that trade-offs and tensions are mitigated. Implications for organizational performance depend on the strategic alignment or congruence of the ambidexterity combinations with customer markets. Tensions and trade-offs escalate when exploration and exploitation manifest within a single domain, either product or market (Gupta et al. 2006). Successfully managing these tensions and trade-offs requires resources, capabilities, and experience that smaller, nascent organizations may lack. We now develop hypotheses relating the strategic combinations to revenue performance, which provides the purest measure of market response to an organization's strategic emphases—that is, whether exploration and exploitation activities effectively motivate current and new customers to purchase the firm's product offerings.

Pure Exploitation and Exploration

Following the organizational culture and identity literature, we propose that a pure focus on exploitation or exploration in both product and market domains is internally congruent and operationally effective. Pursuing one strategic emphasis across functional units creates organization-wide consensus and clarity about what to do and why it is worthwhile (Voss et al. 2006b). Furthermore, organizations adopting a pure focus on either exploitation or exploration can avoid the complexities associated with ambidexterity and take advantage of the most lucrative part of the portfolio (Van Looy et al. 2005). Internally congruent pure strategies are especially effective for smaller firms (Ebben and Johnson 2005), but they are also consistent with recommendations for organizational units that are dedicated to pure exploitation or pure exploration, with the integration challenge focusing on sharing experiences and knowledge across differentiated units (e.g., Jansen et al. 2009).

Exploitation of current products and customers incorporates similar cognitive models and routines operating in different functional domains (Smith and Tushman 2005). These similarities mitigate cross-functional conflict and facilitate communication and integration, ultimately creating complementary interaction effects on organizational performance. Resource dependence theory also supports complementarities between product and market

exploitation (Pfeffer and Salancik 1978) because fully exploiting current customers involves incremental product adaptation (Christensen and Bower 1996, Slater and Narver 1998). This leads us to expect a positive interaction between product exploitation and market exploitation.

Exploration of new product capabilities and new customer markets also entails similar cognitive models and routines operating in different functional domains. Diffusion theory supports complementarities between product and market exploration because innovative new products are attractive to innovative buyers and emerging markets (Rogers 1995). Engaging in proactive market exploration helps innovative firms identify and market to the most receptive buyers (Song et al. 2005), and organizations that engage in product exploration learn to market more effectively to innovation-seeking customer markets (Voss et al. 2006a). This leads us to predict a positive interaction between product exploration and market exploration. More formally stated,

HYPOTHESIS 1 (H1). *A pure focus on (a) product exploitation and market exploitation or (b) product exploration and market exploration will exert positive interaction effects on SME revenue performance.*

Cross-Functional Ambidexterity

The cross-functional ambidexterity combinations explore and exploit across product and market domains. Even the smallest organizations typically maintain differentiated activities and incentive structures for the product development and marketing functions. This functional departmentalization provides the most basic mechanism for mitigating tensions between exploration and exploitation (Levinthal and March 1993). Loose coupling obviates tensions that can arise when pursuing exploration and exploitation (Andriopoulos and Lewis 2009, Benner and Tushman 2003, Gupta et al. 2006) because there are no explicit trade-offs in terms of resource allocations for exploration in one functional area versus exploitation in another. At the same time, a small amount of internal incongruence can arise, which serves to foster creative tension and organizational learning and adaptation to the external environment (Fry and Smith 1987). The two cross-functional ambidexterity combinations create combinative capabilities (Kogut and Zander 1992) that improve organizational performance by simplifying the learning experience in one domain and fostering adaptive learning responses in the other domain (Levinthal and March 1993).

Cross-functional ambidexterity combining product exploitation with market exploration is a market development strategy that seeks to grow revenues by extending current product capabilities to serve new customer markets. New markets could be previously untapped segments or new customers who are reached via new

channels (e.g., the Internet), perhaps in new geographic, sociodemographic, or psychographic markets. Market exploration identifies emerging market opportunities that direct and inform incremental product improvements; at the same time, the firm's incremental product capabilities simplify and direct the market exploration search and selection routines. For example, CIBA VISION extended its contact lens capability to target fashion-sensitive consumers by offering contact lenses that could change the color of one's eyes (O'Reilly and Tushman 2008, Tushman et al. 2010). The primary objective of this strategy is to identify and develop new customer markets, which suggests that combining product exploitation with market exploration should enhance revenue performance.

Cross-functional ambidexterity combining product exploration and market exploitation is a product development strategy that seeks to develop new products that deliver superior benefits to and increase revenues from current customers. This strategy should enhance revenue performance if current customers value the new benefit packages (O'Reilly and Tushman 2008, Tushman et al. 2010). Given the objective of increased revenues from current customers, the role of market exploitation is to direct and enhance product exploration efforts toward satisfying latent as well as expressed needs of current customers (Slater and Narver 1998). Cross-functional ambidexterity combining product exploration and market exploitation features trial-and-error product experimentation targeting a stable customer base that provides explicit feedback loops for product selection and retention routines. For example, CIBA VISION developed extended wear and disposable contact lenses, providing two new benefit packages targeting current customers (Tushman et al. 2010). Simplifying market selection facilitates causal attribution and organizational learning emanating from the product exploration process (Levinthal and March 1993). Thus, from an organizational learning perspective, ambidexterity combining product exploration and market exploitation should lead to higher revenue performance. More formally, we hypothesize the following.

HYPOTHESIS 2 (H2). *Cross-functional ambidexterity featuring (a) product exploitation and market exploration (a market development strategy) or (b) product exploration and market exploitation (a product development strategy) will exert positive interaction effects on SME revenue performance.*

Product and Market Ambidexterity and the Contingent Effects of Firm Size and Age

Product and market ambidexterity simultaneously explore and exploit within a single functional area. In the product domain, conceptual synergies link learning from exploration to more successful exploitation

through incremental product modifications. Exploration creates and enhances product capabilities that are subsequently exploited. A synergistic link in the market domain is less obvious. Does exploration of new customer markets help firms exploit current customers better, or does exploitation of current customer markets provide organizational learning that can be extended to new market exploration? There is little conceptual or empirical research that establishes complementary links between market exploration and exploitation capabilities.

In both product and market domains, however, simultaneous exploration and exploitation increases internal complexity (McKelvey 1999), requires divergent cognitive models and objectives (Gibson and Birkinshaw 2004, Smith and Tushman 2005), and forces trade-offs between the two emphases (Gupta et al. 2006; March 1991, 2006). In the product domain, cannibalization can create tensions between employees, processes, and products whose value is derived from new versus old technologies. In the market domain, acquisition tactics that feature price discounts or enhanced benefits for new customers can penalize long-standing customers and undermine relationship marketing practices.

Conceptual arguments suggest that organizations can successfully implement within-function ambidexterity through structural differentiation (Benner and Tushman 2003) or higher-order contextual systems and processes (Gibson and Birkinshaw 2004). Both approaches increase organizational complexity and require additional resources. Larger, older organizations likely have the resources, capabilities, and experience necessary to successfully manage this complexity, whereas smaller, nascent organizations may lack the requisite resources, capabilities, and experience to realize the benefits of ambidexterity.

Structural differentiation enables simultaneous exploration and exploitation by creating separate subunits, thereby reducing the conflicts that arise from competing cultures, incentives, and competencies (Benner and Tushman 2003, Gupta et al. 2006, Tushman et al. 2010). Large firms can use structural differentiation to internalize the variation-selection-retention process of the marketplace (Burgelman 1991), but smaller firms lack the information-sharing resources and capabilities to manage the complexity associated with physically and culturally separated activities within a single functional area (Siggelkow and Rivkin 2006). Thus, smaller organizations may lack sufficient size to effectively staff and manage multiple differentiated subunits. Moreover, the challenge of managing exploration–exploitation trade-offs and tensions increases as the size of the system decreases (Gupta et al. 2006). Larger firms that can establish physically or culturally separated units that focus on exploration and exploitation—whether in the product or market domain—will be more successful than

smaller firms that lack the required resources (Cao et al. 2009). This leads us to predict that successful implementation of product and market ambidexterity is contingent upon firm size.

HYPOTHESIS 3 (H3). Firm size will exert a positive moderating effect on product and market ambidexterity, such that (a) product exploration, product exploitation, and firm size will exert a positive three-way interaction effect on SME revenue performance; and (b) market exploration, market exploitation, and firm size will exert a positive three-way interaction effect on SME revenue performance.

Contextual systems and processes represent another approach to managing the complexities and tensions associated with ambidexterity (Gibson and Birkinshaw 2004). This approach requires higher-order metalevel capacities, including complex management systems and processes that foster systemwide orientation toward exploration and exploitation (Gibson and Birkinshaw 2004). Theoretically, these capabilities can emerge in the smallest of organizations; however, it takes substantial time and experience to develop complex management systems (Gibson and Birkinshaw 2004, March 1991). Moreover, realizing subsequent benefits requires an extended time frame, even after the capabilities have been developed (Van Looy et al. 2005). These two perspectives suggest that older firms may possess the experience, knowledge, and extended time frame required to implement and benefit from contextual systems and processes whereas younger firms do not. This leads us to hypothesize that firm age will positively moderate the effect of product and market ambidexterity on revenue performance.

HYPOTHESIS 4 (H4). Firm age will exert a positive moderating effect on product and market ambidexterity, such that (a) product exploration, product exploitation, and firm age will exert a positive three-way interaction effect on SME revenue performance; and (b) market exploration, market exploitation, and firm age will exert a positive three-way interaction effect on SME revenue performance.

The Research Program

To test our hypotheses, we used the nonprofit professional theater industry in the United States as our study context. To better understand the relevance of the nonprofit professional theater industry to a study of exploration and exploitation, it is important to distinguish between presenting theaters and the producing theaters examined in this study. Presenting theaters purchase performances of shows that are developed elsewhere and “trucked in” as a finished product (e.g., the touring company of *Billy Elliot*), complete with stage managers, actors, costumes, and sets. The presenting house is

responsible for “booking” performances and marketing to local customers. Nonprofit professional theaters, on the other hand, are involved in intensive, ongoing new product development, thus offering an excellent context for the study of exploration and exploitation. The average nonprofit professional theater in our sample introduced more than 14 new productions per year—that is, more than one new product introduction every month and 42 new productions over the three-year time frame of our study.

Several other features of the nonprofit theater industry are particularly well suited to the study of exploration, exploitation, and ambidexterity in product and market domains.¹ For example, the majority of nonprofit professional theaters adopt a bicameral management structure led by an artistic director and a managing director. This bicameral leadership structure ensures structural differentiation in product development and marketing activities. This differentiation is further emphasized by the terminology in this industry: *artists* create productions and *marketers* or *managers* market the productions. Integration between the artistic director and managing director is overseen by a volunteer board of directors, who are ultimately responsible for the theater’s financial position and mission fulfillment.

Product exploration and exploitation manifest in the season’s play selection, which can range from new-to-the-world productions (i.e., the world premiere of a new play) to new-to-the-market productions (e.g., the regional premiere of a play that premiered in New York the previous year) to revivals of theater classics (e.g., a new production of a Shakespeare play). Product exploration can involve commissioning new works directly from playwrights followed by preliminary readings and workshops, exploratory activities that are analogous to research and development. Exploration also manifests in artistic choices with respect to conceptual approach, casting decisions, and design elements. These two approaches to exploration are analogous to the development of radical new products and the incorporation of radical new design elements into existing products (Voss et al. 2008).

Given the intensity of new product introductions in the theater industry, product ambidexterity is often facilitated through the use of multiple rehearsal halls and theater spaces, with one space designated for “main stage productions” and other spaces designated for more experimental work. The idiosyncratic nature of artistic inputs is conducive to using differentiated subunits to implement product ambidexterity within a season of distinct plays. Still, some theaters choose to maintain a resident company of artists, and it is possible to have a 100% overlap of personnel across productions. Theaters sometimes produce “in rep,” with shows alternating nights of the week with the same actors cast in both productions. Thus, theaters can achieve product ambidex-

terity through (1) structural differentiation by using separate spaces and subunits of artists for each production or (2) contextual systems and processes that emphasize a systemwide orientation toward ambidexterity that is embraced by every member of a resident company.

Product ambidexterity decisions extend directly to market exploration and exploitation. Multiple spaces may feature multiple subscriber bases or single-ticket audiences. Within a single space, market exploitation efforts can focus on deepening the loyalty and purchase behavior of current customers through annual subscription campaigns that target subscribers and single-ticket buyers. The goal is to encourage repurchase and upgrades in the subscription package type or number of plays attended. Theaters implement minor changes each year (e.g., a flexible subscription package, ticket exchange privileges) to improve performance.

Theaters also allocate marketing effort to attracting new audiences to fill the remaining seats. These efforts can use social media and viral techniques to target nontraditional audiences (Hedli 2012). Theaters also use formulaic seasonal strategies that feature a mix of productions targeting distinct audiences—for example, a children’s series; a mix of world premieres targeting innovation-seeking, young adult audiences; contemporary plays targeting mainstream audiences; and classics targeting older, conservative audiences. The managing director of a theater in Los Angeles described this as “flavor of the month” programming, with classic, contemporary, and new plays featuring African American, Asian American, and Latino themes. Finally, as nonprofits, these theaters often engage in outreach activities designed to develop entirely new audiences and extend the organization’s impact on the community (Voss et al. 2006b).

Sampling Frame and Data Collection

Our sampling frame included theaters with membership in Theatre Communications Group (TCG). As the largest service organization for nonprofit professional theaters in the United States, TCG offers membership to all nonprofit professional theaters with annual budgets of \$50,000 or more. Focusing on TCG member theaters decreases sample heterogeneity by setting a minimum size and including only professional theaters that produce plays. Each year, TCG collects fiscal and operating data from member theaters and verifies the reports against external accounting audits to ensure accuracy. Participation varies from year to year; for example, 214 theaters participated in fiscal year (FY) 2003, 198 in FY 2004, and 202 in FY 2005. In 2005, TCG theaters constituted a \$915 million industry, selling nearly 13 million tickets and employing more than 36,000 individuals (Voss et al. 2006c).

We faced several concerns in testing the hypotheses. First, small interaction effects are notoriously elusive

because more than 1,000 cases are required to generate 0.80 power (Aiken and West 1991). Eight hypothesized interactions and a small sample translates into a high probability of Type II errors. Second, there is no definitive time frame for observing exploration and exploitation outcomes. Product exploration effects can take two to three years to manifest (Voss et al. 2006a), and market exploration and exploitation efforts also can take more than a year to yield benefits. Moreover, successful implementation of strategic emphases requires development activities during preceding years.

To address the power and timing concerns, we used objective measures from the TCG database for FYs 2003, 2004, and 2005.² We matched the objective data with strategic emphasis survey data collected at the end of FY 2003. We invited managing directors at the 214 theaters that reported to TCG in FY 2003 to participate in the survey. As the person responsible for the theater's strategic direction, the managing director represents the best internal informant for measuring strategic emphasis. After two follow-up contacts with nonrespondents, we received complete responses from 162 managing directors for a 76% response rate. Our analyses use an incomplete panel of 424 observations, 107 theaters with complete information for all three years, 37 theaters with information for two years, and 29 theaters with information for one year. In Table 1, we present descriptive statistics and a correlation matrix for the variables of interest, which we now describe in greater detail.

Ticket Revenue. The dependent variable is ticket revenue per available seat. To create this measure, we used total ticket revenue data reported to TCG for FYs 2003–2005 divided by the theater's annual seating capacity—that is, the total number of seats available at all performances during the year. This revenue performance measure controls for heterogeneity in operational capacity.

Firm Size and Age. Firm size was operationalized as the organization's lagged budget size. When available, we used the total expense figure reported in the TCG database for FYs 2002–2004. The lagged total expense figure was missing for 14% of cases because of the incomplete nature of the TCG panel. For the missing information, we used the total expense figure reported by theaters to the Internal Revenue Service (IRS) on Form 990, which is required of all nonprofits with budgets greater than \$25,000. These data are compiled in the Unified Database of Arts Organizations by the National Center for Charitable Statistics. Using lagged budget size mitigates endogeneity bias concerns.³ Firm age was operationalized as FYs 2003–2005 minus the theater's founding date, so that age varied across the three-year time frame. We collected the firm age measure from each theater's website. If the founding date was not listed on the website, we contacted the theater directly and asked for the founding date.

Market-Level Control Variable. To control for market conditions, we incorporated a measure of competitive density taken from IRS Form 990 data. We created competitive density scores by sorting the IRS Form 990 theaters for FYs 2003–2005 by city and state and then counting the number of theaters in the IRS database that corresponded to each TCG theater's market.

Firm-Level Control Variables. We incorporated several firm-level measures taken from the TCG database to control for heterogeneity and omitted variables. The control variables for FYs 2003–2005 were total marketing expenditures per available seat, average price, and number of seats. We also included lagged ticket revenues for FYs 2002–2004. As with the lagged total expense measure, lagged ticket revenue data were missing for 14% of cases. We imputed missing values using maximum-likelihood estimation based on information for all measures (Little and Rubin 1989). We also checked the robustness of our results using only complete cases, and all hypothesized results were replicated.

Strategic Emphasis Measures. We conducted two rounds of qualitative research with industry experts to develop scales for the strategic emphasis constructs. The first round involved audiotaped focus group discussions in four cities with 24 performing arts leaders. Guided by the concepts in the literature, the discussions concentrated on exploration and exploitation in an artistic context. One insight that surfaced repeatedly was that product exploration in this industry involves the creation of new-to-the-world plays as well as experimentation with nontraditional conceptualizations or interpretations of an existing play. Because each production is newly created by a theater, product exploitation in this industry was discussed in terms of incremental departure from tradition, with season selections from the existing canon of plays and conventional conceptualization and interpretation of the stories. Product exploitation was described by one artistic director as “making the wheel slightly rounder.”

Market exploration was discussed as a commitment to finding new audiences who might best respond to a particular work. A managing director offered this insight:

When you get down to selling single tickets for a show, you try to figure out the best marketing strategy for each based on where you think the likely audience for that show is: demographically, ethnically, whatever. Sure, you'll weight your resources in a particular direction because of that. So, we worked with a lot of cancer survivor groups in marketing *Wit*. Those were the folks that most needed to have that experience. That's what you do. Explore and seek out new markets.

Market exploitation is well represented through subscription campaigns and efforts to persuade single-ticket buyers to repurchase.

Table 1 Descriptive Statistics and Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11
1 <i>Product exploration</i> ^a	1.00										
2 <i>Product exploitation</i> ^a	-0.43	1.00									
3 <i>Market exploration</i> ^a	0.21	-0.02	1.00								
4 <i>Market exploitation</i> ^a	-0.09	0.35	0.11	1.00							
5 <i>Number of competitors</i> ^b	0.24	-0.27	0.01	-0.12	1.00						
6 <i>Ticket revenue per available seat</i> ^c	-0.13	-0.15	-0.12	-0.13	0.27	1.00					
7 <i>Marketing expenditures per available seat</i> ^c	0.03	-0.12	0.02	-0.05	0.40	0.53	1.00				
8 <i>Average price</i> ^c	-0.22	-0.02	-0.11	-0.09	0.20	0.85	0.50	1.00			
9 <i>Number of seats</i> ^c	-0.22	0.21	-0.01	0.11	-0.14	0.29	0.07	0.39	1.00		
10 <i>Lagged firm budget size (000,000s)</i> ^d	-0.19	0.06	-0.09	0.01	0.14	0.65	0.32	0.63	0.48	1.00	
11 <i>Firm age</i> ^e	-0.18	0.09	0.01	-0.11	-0.13	0.31	0.02	0.34	0.22	0.41	1.00
Mean	3.48	4.88	4.74	5.60	35.6	15.18	5.11	24.50	764.9	4.33	29.22
Standard deviation	1.44	1.17	1.19	0.99	54.9	8.70	2.98	9.65	696.4	6.04	16.50

Notes. Correlations greater than $|0.10|$ are significant at $p < 0.05$ (two-tailed test). Number of observations = 424.

^aData source: Strategic emphasis survey of managing directors conducted at the end of FY 2003.

^bData source: IRS 990 database for FYs 2003–2005.

^cData source: TCG database for FYs 2003–2005.

^dData source: TCG database for FYs 2002–2004 supplemented by IRS 990 database for FYs 2002–2004 for missing observations.

^eData source: Theater website or direct contact with theater personnel.

We used insights from these focus groups to develop three measures for each of the four strategic emphases. We then pilot tested with five managing directors, including follow-up interviews that led to minor changes. The final survey appears in Table A.1 in the appendix, along with factor and reliability analyses. These analyses generally supported the validity of the measures, although the reliability score for market exploration ($\alpha = 0.65$) was slightly below the generally accepted standard of 0.70.

Analyses and Results

We explicitly controlled for several forms of bias in our analyses. Selection bias occurs when the panel is not randomly drawn from the population of interest, especially when the response decision is related to the dependent variable of interest. We implemented the Heckman (1979) two-step procedure to control for selection bias. Using FY 2003 firm size, age, marketing expenditures, average price, and seating capacity, we created a selection variable (i.e., inverse Mills ratio) for each year, which controls for the effect of unmeasured characteristics related to the selection decision.

Heterogeneity bias arises when cross-sectional differences in the dependent variable are not captured by the explanatory variables, producing inconsistent coefficient estimates. Our data exhibit both market- and firm-level heterogeneity. We controlled for market-level heterogeneity using fixed market intercepts and a time-varying measure of competitive density. Firm-level independent variables—marketing expenditures, average ticket price, number of seats, and the lag of ticket revenue—control for unobserved heterogeneity across firms. We also allowed for firm-level heterogeneity with a random coefficient for the marketing expenditure variable (Hsiao

2004), and we specified White (1980) standard errors to control for any remaining heteroscedasticity. The resulting empirical model is consistent with the idea that competition occurs within geographic markets, which is captured by the market intercept and time-varying number of competitors, and with the idea that firms possess heterogeneous levels of marketing capability, which is captured by the random coefficient for marketing expenditures.

The analyses used restricted maximum likelihood estimation with repeated measures for each firm and a time trend variable. To facilitate interpretation of coefficients, we used orthogonal factor scores for the strategic emphases measures and standardized other lower-order terms before creating interaction terms. An assessment of influence diagnostics indicated that collinearity was not a problem. We present hierarchical results in Table 2 to demonstrate the robustness and stability of the estimates.

Results for the baseline model that includes only control variables and main effects appear in the column labeled Model 1; the strategic emphasis two-way interactions results appear in Model 2; the two-way firm size interaction results appear in Model 3, and the three-way firm size interaction results are added in Model 4; the two-way firm age interaction results appear in Model 5, and the three-way firm age interaction results are added in Model 6; and Model 7 shows results for the fully specified model. To assess the overall fit of the models, we compare the Bayesian information criterion (BIC) with the baseline model and adopt the standard that a BIC improvement greater than 2 is positive, greater than 7 is strong, and greater than 10 is very strong (Kass and Raftery 1995). To assess individual coefficients, we report the results of one-tailed t -tests for hypothesized relationships and two-tailed t -tests for non-hypothesized relationships.

Table 2 Moderator Regression Results with Ticket Revenue per Available Seat as the Dependent Variable

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Main effects							
<i>Selection control variable</i>	−0.18	−0.13	−0.13	−0.14	−0.16	−0.19	−0.14
<i>Number of competitors</i>	−0.25***	−0.25***	−0.24***	−0.24***	−0.25***	−0.25***	−0.26***
<i>Lagged ticket revenue per available seat</i>	0.11***	0.08**	0.07*	0.08**	0.06*	0.06*	0.06*
<i>Marketing expenditures</i>	0.18***	0.19***	0.17***	0.19***	0.15***	0.16***	0.18***
<i>Average price</i>	0.30***	0.29***	0.27***	0.27***	0.29***	0.29***	0.29***
<i>Number of seats</i>	−0.03**	−0.03**	−0.02**	−0.03**	−0.02*	−0.02*	−0.02**
<i>Lagged firm budget size</i>	0.05	0.06	0.13**	0.12**	0.08	0.07	0.13**
<i>Firm age</i>	0.06*	0.04	0.05	0.03	0.09**	0.07*	0.05
<i>Product exploitation</i>	−0.06	−0.06*	−0.07*	0.00	−0.07**	−0.05	−0.01
<i>Market exploitation</i>	−0.02	−0.02	−0.02	−0.00	−0.01	−0.02	−0.02
<i>Product exploration</i>	−0.03	−0.08*	−0.03	−0.03	−0.02	−0.02	−0.01
<i>Market exploration</i>	−0.04	0.02	0.02	0.02	−0.00	0.01	0.00
Strategic emphasis interactions							
Pure strategic emphasis							
<i>Product exploitation × Market exploitation</i>	H1(a) (+)	0.06**	0.07**	0.05*	0.09***	0.10***	0.07***
<i>Product exploration × Market exploration</i>	H1(b) (+)	0.05*	0.05*	0.07***	0.03	0.04	0.07***
Cross-functional ambidexterity							
<i>Product exploitation × Market exploration</i>	H2(a) (+)	0.08***	0.08***	0.10***	0.09***	0.08***	0.08***
<i>Product exploration × Market exploration</i>	H2(b) (+)	−0.02	−0.01	−0.02	0.04	0.03	0.05*
Within-function ambidexterity							
<i>Product exploitation × Product exploration</i>		−0.04	−0.01	0.02	−0.01	−0.01	0.03
<i>Market exploitation × Market exploration</i>		−0.04	−0.06*	−0.02	−0.09***	−0.08**	−0.06*
Strategic emphasis × Size interactions							
<i>Product exploitation × Firm budget size</i>			0.05	0.14**			0.07
<i>Market exploitation × Firm budget size</i>			0.02	0.01			0.02
<i>Product exploration × Firm budget size</i>			0.18***	0.20***			0.00
<i>Market exploration × Firm budget size</i>			0.02	0.01			0.08***
Three-way ambidexterity × Size interactions							
<i>Product exploitation × Product exploration × Firm size</i>	H3(a) (+)			0.16***			0.20***
<i>Market exploitation × Market exploration × Firm size</i>	H3(b) (+)			0.09**			0.09*
Strategic emphasis × Age interactions							
<i>Product exploitation × Firm age</i>					0.06**	0.09***	0.07*
<i>Market exploitation × Firm age</i>					0.08**	0.09**	0.05*
<i>Product exploration × Firm age</i>					0.16***	0.18***	0.18***
<i>Market exploration × Firm age</i>					−0.10**	−0.09**	−0.11***
Three-way ambidexterity × Age interactions							
<i>Product exploitation × Product exploration × Firm age</i>	H4(a) (+)					0.06*	−0.06
<i>Market exploitation × Market exploration × Firm age</i>	H4(b) (+)					0.06***	0.01
Model fit							
BIC	192.0	184.9	183.1	167.1	167.4	172.6	164.3
ΔBIC compared with Model 2			1.8	17.8	17.5	12.3	20.6

Note. All models feature market-level fixed intercept effects and a firm-level random coefficient for the marketing expenditures coefficient.
 * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Results for control variables and main effects are in line with expectations. Revenue per available seat is higher when competition is lower; when lagged revenue, marketing expenditures, and prices are higher; and when the organization is older. Revenue per available seat is lower as the number of seats increases, consistent with the idea that distant seats in large theaters are more difficult to sell. With the control variables in the model, firm size and the strategic emphases have no significant main effects on revenue. Although we did not hypothesize main effects for the strategic emphases, the insignificant results in Model 1 add to the “limited and idiosyncratic” support for performance implications for exploration and exploitation (Lavie et al. 2010, p. 137) and underscore

the importance of examining strategic emphasis combinations and contingency effects.

Examining Strategic Emphasis

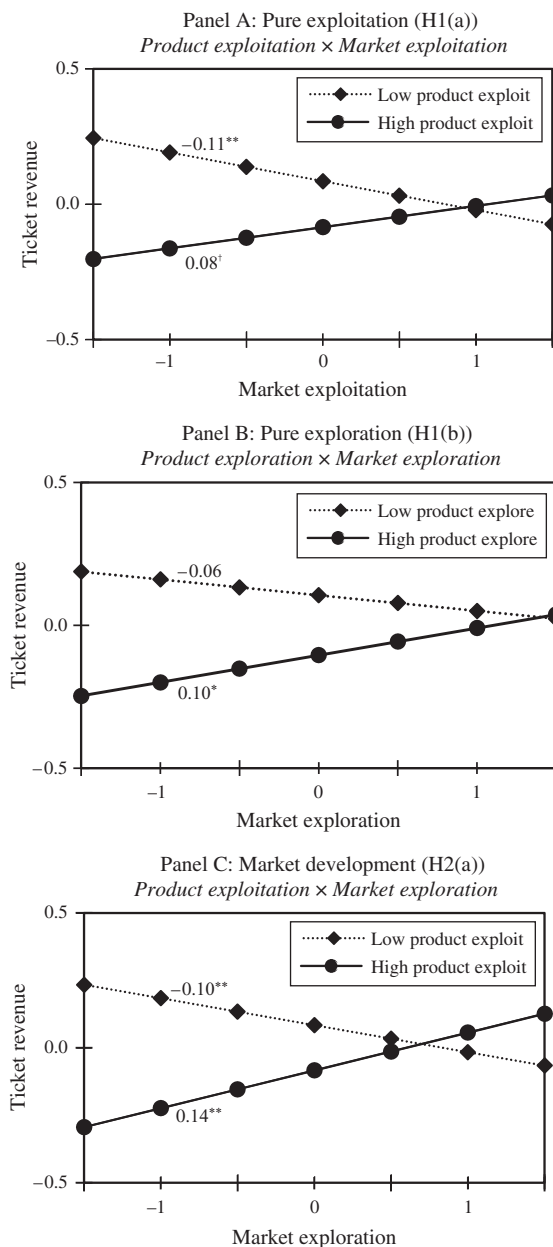
Two-Way Interactions

The addition of the strategic emphasis two-way interactions in Model 2 offers strong positive improvement in fit over Model 1 ($\Delta\text{BIC} = 7.1$). The results support three of the four hypothesized complementary effects for pure and cross-functional ambidexterity combinations. In support of H1(a), the *Product exploitation × Market exploitation* interaction is significantly positive; in support of H1(b), the *Product exploration × Market exploration* interaction is significantly positive; and in support of H2(a), the *Product exploitation ×*

Market exploration interaction is significantly positive. The *Product exploration* × *Market exploitation* interaction term is not significant, so H2(b) is not supported.

To facilitate interpretation of the significant two-way interactions, we plotted simple slope coefficients at high and low levels (± 1.5 standard deviations) in Figure 2 (Aiken and West 1991). Panel A captures the pure exploitation interaction and shows that market exploitation has a negative effect ($\beta = -0.11$, $p < 0.01$) on revenue when product exploitation is low and a marginally significant positive effect ($\beta = 0.08$, $p < 0.10$) when product exploitation is high. Panel B captures the pure

Figure 2 Plotting Significant Two-Way Strategic Emphasis Interactions



† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$.

exploration interaction. It shows that market exploration has no significant effect on revenue when product exploration is low and a positive effect ($\beta = 0.10$, $p < 0.05$) when product exploration is high. Panel C in Figure 2 shows the complementary effects of a market development strategy. Market exploration exerts a negative effect ($\beta = -0.10$, $p < 0.10$) on revenue when product exploitation is low and a positive effect ($\beta = 0.14$, $p < 0.01$) when product exploitation is high.

Collectively, these results indicate that successful exploitation of current product capabilities occurs when complementary marketing efforts are focused either on exploiting current customer markets (Figure 2, panel A) or exploring new customer markets (Figure 2, panel C). Successful exploration of new product capabilities also requires complementary marketing efforts, but these efforts must focus on market exploration (Figure 2, panel B). Market exploitation does not complement product exploration.

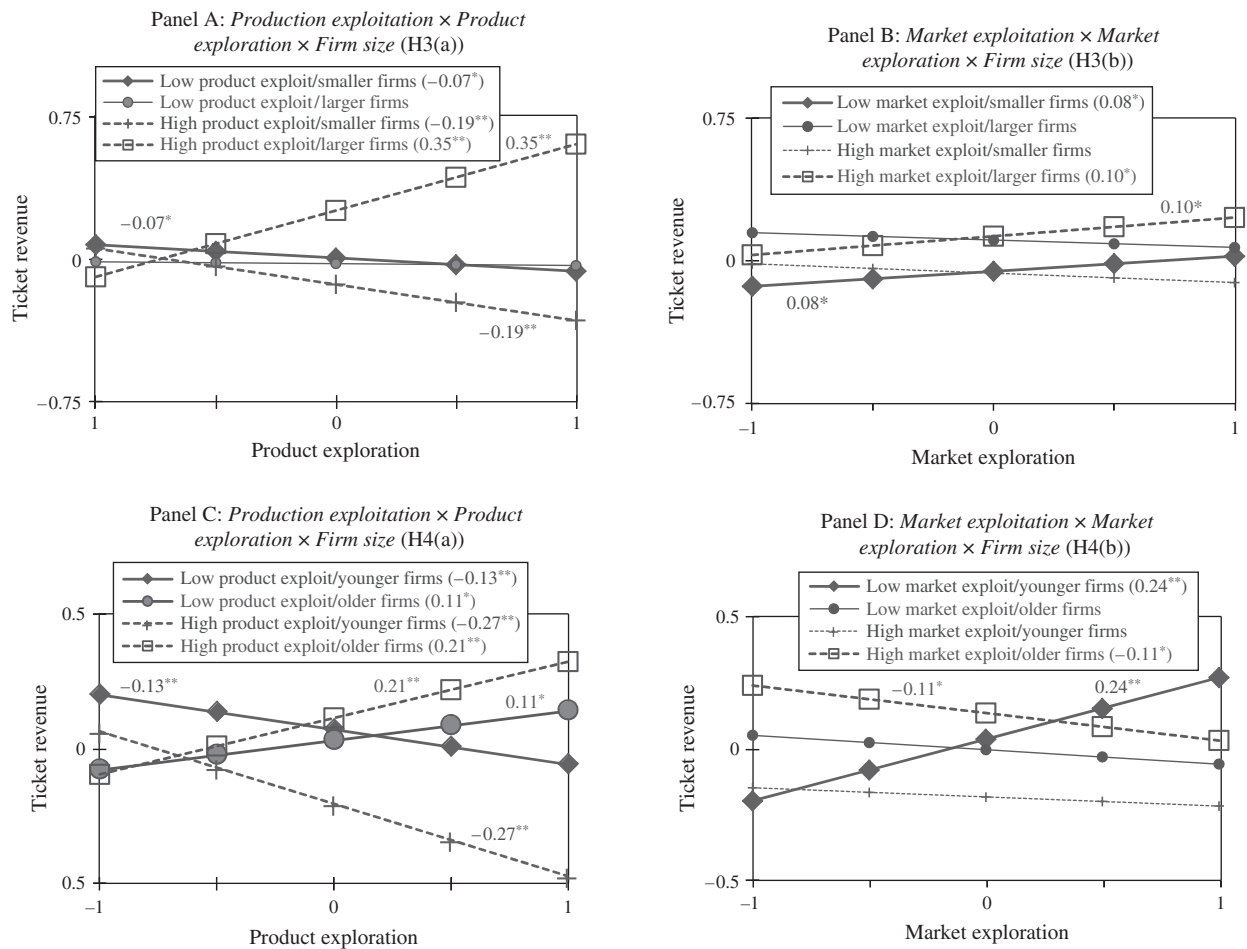
Examining Three-Way Size Interactions

Model 3 adds the four strategic emphasis × firm size interactions that are required to examine the three-way ambidexterity × size interactions. This model produces little improvement in fit compared with Model 2 ($\Delta\text{BIC} = 1.8$). The one significant interaction suggests that larger organizations are more effective implementing product exploration. Model 4, which adds the two three-way ambidexterity × firm size interactions, produces very strong improvement in fit compared with Model 2 ($\Delta\text{BIC} = 17.8$) and Model 3 ($\Delta\text{BIC} = 16.0$). The *Product exploitation* × *Product exploration* × *Firm size* interaction (H3(a)) and the *Market exploitation* × *Market exploration* × *Firm size* interaction (H3(b)) are both significantly positive, consistent with theoretical arguments that sufficient size is required to institute structural differentiation and successfully implement within-function ambidexterity. We also explored whether three-way size interactions were significant for pure or cross-functional emphases, but none were.

To facilitate interpretation of the three-way interactions, we plot simple slope coefficients in Figure 3 for smaller and larger firms. Because the firm size measure is positively skewed (see Table 1), we show plots for smaller firms at 0.5 standard deviation below the mean and for larger firms at 1 standard deviation above the mean. This equates to smaller firms with annual budgets equal to \$1.3 million and larger firms with annual budgets equal to \$10.4 million.

Panel A in Figure 3 depicts the three-way interaction between firm size and product ambidexterity. When larger firms engage in high product exploitation, product exploration has a strong, positive effect ($\beta = 0.35$, $p < 0.01$) on revenue; when larger firms engage in low product exploitation, product exploration has no effect on revenue. The interaction effect is the reverse for smaller

Figure 3 Plotting Significant Three-Way Interactions



* $p < 0.05$; ** $p < 0.01$.

firms. When smaller firms engage in high levels of product exploitation, product exploration has a strong, negative effect ($\beta = -0.19$, $p < 0.01$) on revenue; when smaller firms engage in low levels of product exploitation, product exploration has a weaker, negative effect ($\beta = -0.07$, $p < 0.05$) on revenue. Thus, product ambidexterity benefits larger firms but hurts smaller firms.

Panel B in Figure 3 depicts the three-way interaction between firm size and market ambidexterity. For larger firms, market exploration has a positive effect ($\beta = 0.10$, $p < 0.05$) on revenue in conjunction with a high level of market exploitation; when market exploitation is low, market exploration has no effect on revenue. We see the opposite effect for smaller firms. When smaller firms engage in low market exploitation, market exploration has a positive effect ($\beta = 0.08$, $p < 0.05$) on revenue; when smaller firms engage in high levels of market exploitation, market exploration has no effect on revenue. Thus, larger firms benefit from market ambidexterity, whereas smaller firms benefit from a focus on market exploration with low levels of market exploitation.

Examining Three-Way Age Interactions

Model 5 adds the two-way strategic emphasis × firm age interactions that are required to examine the three-way ambidexterity × age interactions. This addition leads to very strong improvement in fit compared with Model 2 ($\Delta \text{BIC} = 17.5$), and all four interactions are significant, pointing to strong learning effects. Older firms are more effective implementing product exploitation, market exploitation, and product exploration. Older organizations are less effective, however, implementing market exploration, a result consistent with the idea that older organizations are less adaptable to new and emerging markets (e.g., Christensen 1997).

Model 6, which adds the two three-way ambidexterity × age interactions, leads to no improvement in fit compared with Model 5 ($\Delta \text{BIC} = -5.2$), but the *Product exploitation* × *Product exploration* × *Firm age* interaction (H4(a)) and the *Market exploitation* × *Market exploration* × *Firm age* interaction (H4(b)) are significantly positive.⁴ The significant interactions are consistent with theoretical arguments that instituting the complex social processes associated with contextual systems and processes requires sufficient age and experience.

To facilitate interpretation of the three-way interactions, we plot simple slope coefficients in Figure 3.

Panel C in Figure 3 depicts the three-way interaction between firm age and product ambidexterity. When older firms engage in high product exploitation, product exploration has a strong, positive effect ($\beta = 0.21$, $p < 0.01$) on revenue; when older firms engage in low product exploitation, product exploration has a weaker, positive effect ($\beta = 0.11$, $p < 0.05$) on revenue. These results are consistent with the idea that older firms can successfully implement product ambidexterity. The results are the opposite for younger firms. When younger firms engage in high levels of product exploitation, product exploration has a strong, negative effect ($\beta = -0.27$, $p < 0.01$) on revenue; when younger firms engage in low levels of product exploitation, product exploration has a weaker, negative effect ($\beta = -0.13$, $p < 0.01$) on revenue. These results suggest that young firms have difficulty implementing product exploration, a difficulty that is exacerbated by attempts to simultaneously implement both product exploration and product exploitation.

Panel D in Figure 3 depicts the three-way interaction between firm age and market ambidexterity. When older firms engage in high market exploitation, market exploration has a negative effect ($\beta = -0.11$, $p < 0.05$) on revenue; when older firms engage in low market exploitation, market exploration has no effect on revenue. Contrary to our theoretical development, these results suggest that older firms do not benefit from market ambidexterity; in fact, older firms realize no benefits from market exploration under any conditions. When younger firms engage in high levels of market exploitation, market exploration also has no effect on revenue; but when younger firms engage in low levels of market exploitation, market exploration has a strong, positive effect ($\beta = 0.24$, $p < 0.01$) on revenue. These results are consistent with our theoretical development, in that younger firms do not benefit from market ambidexterity; instead, younger firms benefit from a focus on market exploration to the exclusion of market exploitation.

Model 7, which includes results for all independent variables, provides a better fit than all other models, but the three-way age interactions are not significant. Combining the results from all models produces the following inferences. Firm size produces negligible contingency effects for implementing each individual strategic emphasis but robust complementary effects for implementing both product and market ambidexterity. By contrast, age and experience produce strong learning effects for implementing individual strategic emphases, but the learning effects for product and market ambidexterity are not robust. The product ambidexterity effects associated with age disappear when the firm size three-way interactions are included in the analyses, and older firms do not exhibit any market ambidexterity capabilities.

Discussion

Much of the literature to date has focused on how firms can overcome challenges and barriers to implement organizational ambidexterity and simultaneously pursue exploration and exploitation. The implicit assumption—what Raisch and Birkinshaw (2008, p. 392) refer to as the “ambidexterity premise”—is that organizational ambidexterity is necessary for long-term performance and that all firms should endeavor to achieve ambidexterity (e.g., March 1991). Relatively little research has explicitly examined if and when organizational ambidexterity impacts firm performance, and empirical research linking ambidexterity to objective, financial measures of firm performance is especially scarce.

Rather than assume that ambidexterity is desirable, our contingency hypotheses focus on when and how exploitation, exploration, and ambidexterity affect organizational performance. The results in Model 7 confirm that the effects of exploitation and exploration on firm performance are completely contingent; none of the main effects is significant in the fully specified model, and the higher-order interaction effects provide strong explanatory value. The results support complementary effects for pure strategies that combine product exploration with market exploration or product exploitation with market exploitation and for a market development strategy that combines product exploitation with market exploration.

The contingency hypotheses for firm size and age question the ambidexterity premise and complement prior research examining organizational characteristics that facilitate ambidextrous learning (e.g., Fang et al. 2010, Jansen et al. 2012). The findings indicate that product ambidexterity has positive effects on revenue for older and larger—but not younger and smaller—firms and that market ambidexterity has positive effects on revenue for larger—but not smaller, younger, or older—firms. The implication is that smaller, nascent organizations lack the resources, capabilities, and experience required to manage the tensions and trade-offs that escalate when exploration and exploitation manifest within a single domain.

Our investigation is noteworthy on several dimensions. Linking exploitation and exploration in both product and market domains to overall organizational performance represents new levels of analysis for ambidexterity. Compared with larger corporations, SMEs are limited in their ability to create structures that separate exploration and exploitation activities or buffers that conceal performance problems. The dynamism of this industry, where the average theater introduced 14 new productions per year, amplifies the learning effects and tensions associated with exploration, exploitation, and ambidexterity. Our examination of three years' worth of objective financial performance in this industry provides initial insights into the impact of exploration, exploitation, and ambidexterity on long-term firm performance.

Complementary Effects for Pure Strategies and Cross-Functional Ambidexterity

We hypothesized that the two pure strategies and two cross-functional ambidexterity combinations would exert complementary effects on revenue performance. We used congruence logic to argue that pure exploration and pure exploitation are internally consistent strategies that create organization-wide consensus and clarity about what to do and why it is worthwhile. We built on diffusion and resource dependence theories to argue that new customer markets would respond positively to product exploration and that existing customers would respond positively to product exploitation. The empirical results support these expectations at two levels: (1) positive correlations between product and market exploration ($r = 0.21$ from Table 1) and between product and market exploitation ($r = 0.35$ from Table 1) suggest that firms find them inherently compatible in implementation, and (2) positive coefficients for the two pure strategy interactions indicate complementary effects for combining product exploration with market exploration or combining product exploitation with market exploitation.

We used organizational learning theory to argue that ambidexterity across product and market domains enables organizational adaptation by aligning product development and production activities with customer expectations. The market development strategy combining product exploitation and market exploration exerted a positive impact on revenue performance (see Figure 2, panel C), which supports the value of extending current product capabilities to explore new markets. The product development strategy combining product exploration and market exploitation had no effect on revenue, which reflects equivocal arguments that new products can deliver superior benefits to current customers (e.g., O'Reilly and Tushman 2008, Tushman et al. 2010) but that existing customers may not value new offerings that redefine the benefit package (Christensen 1997).

The two-way interaction results are generally consistent with the concept of equifinality, wherein organizations can exhibit different profiles of congruence and still be effective (Fry and Smith 1987), and with prior findings indicating that achieving both internal and external congruence may not be necessary (Meyer 1982). The pure strategies enhance performance by ensuring internal goal congruence (Voss et al. 2006b). The market development strategy enhances performance by simplifying the learning experience in the product domain and fostering adaptive learning in the market domain (Levinthal and March 1993).

Within-Function Ambidexterity and Firm Size

Larger firms in our sample successfully implemented both product and market ambidexterity. Figure 3, panel A, offers interesting insights with respect to combining product exploration and exploitation. Conceptually, product exploration creates new capabilities that

firms can subsequently exploit. Our results clearly support the idea that these activities are complementary in larger firms. Larger theaters in our sample realized higher revenues when they produced a diverse season of plays combining more traditional offerings with innovative new works. Smaller firms, on the other hand, realize lower revenues and are clearly worse off when they try to combine product exploration and exploitation. The nature of the interaction indicates that product exploration and exploitation act as substitutes in smaller firms that lack the resources required to simultaneously explore and exploit product capabilities.

Larger firms also benefitted from combining market exploration with market exploitation (Figure 3, panel B). An artistic director of a large theater spoke directly to an intentional market ambidexterity strategy: "We strive for no more than 50% subscriber capacity. I don't want to tailor the art to an older audience's tastes just because they have been with the theater a long time. I'm a big fan of target marketing." Smaller firms, on the other hand, are better off when they focus on market exploration to the exclusion of market exploitation because they lack the resources required to simultaneously explore new markets and exploit current markets. Collectively, these results provide robust support for the important role of structural differentiation (e.g., Tushman et al. 2010) and add to evidence indicating that firm size is a necessary condition to realize the benefits of ambidexterity (Cao et al. 2009) and that smaller firms' performance suffers when they implement complex, ambidextrous strategies (Ebben and Johnson 2005).

Within-Function Ambidexterity and Firm Age

Comparing the graphs in panels A and C in Figure 3 suggests that size and age have similar moderating effects on product ambidexterity. Older firms enhance performance by implementing product ambidexterity and younger firms' performance suffers when they attempt to implement product ambidexterity. These results support the idea that firms can learn how to implement product ambidexterity over time. Panel D in Figure 3 demonstrates benefits to younger firms that focus exclusively on market exploration to the exclusion of market exploitation, but the evidence does not support the idea that older firms learn how to effectively implement market ambidexterity over time.

Coupled with the lack of significance for the three-way ambidexterity \times age interactions in the fully specified Model 7, these results suggest that growing older enables firms to implement ambidexterity, but only if they also grow larger. Firm size and age are positively correlated ($r = 0.41$ from Table 1), but they are distinct constructs. If firm size is a proxy for success emanating from organizational learning, then our results do not distinguish between learning effects that facilitate contextual systems and processes and pure size effects that

facilitate structural differentiation. We can conclude that the results provide compelling support for the complementary role of firm size in the successful implementation of within-function ambidexterity, but additional research is necessary to explicate the roles of organizational learning, contextual systems and processes, and structural differentiation.

It is clear that age, experience, and learning play a robust role in reinforcing the effects of each individual strategic emphasis. Model 5, which added the four two-way strategic emphasis \times age interactions, provided a large incremental improvement in model fit, and the effects remained robust in Model 7 with the addition of the two-way and three-way size interactions. The positive interactions between firm age and product and market exploitation are not surprising. Age and experience should enhance a firm's ability to exploit current capabilities. These findings are also consistent with Burgelman's (2002) observations of coevolutionary lock-in, wherein both internal and external strategy making demonstrates increasing levels of inertia.

The opposite signs for the *Product exploration* \times *Firm age* and *Market exploration* \times *Firm age* interactions are surprising and warrant additional insight and speculation. We believe that the typical organizational structure and processes in this industry explain why older theaters adapt well to product-related change but not to market-related change. As described earlier, the average theater in our sample introduced more than 14 new productions per year using only 59 full-time employees. Many theaters accomplish this through the extensive use of outsourced artists (i.e., directors, designers, and actors) who are hired for a specific play. In effect, these theaters have institutionalized employee turnover as a key feature of the product exploration process, employing 7 to 9 full-time artists and over 100 "jobbed-in" artists per year (Voss et al. 2006c). This turnover increases variation and organizational learning, effects that are amplified over time (March 1991). As a result, older theaters demonstrate strong learning effects that enhance the effectiveness of product exploration, product exploitation, and product ambidexterity.

By way of contrast, the average theater held 40 permanent administrative personnel and reported employee turnover as 10% per year, well below the national turnover rate for all industry sectors (see http://www.nobscot.com/survey/us_total_separations_0806.cfm, accessed October 12, 2012). This stable administrative unit is responsible for marketing rapidly changing product offerings to a dynamic marketplace. Theaters reduce the complexity of the marketing activity by developing subscription campaigns that exploit loyal customers. Over time, incremental learning enhances the effectiveness of these market exploitation activities, but older theaters appear to be incapable of adapting marketing efforts to explore emerging customer markets or develop

market ambidexterity—unless they also grow in size. Presumably, organizational growth promotes an influx of fresh administrative talent with diverse perspectives.

Because the market ambidexterity capability is a key distinction between larger theaters and older theaters, we believe that the ability to develop and sustain market ambidexterity—especially market exploration—is a critical capability driving long-term growth in this industry. Theaters implement rapid product development that ensures variation through high turnover in artists. Smaller, younger theaters do best when they explore new markets, likely out of necessity. As they age, many theaters develop a loyal following and lose the ability to explore new markets because of the rigidity of their subscription marketing model or the rigidity of long-term personnel who lack the know-how to implement successful campaigns using newer methods such as social media or texting that are more relevant to younger, emerging markets. Continuing to nourish these dynamic market exploration capabilities while simultaneously transitioning to market exploitation with core customers is a key to growth.

Ours is not the first study to uncover a pattern of dynamic product exploration capabilities hindered by rigidity or inability in market exploration. Tripsas and Gavetti (2000) attribute Polaroid's failures to an inability to implement new business models that allowed entry into new markets, not to an inability to develop new technologies. Likewise, Christensen (1997) finds that established firms failed not because they failed to develop new technologies but because they were unwilling to pursue emerging markets opportunities that were initially less profitable. Thus, although much of the literature has implicitly emphasized product or technology exploration, our results add to accumulating evidence that ongoing market exploration may be a critical factor to ensuring long-term success.

Ambidexterity Paradoxes

As expected, larger firms implemented product ambidexterity and market ambidexterity more effectively than smaller firms, and there is some evidence that older firms are more effective than younger firms in implementing product ambidexterity. Despite the benefits, organizational inertia suggests that larger, older firms are more likely to exploit and less likely to explore and achieve ambidexterity. Specifically, larger organizations are susceptible to structural inertia, which is driven by the "size, complexity, and interdependence in the organization's structures, systems, procedures, and processes" (Tushman and O'Reilly 1996, p. 18). Likewise, organizational age and experience are linked to cultural inertia (Tushman and O'Reilly 1996), entrenched competency traps (Levitt and March 1988, Nelson and Winter 1982), and core rigidities (Leonard-Barton 1992). As an artistic director in one of our focus groups observed, "The

older you get, the safer you get and the more money you have. You may have someone in a management position who says, ‘OK, we don’t need to push it any more. This really works; this keeps us in the black.’ But that very thing is what’s going to keep the institution from continuing to grow and to increase and diversify that audience base.”

To explore the extent to which organizational inertia might deter ambidexterity in this industry, we examined simple correlations between firm size and age and reported levels of product and market ambidexterity. We operationalized product ambidexterity as the product exploration score times the product exploitation score and market ambidexterity as the market exploration score times the market exploitation score. We used one observation (i.e., FY 2003) per firm. Consistent with expectations, product ambidexterity was negatively correlated with both firm size ($r = -0.17$, $p < 0.05$) and firm age ($r = -0.15$, $p < 0.05$). The correlations in Table 1 suggest that these results emanate from the reluctance of larger ($r = -0.19$) and older ($r = -0.18$) firms to engage in product exploration, despite the fact that only larger and older firms realize benefits from product exploration (Figure 3, panels A and C).

These results suggest that structural inertia (Henderson and Clark 1990, Voss et al. 2008) inhibits product exploration and product ambidexterity. If firms can overcome this inertia, however, their performance increases dramatically (see Figure 3, panels A and C). Thus, the product ambidexterity paradox is that only larger, older firms have the resources, capabilities, and experience required to benefit from a product ambidexterity strategy; nevertheless, these larger, older firms are significantly less likely to implement product ambidexterity.

The results are quite different for market ambidexterity. The correlation between firm size and market ambidexterity was not significant, but the correlation between firm age and market ambidexterity was negative ($r = -0.12$, $p < 0.10$). Two interesting patterns emerge for the market ambidexterity result: (1) the correlations in Table 1 suggest that the negative correlation between age and market ambidexterity emanates from the reluctance of older firms to emphasize market exploitation ($r = -0.15$, $p < 0.05$), not a reluctance to pursue market exploration; and (2) the results in Figure 3, panel D, indicate that older firms do not benefit from market exploration, especially as part of a market ambidexterity strategy.

This pattern of results suggests that market ambidexterity is not inhibited by organizational inertia. Indeed, older firms appear to recognize that returns from current customer markets are limited, and they pursue market exploitation less as they age. However, they face a capability gap when they attempt to implement market exploration (Leonard-Barton 1992). As we argue above,

this capability gap is likely due to the rigidity of the subscription marketing model or the rigidity of long-term personnel who lack the know-how to implement successful new marketing campaigns. Thus, the market ambidexterity paradox is that only larger firms have the resources and capabilities required to benefit from a market ambidexterity strategy, but commitment to developing and sustaining market ambidexterity capabilities—especially market exploration—is necessary to drive long-term growth.

Managerial Implications

Our results suggest general managerial implications and specific recommendations for arts managers. Several strategic combinations produced positive effects on revenue. For larger firms, product ambidexterity leads to significantly higher revenues (Figure 3, panel A). This type of competitor offers diverse product lines, with one line staying close to the company’s current strengths and serving as the cash cow for one or more uncertain, experimental product lines. In a theater context, this differentiation of product lines is frequently carried out in different theater spaces. Although the different product lines may target different customer segments, this strategy can also involve cross selling: moving more innovative customers to more traditional products or traditional customers to more exploratory offerings. Despite this empirical finding, which is consistent with Schumpeter’s (1962) theoretical arguments, larger theaters generally do not engage in high levels of product exploration ($r = -0.19$ from Table 1).

This finding reaffirms the idea that inertia with respect to product exploration can be deleterious to performance. It is particularly relevant to managers of arts organizations, which are experiencing long-term declines in attendance (National Endowment for the Arts 2009). Given this changing marketplace, larger theaters’ unwillingness to pursue product exploration corroborates the “paradox of success,” wherein organizations persist with strategies that provided past success but ultimately lead to performance declines (Audia et al. 2000). Calls for greater exploration in the arts abound (e.g., Ragsdale 2009, Walker-Kuhne 2005), and our findings should provide confidence to managers of larger, older theaters to pursue product ambidexterity (Figure 3, panels A and C).

Our empirical findings support the wisdom of a market development growth strategy, which is widely seen in global expansion efforts by companies seeking new markets for current products. There also are high-profile examples from the arts world. For example, the Live in HD broadcasts of Metropolitan Opera performances reach over two million new customers in 46 countries (see Metropolitan Opera 2010). The Metropolitan Opera also provides a recent example of the difficulty of combining product exploration with market exploitation; its new and innovative production of *Tosca* was publicly

rejected by subscribers, who hooted and jeered, demanding a return to the 1985 Zeffirelli production they had come to love (Wakin 2009). Loyal long-term audiences can be emotionally invested in status quo offerings.

Market exploration especially benefits small, nascent firms with low levels of current product and customer resources (Figure 3, panels B and D). This strategy can be realized by identifying a market that is underserved by larger firms and developing a niche position. In the theater context, underserved markets might be defined based on culturally specific populations (e.g., African American theater), language (e.g., Latino theater presented in Spanish), age (e.g., children's theater), geography (e.g., rural America), or social issues (e.g., gay/lesbian theater).

It is particularly important for small, emerging firms to avoid diluting limited resources by pursuing product or market ambidexterity (see Figure 3). Managers of small firms achieve better performance by implementing simple, focused strategies (Ebben and Johnson 2005). Many small nonprofits avoid making hard trade-off decisions and fall into the trap of wanting to provide everything to everyone, with a very modest budget. By keeping focused on a pragmatic plan and well-defined mission that specifies realistic, intended offerings and target markets, small organizations can maximize their impact and create a clear identity (Bradach et al. 2008).

Limitations and Future Research Directions

Although the use of a single industry enhances internal validity, caution should be used when generalizing these findings to other industries. Our findings clearly demonstrate that smaller theaters have greater difficulty than larger theaters dealing with the ambidexterity challenge. Post hoc analyses indicate that annual budgets greater than \$5.5 million are required before product ambidexterity exerts a positive effect on performance and that annual budgets greater than \$8 million are required before market ambidexterity exerts positive effects on performance. Combining these results with previous findings provides tentative insights regarding threshold levels for the contingent effect of firm size on the organizational ambidexterity–performance relationship.

In the theater context, the threshold level for firm size effects was lower in the product domain—which is typically organized into dynamic, decentralized, and independent project teams—than in the marketing domain, which is typically less dynamic and more centralized and interdependent. Examining a sample of technology firms in a dynamic, emerging market, Cao et al. (2009) find that combined ambidexterity exerted positive effects on performance when firm size exceeded 87 employees, equivalent to approximately \$1 million in annual sales. Examining a sample of relatively stable manufacturing firms, Ebben and Johnson (2005) conclude that, for firms

with annual sales less than \$20 million, a focused strategy emphasizing either flexibility or efficiency outperformed an ambidextrous strategy emphasizing both. We speculate that, in dynamic, decentralized contexts where resource interdependency is low, the threshold level for firm size effects may be lower than in stable, centralized contexts where resource interdependency is high (see Jansen et al. 2012). Future research explicitly examining threshold levels for the contingent effects of firm size on the organizational ambidexterity–performance relationship in different contexts would be theoretically and managerially interesting.

A key element missing from the measurement and analyses in our study is strategic emphasis execution quality. This omission does not affect the inferences, which are based on the assumption that execution quality is normally distributed across each strategic emphasis, but it does limit our ability to identify key elements of execution quality. We also did not examine supply-side and internal factors that may impact firms' cost structures and bottom lines. The ultimate success of strategic emphases and ambidexterity also depends on implementation costs and profits. Additional theory and data are required to explore the increasingly complex relationship between exploration, exploitation, costs, and profit.

Finally, some of our theoretical arguments assume linkages between observable organizational characteristics and unobserved, underlying mechanisms. For example, we link firm size to structural differentiation through the underlying mechanism of resources and capabilities, and we link firm age and experience to contextual systems and processes through the underlying mechanism of organizational learning. Future research that explicitly measures structural and contextual approaches to ambidexterity and assesses their relative effectiveness in driving firm performance would be instructive.

There is widespread consensus that exploration and exploitation influence revenues, but this knowledge is insufficient to achieve superior business performance. Managers must understand how to align exploration and exploitation within and across functional areas with firm size and age to drive revenue growth. Our results demonstrate that managers' abilities to achieve alignment are heterogeneous and that revenues benefit or suffer as a consequence. We encourage future research that offers additional insights relating ambidexterity to firm performance and the role of key contingency factors.

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Appendix

Table A.1 Strategic Emphasis Factor Analysis and Reliability Results

	Product exploration	Product exploitation	Market exploration	Market exploitation
<i>Artistic decisions emphasize...</i>				
<i>Product exploration</i> ($\alpha = 0.83$)				
Creating revolutionary new conceptual approaches	0.86	-0.07	0.17	-0.01
Experimenting with radical new works	0.86	-0.10	-0.02	-0.13
Challenging traditional artistic boundaries	0.80	-0.19	0.15	0.03
<i>Product exploitation</i> ($\alpha = 0.71$)				
Offering shows that stay close to our known strengths	-0.30	0.75	0.00	0.20
Maximizing the contribution of our in-house artistic and production skills	0.10	0.75	0.00	0.14
Producing shows similar to those that have done well for us in the past	-0.38	0.72	0.06	0.08
<i>Marketing decisions emphasize...</i>				
<i>Market exploration</i> ($\alpha = 0.65$)				
Challenging ourselves to increase the number of first-time theatergoers	0.04	0.04	0.78	0.20
Initiating programs designed to attract new audiences	0.14	0.22	0.76	0.02
Seeking out audiences in new markets	0.07	-0.19	0.75	-0.04
<i>Market exploitation</i> ($\alpha = 0.78$)				
Getting single-ticket buyers to attend multiple shows	-0.07	0.09	0.10	0.84
Encouraging more frequent attendance by our core audience base	0.03	0.14	0.05	0.80
Persuading existing ticket buyers to provide greater financial support	-0.07	0.14	0.02	0.78

Notes. Orthogonal rotation results with loadings greater than $|0.40|$ are shown in bold for visual clarity. All items used a seven-point scale anchored by weak emphasis (1) and strong emphasis (7). Confirmatory factor analysis replicated these results and provided strong support for the convergent and discriminant validity of the scales.

Endnotes

¹This discussion is informed by the expertise of a coauthor who has over 20 years of experience working in and consulting for the nonprofit professional theater industry. She worked in executive-level positions at three nonprofit professional theaters. As producing director, she transferred two productions to Broadway, one of which subsequently went on national tour. As a consultant for the National Endowment for the Arts and numerous arts-funding foundations and service organizations, she has assessed strategy, operations, and grant proposals for several hundred nonprofit professional theaters.

²We report results using three years of objective data, but we also examined models using two years and four years of data, which replicated the hypothesized results.

³We also explored using number of full-time employees as a measure of firm size, which replicated all of the hypothesized results but produced slightly worse model fit.

⁴We also explored whether the other three-way age interactions were significant, but none were.

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