



Does ambidexterity in marketing pay off? The role of absorptive capacity

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ABSTRACT

Research in marketing and other organizational domains shows that the ambidexterity–firm performance relationship is elusive, and high levels of both exploitation and exploration may not always lead to higher firm performance. To shed light on this topic, this study examines marketing ambidexterity (MA) as balanced levels of exploitation and exploration across marketing activities and tests how firm-level absorptive capacity (AC) moderates the MA–firm performance relationship. Analyzing a unique dataset that combines survey and archival financial data from 318 private firms, this study finds that MA is positively associated with sales growth for firms with relatively strong AC. This relationship becomes negative for firms with weak AC. Results are robust when the additive and multiplicative terms of exploitation and exploration are controlled for. Study findings underscore the critical role of organizational knowledge processing in ensuring that firms can benefit from the pursuit of MA.

1. Introduction

To succeed in today's complex and fast-changing marketplace, firms must not only exploit current marketing knowledge and practices but also explore new ones. That is, firms must incorporate ambidexterity into their marketing functions (Day, 2011). Through the simultaneous pursuit of exploitation and exploration across marketing programs, firms would be able to identify and seize market opportunities to a greater extent, resulting in higher performance. However, studies examining the link between marketing ambidexterity (MA) and firm performance are scarce and have limitations that restrict the understanding of this complex relationship.

First, prior marketing research examining ambidexterity focuses mainly on product innovation strategies such as radical versus incremental innovation (e.g., Atuahene-Gima, 2005). Thus, the implications of pursuing ambidexterity across marketing actions are underexplored. In addition, previous studies did not conceptualize MA explicitly, and a lack of conceptual clarity hinders the comparability of results across studies. The first conceptualization of MA introduced the construct of “strategic marketing ambidexterity” as “the orchestration of exploitation and exploration in strategic marketing actions, from the perspective of advertising (exploitation) and R&D (exploration)” (Josephson,

Johnson, & Mariadoss, 2016, p. 540). This definition is grounded in a narrow view of marketing that omits crucial marketing actions such as targeting, pricing, and customer service. Notably, the primary conceptual distinction between exploitation and exploration lies in leveraging existing knowledge versus searching for new knowledge (Levinthal & March, 1993; March, 1991). Thus, advertising and R&D can both be exploratory or exploitative in nature (Mudambi & Swift, 2014); linking only advertising to exploitation and only R&D to exploration is not entirely accurate from the theoretical viewpoint.

Second, research examining the joint effects of marketing exploitation and exploration on firm performance focuses mostly on the interaction between exploitation and exploration (Ho & Lu, 2015; Kyriakopoulos & Moorman, 2004; Vorhies, Orr, & Bush, 2011). This view implicitly implies that firms can improve performance by increasing either exploitation or exploration regardless of the balance between these two conflicting spectra of marketing actions. However, no research has addressed the implications of firms' achievement of balanced levels of marketing exploitation and exploration. We argue conceptually and demonstrate empirically that under certain conditions, firms can improve performance when their marketing functions hold a bilateral and more balanced focus (i.e., high MA).

Third, empirical evidence reveals that the joint effects of marketing

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exploitation and exploration could be either positively or negatively¹ associated with firm performance (Ho & Lu, 2015; Kyriakopoulos & Moorman, 2004; Vorhies et al., 2011), suggesting that the MA–firm performance relationship may be contingent on supportive organizational processes, and the omission of such moderators could account for the mixed findings in prior research. Since the literature suggests that exploration and exploitation essentially deal with knowledge use (Levinthal & March, 1993; March, 1991), the payoffs of pursuing MA may hinge on firms' ability to capitalize on both internal and external knowledge (Kozlenkova, Samaha, & Palmatier, 2014; Moorman & Miner, 1997; Slater & Narver, 1995). Therefore, our primary premise is that the MA–firm performance relationship is likely to be contingent on a firm's ability to acquire and process organizational knowledge: its absorptive capacity (AC).

Given the strategic importance of MA and the limitations of prior research, this study emphasizes the importance of striking a balance between marketing exploitation and marketing exploration in achieving stronger firm performance. Although prior research has documented the direct effects of marketing exploitation and exploration, along with their interaction, on firm performance, this study demonstrates that their balance matters, with performance in certain circumstances exceeding that attributed to the direct effects. In addition, our empirical findings show that “balanced”² MA is significantly associated with sales performance, whereas “combined” MA (operationalized as either an additive or multiplicative term of marketing exploitation and exploration) is not.

Our study contributes to the marketing literature in several ways. First, we refine the conceptualization of MA as the marketing function's bilateral focus, giving equal attention and effort to marketing exploitation and marketing exploration.³ Empirically, MA is operationalized as convergent (similar) levels of exploitation and exploration across major marketing actions, including product design, promotion, segmentation and targeting, pricing, and customer service. Then, we examine the nature of the relationship between MA and firms' marketing performance in terms of sales growth. Considering MA as a distinct characteristic of firms' marketing function allows us to distinguish it conceptually and empirically from organizational ambidexterity, which typically refers to the bilateral strategic focus of the entire organization.

Second, this study examines how the firm's AC moderates the relationship between MA and sales growth. A salient aspect of AC is the ability to integrate internal and external knowledge (Cohen & Levinthal, 1990; Rothaermel & Alexandre, 2008), thus AC could play a crucial role in resolving the trade-off between the inward-focused exploitation and the outward-focused exploration. In addition, firms possessing strong AC are likely to be more alert to emergent market opportunities and proactive in seizing those opportunities by engaging in internal and external search of market-related knowledge (Vorhies et al., 2011). Therefore, AC possibly affects the extent to which firms can benefit from embracing MA. Examining the interplay between MA and AC, the present study confirms their complementarity in enhancing marketing effectiveness and inducing greater customer demand,

¹ The cited references examined the multiplicative effects of marketing exploitation and exploration and addressed moderators, including market orientation and supplier collaboration (Table 1).

² Cao et al. (2009) use the terms “balanced dimension” and “combined dimension” of ambidexterity to denote the convergence and complementarity between exploration and exploitation at the firm level respectively.

³ Marketing exploitation refers to the firm's focus on improving and refining existing marketing processes and programs, whereas marketing exploration refers to the focus on finding and experimenting with new ways of undertaking marketing processes and programs (Kyriakopoulos & Moorman, 2004). Empirically, MA was operationalized as the absolute difference between the level of marketing exploration and exploitation (aggregated across five groups of marketing actions).

resulting in higher sales. Table 1 summarizes how this study adds knowledge to the emergent MA literature.

In terms of methodological merits, this research uses cross-sectional survey data to capture complex constructs and combines these data with archival data to test the MA–sales growth relationship. By avoiding the biases in self-report performance measures commonly used in the MA literature, we ensure strong validity of our results. The empirical findings show that, for firms with medium and high levels of AC, MA has an upward concave relationship with sales growth. However, this relationship becomes negative for firms with low levels of AC. Thus, this study provides empirical evidence in support of MA as the source of firms' competitive advantage and the boundary condition of its effect.

Understanding the link between firms' MA and sales growth can motivate marketing managers to assess whether their companies pay equal attention to marketing exploitation and exploration. Although our results indicate that companies can boost sales when they maintain a bilateral rather than unilateral focus, the key to this success rests on having relatively strong AC that facilitates the transformation of MA into positive outcomes. Thus, validating AC as a strengthening factor for the MA–sales growth association will impel companies to systematically assess and develop the requisite organizational processes constituting AC to embrace MA.

The remainder of this paper is organized as follows. First, we review the literature on organizational ambidexterity in general. We then delineate the concept of MA and provide theoretical arguments for our hypotheses. Subsequently, we report and discuss the empirical study, analysis, and results. Finally, we discuss the study's theoretical and managerial implications and describe its limitations.

2. Literature review and hypotheses

2.1. Marketing ambidexterity (MA) and firms' marketing performance

Prior research on MA considers marketing exploitation and exploration as two distinct foci that influence how firms deploy market-based assets and execute marketing strategies (Ho & Lu, 2015; Kyriakopoulos & Moorman, 2004; Vorhies et al., 2011). Marketing exploitation draws on firms' cumulative market-based knowledge and experience, whereas marketing exploration leverages new market-based knowledge that is divergent from existing knowledge bases (Ho & Ganesan, 2013). We define MA as firms' bilateral and balanced focus on exploration and exploitation simultaneously across marketing activities, including product design, promotion, segmentation and targeting, pricing, and customer services. Empirically, we assess the comparable levels of efforts put into marketing exploitation and marketing exploration. For instance, in product design, Samsung simultaneously develops innovative features of its flagship smartphone models (exploration) and improves the basic functionality of its low-end smartphone models in an incremental manner (exploitation) (Yeung, 2016). In brand promotion, to cultivate its brand image, Burberry concurrently uses conventional print and TV ads featuring celebrities (exploitation) and innovative social media campaigns involving customer co-creation (exploration) (Ahrendts, 2013). Overall, a firm's increasing MA indicates that the marketing function is shifting from a unilateral focus to a bilateral focus, with marketing managers paying equal attention (and thus putting forth similar effort) to both exploitation and exploration activities.

To theorize the performance implications of MA, we draw on insights from the organizational ambidexterity literature. O'Reilly and Tushman (2008, 2011) consider ambidexterity to be a dynamic capability and assert that the pursuit of ambidexterity entails concurrent occurrence of organizational processes pertaining to sensing and seizing market opportunities (arising from changes in customer demands and technologies) as well as continual renewal of resources. As these capabilities are built on tacit knowledge and orchestration of

Table 1
Summary of key studies on marketing exploitation, marketing exploration, and marketing ambidexterity.

Source	Independent variable(s)	Moderator	Dependent variable(s)	Data collection Method	Major findings
Kyriakopoulos and Moorman (2004)	Marketing exploitation, marketing exploration, and their interaction	Market orientation as a moderator for the interaction effect of marketing exploitation and exploration	New product financial performance at the project level	Survey	The interaction between marketing exploitation and exploration improves the new product financial performance for firms with a high market orientation and negatively influences the new product financial performance for firms with a low market orientation. Marketing exploitation and exploration can positively affect both brand management and CRM capabilities, leading to higher financial performance. Marketing exploration moderates the relationship between marketing exploitation and marketing capabilities such that higher levels of marketing exploration lead to a weaker relationship. Marketing exploitation moderates the relationship between marketing exploration and marketing capabilities such that higher levels of marketing exploitation lead to a weaker relationship.
Vorhies et al. (2011)	Marketing exploitation, marketing exploration		Marketing capabilities (brand management, CRM) and financial performance (ROA)	Survey	The interaction between marketing exploitation and exploration lowers marketing performance. Supplier collaboration enhances the impact of marketing exploration but weakens the impact of marketing exploitation on marketing performance.
Ho and Lu (2015)	Marketing exploitation, marketing exploration, and their interaction	Supplier collaboration as a moderator for marketing exploitation and exploration	Marketing performance	Survey	The interaction between marketing exploitation and exploration lowers marketing performance. Supplier collaboration enhances the impact of marketing exploration but weakens the impact of marketing exploitation on marketing performance.
Josephson et al. (2016)	Strategic marketing ambidexterity (SMA): operationalized as advertising expenses divided by advertising plus R&D expenses		Financial performance (firm risk and firm returns)	Secondary data	Firm maturity and slack are determinants of SMA. Increased firm maturity and strategic slack result in a shift toward exploration, whereas increased financial slack results in a shift toward exploitation. Industry competitiveness moderates these effects. Shifts in SMA toward exploitation increase return and firm idiosyncratic risk.
Zhang et al. (2015)	Market exploitation, market exploration, and their interaction	Customer need tacitness as a moderator for market exploitation and market exploration	New product performance (innovativeness, development speed, and financial performance)	Survey	Market exploration increases new product innovativeness. Market exploitation increases new product development speed. The interaction between market exploration and exploitation reduces new product development speed. Customer-need tacitness strengthens the effects of market exploration on both new product innovativeness and new product development speed and weakens the effect of market exploitation on new product innovativeness.
The present study	Marketing ambidexterity (MA): operationalized as [marketing exploration - marketing exploitation], Euclidean distance, city-block distance	Absorptive capacity (AC)	Sales growth	Survey and secondary data	Balance of marketing exploitation and marketing performance, over and above the distinct impact of marketing exploitation, marketing exploration, and their interaction. MA is positively associated with sales growth in an upward concave manner at medium and high levels of AC and is negatively associated with sales growth at low levels of AC.

organizational processes, they are inimitable and non-tradeable, and allow firms to gain competitive advantage (Teece, 2014; Wilden, Devinney, & Dowling, 2016). Examining ambidexterity as the simultaneous occurrence of alignment and adaptability in organizational systems, Gibson and Birkinshaw (2004) demonstrate the empirical link between ambidexterity and business unit performance. Focusing on the dilemma in firms' pursuit of ambidexterity, Smith and Tushman (2005) theorize that embracing the contradictions (e.g., short-term performance vs. long-term adaptability, efficiency vs. flexibility) in the simultaneous undertaking of exploitation and exploration is instrumental to sustained performance.

Several reviews of the evolution of organizational ambidexterity research show that the concept of ambidexterity has been applied to a wide range of strategic firm behaviors and is associated positively with various performance indicators (Junni, Sarala, Taras, & Tarba, 2013; O'Reilly & Tushman, 2013; Wilden, Jan, & Devinney, 2018). In general, studies on ambidexterity at the firm level maintain that a balanced pursuit of exploitation and exploration in core value-creation activities helps firms avoid the pitfalls of a one-sided focus⁴ (He & Wong, 2004; Kristal, Huang, & Roth, 2010; Rothaermel & Alexandre, 2008). More specifically, when the extent of a firm's exploitation greatly exceeds that of its exploration, the firm is likely to risk obsolescence. In the face of rapid market and technological changes, existing competencies can become outdated and lead to core rigidities that impede the firm's learning and renewal of capabilities (Cao, Gedajlovic, & Zhang, 2009; Leonard-Barton, 1992). Firms that emphasize exploration to the exclusion of exploitation would incur the risk of failing to appropriate returns from costly search and experimenting behaviors. As noted by Atuahene-Gima (2005), "a firm that is too oriented toward exploration suffers the costs of exploration without gaining many of its benefits because it exhibits too many new and risky ideas and little refinement of its existing competencies" (p. 65). In contrast, by being ambidextrous, a firm can obtain the benefits of improved efficiency from exploitation and enhanced adaptability from exploration while preventing the drawbacks associated with a dominant focus (Lavie & Rosenkopf, 2006; Mizik & Jacobson, 2003).

Generally, the arguments about organizational ambidexterity can be applied to a firm's marketing function. As noted by Day (2011), to cope with today's volatile and complex markets, firms must make timely adjustments to market shifts while ensuring consistency in pricing, branding, and marketing activities. Marketing exploitation applies incremental knowledge and is appropriate when the firm seeks incremental improvement to its marketing processes. With minimal reconfiguration of existing processes, exploitation activities can address current customers' needs while ensuring a continued focus on efficiency. Since marketing exploitation leverages firms' existing knowledge base and organizational routines, it enables firms to launch marketing programs faster and more effectively, boosting existing

⁴ One stream of ambidexterity literature suggests that firms can pursue ambidexterity in a sequential manner in which they cycle through periods of exploration and exploitation (Goossen, Bazzazian, & Phelps, 2012; O'Reilly & Tushman, 2013). For instance, firms start with exploration (R&D), which is then followed by exploitation (commercial activities) that generates financial resources to support exploration in the next cycle. This "sequential ambidexterity" applies to the pursuit of ambidexterity at the organizational level, since R&D requires relatively large investment and sunk cost. We argue that, for the marketing function, pursuing exploration and exploitation does not necessarily have to follow a sequential manner for two reasons. First, both exploration and exploitation activities can generate revenue, albeit from different target customer groups (i.e., existing vs. emerging), and therefore engaging in exploration does not necessarily rely on the financial resources generated from exploitation. Second, since marketing exploration and exploitation activities appeal to different customer groups, to maximize sales performance firms should pursue MA simultaneously rather than sequentially. Otherwise, firms will miss out on the sales opportunities from the existing or emerging market.

customers' satisfaction and repeated purchase (Kim & Atuahene-Gima, 2010; Zhang, Wu, & Cui, 2015). In addition, because of higher efficiency, marketing exploitation enables firms to respond swiftly to competitor threats.

Marketing exploration focuses on adopting new approaches to marketing programs and developing innovative marketing processes so that firms can get the right product made and marketed in response to changing market conditions. This endeavor entails the development of new resources or reconfiguration of existing marketing resources (Vorhies et al., 2011). By emphasizing experimentation and risk taking, marketing exploration drives firms to search for latent customer needs (i.e., new markets/segments) and identify novel solutions to meet those needs (Zhang et al., 2015). In striving to offer customers unique benefits and value, firms are motivated to look beyond their existing knowledge base and routines, facilitating their development of innovative marketing practices (Zhang et al., 2015; Zhang, Wang, Li, & Cui, 2017).

Overall, when all other conditions remain constant, firms that pursue MA have the potential to perform better than firms that focus on either marketing exploitation or exploration.⁵ Since exploitation strives to improve effectiveness and efficiency of currently used marketing activities and exploration experiments with innovative marketing approaches (Josephson et al., 2016; Vorhies et al., 2011), firms that pursue both reduce the risks associated with a one-sided focus (Mizik & Jacobson, 2003). For instance, firms can mitigate the dire consequences of experimenting with innovative marketing programs that encounter setbacks (Mani & Chouk, 2018). Therefore, while Amazon has been expanding its private-label business across product categories (exploration), it has simultaneously been cultivating its supplier networks for branded goods (exploitation). Such a move helps to alleviate the impact of any missteps in its new private-label business (Howland, 2017).

By being ambidextrous, firms can ensure greater returns on their exiting marketing programs through exploitation while capturing emergent market opportunities through exploration, resulting in overall improvement in marketing performance. Having a dual focus is especially crucial when marketing managers fall prey to a "competency trap" and tend to stay with what is working and allocate increasing resources to existing capabilities that warrant improvement while neglecting the potential value of exploration (Michael & Palandjian, 2004; Vorhies et al., 2011). Therefore, while Nike has relentlessly exploited its decades-long mass media advertising experience and knowledge to launch creative, eye-catching ad campaigns, it has been exploring innovative ways to strengthen its presence and brand identity in social media.

By pursuing MA and evenly allocating managerial attention and effort to exploitation and exploration, firms have greater capacity to build a portfolio of marketing programs that stimulate favorable responses from both existing and new customers (Nguyen, Zhang, & Calantone, 2018; Ryals, Dias, & Berger, 2007). We therefore predict the following:

H1a. MA has a positive relationship with firms' marketing performance.

We also argue that the positive relationship between MA and marketing performance could be nonlinear. When a firm shifts the focus of its marketing function from either exploitation or exploration toward a

⁵ Although empirical evidence shows that a null or negative interaction between marketing exploitation and exploration may occur (Ho & Lu, 2015; Kyriakopoulos & Moorman, 2004), these findings are sparse and not contradictory to our conjectures. Our arguments do not preclude the existence of conflicts between marketing exploitation and exploration. In fact, our arguments are based on a premise that firms must resolve the inherent tension between exploitation and exploration to achieve higher MA.

more balanced focus, its performance (e.g., sales) is likely to increase at a low rate initially but at a higher rate later on. This process occurs because, for instance, when a firm focuses predominantly on marketing exploitation, managers may lack the cognitive frame and information-processing ability to recognize the merits of partaking in marketing exploration (Kaplan & Henderson, 2005). Therefore, a firm accustomed to a dominant focus must make strenuous efforts to overcome the initial inertia of its strategic shift from a unilateral to a balanced focus. The firm has to cultivate an ambidextrous mindset among the marketing staff and implement requisite changes in performance assessments and incentives in the marketing department (Gibson & Birkinshaw, 2004; Kaplan & Henderson, 2005). Since these managerial efforts require constant attention, a firm undertaking a strategic shift may earn little benefit at the initial stage (Josephson et al., 2016). However, once the firm overcomes the initial inertia of a strategic shift, employees adapt to the dual strategic focus of MA and the changes in policies, priorities, and decision rules (Gibson & Birkinshaw, 2004). The accumulation of learning and positive feedback will help the firm design more effective marketing programs with a stronger impact on customer demand. In other words, the firm will become more proficient at capturing current and emergent market opportunities through a portfolio of exploitative and exploratory marketing programs that complement one another (Day, 2011).

To summarize, the above arguments grounded in firm experience suggest that the beneficial outcomes of MA are greater when a firm is practicing a higher level of MA. Therefore, with respect to a cross-sectional sample of companies with varied levels of MA, our arguments imply that the effects of MA are not univariate across firms. Rather, the effect of MA is stronger for firms that have already attained a high level of MA relative to firms with a low level of MA. This difference manifests as increasing strength of the marginal effect of MA across levels of MA. Accordingly, we propose that the marginal effect of MA on marketing performance will increase, exhibiting a positive curvilinear relationship.

H1b. The positive relationship between MA and firms' marketing performance is upward concave in shape.

2.2. The moderating effect of absorptive capacity (AC)

Market-based knowledge is often tacit and embedded in a firm's network of partnerships (Day, 2011; Rindfleisch & Moorman, 2001). For instance, partnerships expose firms to new ideas, information, and opportunities (Mahmood, Zhu, & Zajac, 2011). Knowledge acquired from suppliers could motivate a firm to review and revise its marketing practices (Ho & Lu, 2015) and to develop optimal production and distribution plans (Flynn, Huo, & Zhao, 2010). Customers provide insights regarding design and manufacturing problems (Mishra & Shah, 2009), facilitating sellers' responsiveness to changing customer needs (Angulo-Ruiz, Donthu, Prior, & Rialp, 2014; Chang & Taylor, 2016; Joshi & Sharma, 2004; Yli-Renko & Janakiraman, 2008). Thus, to capitalize on the knowledge residing in the external environment, firms must possess a strong learning orientation and robust learning capabilities.

Since the pursuit of marketing exploitation and exploration rests on market-based learning (Kim & Atuahene-Gima, 2010), the MA–firm performance relationship is likely to be contingent on the organizational processes underpinning a firm's learning capabilities. Logically, the most theoretically relevant moderator for this relationship is the firm-level absorptive capacity (AC). Numerous empirical studies have affirmed the role of AC in innovation, organizational adaptation, and successful alliances (Zou, Ertug, & George, 2018). Although most prior research examines AC in the context of R&D, the marketing study undertaken by Xiong and Bharadwaj (2011) demonstrates that AC can translate firms' market-based learning into firm value.

MA entails the use of market-based knowledge for refining and re-vamping marketing practices (Bierly, Damanpour, & Santoro, 2009;

Morgan, Zou, Vorhies, & Katsikeas, 2003; Wilden & Gudergan, 2015). Therefore, the extent to which MA leads to higher firm performance would depend on firms' ability to access, assimilate, and use knowledge for crafting marketing strategies and designing marketing programs—capabilities pertaining to the AC of firms⁶ (Cohen & Levinthal, 1990; Zahra & George, 2002). As a set of organization-wide capabilities, AC facilitates organizational learning and helps firms recognize, integrate, and exploit information within and across the organization (Jansen, van den Bosch, & Volberda, 2005). AC is not entirely outward-focused, as it also encompasses routines for inward-looking learning that facilitate articulation, codification, and dissemination of internal knowledge and experiences (Lewin, Massini, & Peeters, 2011).

Focusing on the microfoundations of AC, Lewin et al. (2011) posit that AC comprises external and internal metaroutines. The external metaroutines facilitate the identification, valuation, and acquisition of knowledge from the external environment, whereas the internal routines entail the management of variation, selection, and replication of knowledge activities within an organization. In a study of team learning, Bresman (2009) shows that vicarious learning (i.e., learning from external others) is complemented by internal learning in enhancing team performance. Therefore, possession of superior AC implies that these firms are able to manage the interdependence and complementarity between external and internal routines.

Since AC supports the establishment of routines for knowledge search and assimilation across and within organizational boundaries, it enables firms to integrate the knowledge arising from marketing exploitation and exploration (Jansen, Tempelaar, van den Bosch, & Volberda, 2009; O'Reilly & Tushman, 2008). Such integration is vital to ambidextrous marketing organizations as existing knowledge sources may be revisited, reinterpreted, and used for exploratory endeavors (Jansen et al., 2009). Therefore, AC plays a primary role in translating the market-based knowledge generated from the pursuit of MA into higher firm performance.

Firms that possess a high level of AC are not only alert to emergent market opportunities but also proactive in exploiting those opportunities by integrating the existing and newly acquired knowledge (Cohen & Levinthal, 1990; Jansen, van den Bosch, & Volberda, 2006). As noted by Kostopoulou, Papalexandris, Papachroni, and Ioannou (2011), “firms that consistently invest in assimilating and exploiting new external knowledge are more likely to capitalize on changing environmental conditions by generating innovative products and meeting the needs of emerging markets” (p. 1337). The knowledge integration function of AC facilitates the recognition and combination of seemingly incongruous sets of information, such as the information that arises from exploitation and exploration, to arrive at a new schema (Zahra & George, 2002). Therefore, AC is indispensable for transforming market-based knowledge that is broad, deep, and tacit into effective marketing practices (De Luca & Atuahene-Gima, 2007).

Research also suggests that AC helps firms resolve the apparent incompatibility and contradiction between the existing and newly acquired knowledge generated from ambidextrous pursuits (Fernhaber & Patel, 2012; Rothaermel & Alexandre, 2008). Resolution of tensions is possible because AC encompasses formal and informal integration mechanisms that promote shared meanings of information and coordination among employees (Zahra & George, 2002). For instance, a shared organization vision is an informal mechanism that increases employees' motivation to consider and incorporate opposing views, facilitating firms' ambidextrous endeavors (Burgers, Jansen, van den

⁶ AC is distinct from the construct of MA (Patel, Terjesen, & Li, 2012; Rothaermel & Alexandre, 2008). AC refers to a firm's organization-wide learning capabilities founded on specific organizational design, culture, and leadership. In contrast, MA refers to the balanced focus of a firm's marketing function pertaining to the use of existing and new marketing processes and programs.

Bosch, & Volberda, 2009; Subramaniam & Youndt, 2005). These integration mechanisms not only enable new value creation by linking previously unconnected knowledge sources but also foster synergies between exploitative and exploratory pursuits (Jansen et al., 2009; Smith, 2014). In addition, research shows that AC can enhance managers' ability to balance contradictory goals, undertake multitasking, and interact and recombine divergent knowledge sets (Mom, van den Bosch, & Volberda, 2009). These managerial activities are instrumental to firms' realization of beneficial outcomes from MA.

In sum, with high levels of AC, a firm can both strengthen knowledge use in marketing exploitation/exploration and establish novel knowledge linkages between these two spheres of activities, resulting in a synergistic combination of resources for simultaneous pursuits. Firms' pursuit of MA will become less prone to mistakes and more sustainable. As a result, we predict that AC would magnify the impact of MA on firms' marketing performance.

H2a. AC positively moderates the relationship between MA and marketing performance such that the curvilinear relationship proposed in H1b is stronger for firms with high levels of AC.

We also predict that when a firm possesses inadequate AC, the MA–marketing performance relationship may change from an upward concave direction (as proposed in H1b) to a downward direction. Several reasons support this conjecture. First, when firms lack inward- and outward-looking routines that underpin AC, they fail to reap the learning benefits from internal searches (exploitation) and external searches (exploration). In this situation, the dual pursuit of marketing exploitation and exploration not only increases the information-processing burden for the firm but also exacerbates the inherent tensions between exploitation and exploration, since the returns become far less certain (Levinthal & March, 1993).

Second, firms lacking in AC generally possess limited systematic organizational routines and mechanisms that integrate divergent or inconsistent market information. Managers may also lack both the intent to practice paradoxical thinking and the skills needed to address contradictions that arise during decision making (Smith & Tushman, 2005; Smith, 2014). Since pursuing MA requires resolving conflicts between the competing objectives of exploitation and exploration, inadequate AC would curtail managers' capacity to address such challenges, compromising the firm's ability to reap the benefits of MA. In addition, the divergent and conflicting information and knowledge arising from the simultaneous pursuit of marketing exploitation and exploration could be subject to cognitive overload, biased interpretations, and sub-optimal use (Cronin & Weingart, 2007), which undermine the quality of marketing decisions and the effectiveness of marketing programs in inducing a positive market response. Therefore, we predict the following:

H2b. When AC is at a low level, the relationship between MA and marketing performance is negative.

3. Methodology

3.1. Sampling and data

We test the research hypotheses using a sample of private companies operating in multiple industries in Singapore. The sample comprises mainly small- to medium-sized firms competing in international markets. Since these firms' customers are located across multiple countries, the market environments they face may vary in volatility, which impels them to adapt their marketing strategies to cope with such market variability. Therefore, our conceptual framework is highly applicable to these companies.

The sampling frame was obtained from a database sourced from the Singapore office of a global information company (DP Information

Group) and includes financial data on approximately 2000 companies located in Singapore. In the last quarter of 2010, we randomly selected 1000 companies from the database as the sampling frame and sent self-administered surveys containing measures of the explanatory variables (marketing exploration/exploitation and AC) and the non-financial control variables (market volatility and market competitiveness) to the key informant of each sampled firm. These key informants held senior management positions, such as marketing director, general manager, or managing director. Before the surveys were mailed, a research company contacted these informants by telephone to solicit their voluntary participation and assess whether they possessed the requisite knowledge. Then, each qualified informant received a cover letter, questionnaire, and return envelope. Each respondent was also offered a survey summary and a gift voucher as an incentive for participation. Three weeks later, the participants received a reminder letter, followed by a telephone call. Informants who did not respond within eight weeks received a second set of survey materials. Overall, we received 318 usable answers (response rate of 31.8%). Respondents reported that they were highly involved with and knowledgeable about the issues addressed in the survey ($M = 5.78$ on a seven-point scale) and had worked for their firms for an average of 12 years. Our analysis showed no significant difference in the means for various key constructs (marketing exploration, marketing exploitation, absorptive capacity, sales growth) and firm demographics between early and late respondents, suggesting that a delayed response bias was not a problem. The survey data were matched with supplementary archival financial data, including annual sales and control variables, which were retrieved from the database.

3.2. Measures

The measurement instruments for all variables, along with the sources and psychometric characteristics, are presented in Table 2.

3.2.1. Dependent variable

In alignment with prior ambidexterity research (He & Wong, 2004), we assessed firms' marketing performance using sales growth from the fiscal year of 2010 (base year) to 2011. This measure gauges the effectiveness of firms' marketing activities and is consistent with our theoretical arguments stressing the power of MA for stimulating positive responses from existing and new customers. Sales growth is a direct outcome of firms' marketing activities and, relative to other accounting performance measures, is more proximate to MA (Katsikeas, Morgan, Leonidou, & Hult, 2016). Sales growth has also been widely used as a major performance indicator in ambidexterity research (Junni et al., 2013) and is a reliable proxy for other aspects of firm performance, such as long-term shareholder wealth maximization and survival (He & Wong, 2004).

3.2.2. Predictors

The key predictor, MA, reflects a firm's balanced focus on marketing exploitation and exploration. In this study, marketing exploitation represents the extent to which firms endeavor to strengthen and improve their skills and practices in five marketing activities: product design, customer service, promotion, segmentation and targeting, and pricing. Marketing exploration is the extent to which firms develop entirely new skills and practices that differ from the status quo in the above five areas of marketing activities. We measured MA as the absolute difference between the two scales for marketing exploration and marketing exploitation modified from Kyriakopoulos and Moorman (2004). We reverse-coded the difference score by subtracting it from the scale maximum of seven; therefore, a higher value indicates greater balanced ambidexterity. AC is the extent to which firms have established processes to identify, share, assimilate, and use both external and internal knowledge. We used 10 items adapted from Jansen et al. (2005) and Lichtenthaler (2009) to assess this construct.

Table 2
Measures.

Construct and source	Measure	Data Source
<i>Independent variable</i>		
Marketing exploration (modified from Kyriakopoulos & Moorman, 2004)	Your company has developed entirely new skills and procedures over the past 12 months that challenged the status quo of conventional practices in the following marketing activities: (1) product design, (2) promotion, (3) targeting and segmentation, (4) pricing, and (5) customer service. Cronbach's $\alpha = 0.94$; AVE = 0.74; CR = 0.93. Standardized loadings ranged from 0.81 to 0.94, with an average of 0.86.	Survey
Marketing exploitation (modified from Kyriakopoulos & Moorman, 2004)	Your company has made efforts to strengthen existing skills and practices over the past 12 months for the following marketing activities: (1) product design, (2) promotion, (3) targeting and segmentation, (4) pricing, and (5) customer service. Cronbach's $\alpha = 0.92$; AVE = 0.68; CR = 0.92. Standardized loadings ranged from 0.77 to 0.93, with an average of 0.82.	Survey
Marketing ambidexterity	MA = 7 – Marketing exploration – Marketing exploitation	Survey
Absorptive capacity (Jansen et al., 2005; Lichtenthaler, 2009)	(1) We frequently look for external sources of new knowledge and skills. (2) We analyze the usefulness of new external knowledge for our existing knowledge. (3) We record and store newly acquired knowledge for future reference. (4) We are proficient in integrating newly acquired knowledge into current ways of doing things. (5) We constantly consider how to exploit newly acquired knowledge, skills, and technologies. (6) We are proficient in transforming learned knowledge into strategies and actions. (7) We adopt an information platform for employees to share information and practical experience. (8) Our employees often exchange ideas on learned knowledge to improve performance. (9) Operations, marketing, and supply chain functions regularly share information and interpret its implications. (10) The activities of our functional units are tightly coordinated to ensure better use of our acquired knowledge. Cronbach's $\alpha = 0.94$; AVE = 0.62; CR = 0.94. Standardized loadings ranged from 0.66 to 0.90, with an average of 0.78.	Survey Survey
<i>Dependent variable</i>		
Sales growth (T/Q)	Sales growth (T over Q) = Sales (year T)/Sales (year Q) – 1	Financial database
<i>Control variable*</i>		
Market volatility (Jaworski & Kohli, 1993)	(1) In our business, customers' product preferences change frequently. (2) Customers look for new products all the time. (3) Customers always switch brands or vendors. (4) Changes in customer needs are quite uncertain. Cronbach's $\alpha = 0.81$; AVE = 0.42; CR = 0.74. Standardized loadings ranged from 0.57 to 0.83, with an average of 0.64.	Survey
Market competitiveness (Jaworski & Kohli, 1993)	(1) Competition in our industry is cutthroat. (2) There are many promotion wars and price cutting in our industry. (3) Anything that one competitor offers, others can follow suit easily. Cronbach's $\alpha = 0.88$; AVE = 0.70; CR = 0.88. Standardized loadings ranged from 0.81 to 0.89, with an average of 0.84.	Survey

Notes: Scale anchors for multi-item measures: 1 = strongly disagree, 7 = strongly agree. AVE: average variance extracted. CR: composite reliability. *Other control variables included in the analysis were retrieved from the financial database.

3.2.3. Control variables

We controlled for several factors that might simultaneously affect the predictors and the dependent variable. At the industry level, using scales from Jaworski and Kohli (1993) we controlled for the volatility of the market environment (in terms of the variability in customer demand and preferences) and the level of competitive intensity the sampled firms encounter. We also controlled for industry characteristics using industry dummies assessed by the survey. At the firm level, we controlled for firms' key customer types using dummy variables assessed by the survey. In addition, we controlled for firm size (log number of employees and log sales), prior profitability (return on equity), and equity-to-debt ratio (reflecting potential slack, or firms' ability to borrow money to finance growth). We obtained these variables from the financial database in 2010 and included them as controls since they might affect both MA and sales growth. Finally, to disentangle the unique impact of MA on sales growth, beyond its components we included marketing exploration and marketing exploitation as control variables.

3.3. Measurement model

Before testing the hypotheses, we established the appropriateness of the overall measurement model and the individual constructs for the multiple-item survey-based constructs (marketing exploration, marketing exploitation, AC, market volatility, and market competitiveness) using confirmatory factor analysis. The measurement model fit the data reasonably well: $\chi^2/df = 1.96$, RMSEA = 0.068, CFI = 0.942, TLI = 0.933, and SRMR = 0.056.

3.3.1. Convergent validity

The results of confirmatory factor analysis showed that all factor loadings for the five latent constructs were significant at the 0.05 confidence level, and all standardized loading values exceeded the recommended threshold of 0.5 (min = 0.57, max = 0.94, and average = 0.79). All average variance extracted (AVE) values for the composite scales were above the recommended threshold of 0.5 (Table 2), suggesting adequate convergence. The only exception was market volatility (AVE = 0.42), but since this variable served as a control and demonstrated sufficient reliabilities ($\alpha = 0.81$ and composite reliability = 0.74), it was used in subsequent analyses. All composite reliability values and Cronbach's alpha indices were well above the cutoff point of 0.7 (Fornell & Larcker, 1981), suggesting good reliability of the measures.

3.3.2. Discriminant validity

We assessed the discriminant validity of the constructs by setting the correlation between each pair of latent constructs to one (one pair at a time). Each time, the alteration resulted in a statistically significant drop in model fit, and the constrained model had a significantly higher χ^2 than the unrestricted base model. This test rejected the hypothesis of a lack of discrimination between any pair of latent constructs. Moreover, the more conservative test—comparing the square root of the AVE values of constructs with the correlations between them—revealed no problem with empirical discrimination between the constructs (Fornell & Larcker, 1981). Table 3 reports the descriptive statistics and correlations among all the key constructs used in the analysis.

Table 3
Descriptive statistics and correlations.

	Mean	S.D.	Min	Max	1	2	3	4	5	6	7	8	9	10
1. Sales growth	0.082	0.071	-0.068	0.194										
2. Marketing ambidexterity	6.428	0.816	2.200	7.000	0.123									
3. Marketing exploration	4.581	1.376	1.000	7.000	-0.045	0.485								
4. Marketing exploitation	4.936	1.158	1.2000	7.000	-0.046	0.014	0.742							
5. Absorptive capacity	4.674	1.08	1.000	7.000	-0.066	0.063	0.518	0.583						
6. Log (number of employees)	5.305	1.525	0.000	9.903	0.112	-0.044	-0.106	-0.036	0.006					
7. Log (sales)	18.186	1.058	15.545	23.606	0.006	-0.092	-0.074	-0.002	0.01	0.435				
8. Return on equity	0.212	0.264	-1.772	1.969	-0.080	-0.003	0.081	0.074	0.117	-0.064	0.018			
9. Equity to debt ratio	1.714	1.681	-0.500	15.258	-0.033	-0.033	-0.005	-0.065	-0.069	0.095	0.032	-0.087		
10. Market volatility	4.267	1.214	1.250	7.000	0.026	0.057	0.187	0.199	0.165	0.107	-0.018	0.068	-0.037	
11. Market competitiveness	5.067	1.083	1.333	7.000	0.088	-0.01	0.105	0.099	0.023	-0.054	-0.058	-0.064	-0.075	0.367

Notes: $N = 318$. All Pearson correlations with absolute values above $|r| > 0.11$ are significant at $p < 0.05$; all $|r| > 0.14$ are significant at $p < 0.01$; all $|r| > 0.18$ are significant at $p < 0.001$.

3.4. Analysis and results

We tested the hypotheses using hierarchical OLS regression models that included control variables (Model 1), MA (Model 2), a squared term of MA (Model 3), and the interactions between AC and MA as well as its squared term (Model 4). All predictors were captured at the base year (2010), while the dependent variable (sales growth) was based on sales data in 2010 and 2011, allowing us to control the causal order of the events. The variables (MA and AC) that compose the interaction and quadratic terms in the regression models were mean-centered to allow for a more intuitive interpretation. The standard errors were estimated using the heteroscedasticity-robust Huber-White method. Since all correlations among the constructs in this study are less than 0.75 (see Table 3), multicollinearity does not pose a threat to the analyses. The variance inflation factor (VIF) analysis also suggests an absence of multicollinearity.

The results of the hypotheses testing using the OLS regression models are presented in Table 4. In Model 1, none of the control variables, among either the financial or survey-based measures, is a significant predictor of sales growth (the overall model's $F = 0.90$, $p > 0.10$, and $R^2 = 0.05$), except for the log of the number of employees ($b = 0.007$, $p < 0.10$). This result aligns with the correlation matrix (Table 3), which indicates that only the log of the number of employees ($r = 0.112$, $p < 0.05$) is significantly correlated with sales growth. However, this effect is not significant in the subsequent models.

In Model 2, we added the linear term for MA. The overall model fit shows a substantive improvement (incremental $F = 11.38$, $p < 0.001$) and reaches a statistical significance level ($F = 1.69$, $p < 0.05$, $R^2 = 0.08$). The coefficient of MA is significant ($b = 0.023$, $p < 0.001$), suggesting an overall positive association between MA and sales growth. In Model 3, we tested the possibility that MA has a curvilinear effect on sales growth by adding the squared term for this predictor. The inclusion of the quadratic MA term significantly improves the model fit (incremental $F = 6.47$, $p < 0.05$). Both the linear term and the squared term for MA are significant (linear effect: $b = 0.038$, $p < 0.001$; quadratic effect: $b = 0.008$, $p < 0.05$), suggesting that the relationship between MA and sales growth has an upward, concave shape. The results of Models 2 and 3 jointly provide strong empirical support for H1a and H1b.

Regarding the components of MA, the average effect of marketing exploitation is positive ($b = 0.009$, $p < 0.10$), as expected. However, the average effect of marketing exploration is negative ($b = -0.013$, $p < 0.05$), which suggests that marketing exploration contributes to firms' sales growth indirectly via MA. We discuss the implications of this result in the discussion section.

Moreover, using varying coefficients estimation, we assessed whether the effects of MA on sales growth vary according to marketing exploitation and exploration levels. For this, we created a binary dummy variable (D_{exploit}) to represent a firm's marketing exploitation

level (high vs. low). Likewise, we created a dummy variable for marketing exploration (D_{explore}). Then, we created four new variables— $D_{\text{exploit}} \times \text{MA}$, $D_{\text{explore}} \times \text{MA}$, $D_{\text{exploit}} \times \text{MA}^2$ and $D_{\text{explore}} \times \text{MA}^2$ —and added them to Model 3. The regression results indicate that among these four variables, only the coefficient of $D_{\text{exploit}} \times \text{MA}^2$ is significant ($b = 0.020$, $p = 0.008$), suggesting that the quadratic effect of MA is stronger among firms with high levels of exploitation.⁷

Model 4 tested the hypothesized moderating effect of AC as stipulated in H2a. For this, we added the AC interactions with the linear and squared term for MA; this addition significantly improves the model fit (incremental $F = 3.53$, $p < 0.05$). The regression coefficients for both interaction terms are positive and statistically significant ($\text{MA} \times \text{AC}$: $b = 0.016$, $p < 0.05$; $\text{MA}^2 \times \text{AC}$: $b = 0.008$, $p < 0.01$), while the linear and squared terms of MA remain significant. These results confirm that the curvilinear relationship between MA and sales growth is moderated by AC, supporting H2a. The nature of this moderated curvilinear relationship is shown in Fig. 1.

The graph in Fig. 1 shows that for levels of AC that are at the mean and higher, the MA–sales growth relationship is an upward, concave curve. In contrast, at very low levels of AC, the MA–sales growth relationship is a negative, downward concave curve. More precisely, the curve shifts from an upward to a downward direction when the value of AC is 3.45 (on the untransformed scale from 1 to 7), or 1.13 standard deviations below the mean value. Below and above this value, the MA–sales growth relationship has opposite shapes.

A simple slope analysis corroborates these findings. When AC is at the mean, the marginal effect of MA on sales growth increases from 0.024 ($t = 3.87$, $p < 0.01$) at a low level of MA (Mean – 1SD) to 0.055 ($t = 3.99$, $p < 0.001$) at a high level of MA (Mean + 1SD). When AC is at a very high level (Mean + 2SD), the marginal effect of MA on sales growth increases from 0.032 ($t = 2.94$, $p < 0.01$) to 0.117 ($t = 3.92$, $p < 0.001$), that is, from a low to a high level of MA. These results confirm an upward concave relationship between MA and sales growth that increases in strength when AC shifts from the mean to higher levels. In contrast, when AC is at a very low level (Mean – 2SD), the marginal effect of MA changes its sign from 0.016 ($t = 1.37$, n.s.) at a low level of MA to -0.07 ($t = 0.27$, ns.) at a high level of MA. This result indicates a downward concave relationship between MA and sales growth when AC is at low levels (visible in Fig. 1 in the curve labeled as “AC = Mean – 2SD”). However, the marginal effects are not sufficiently large to reach statistical significance. Overall, our results provide strong support for H2a but only partial support for H2b.

⁷ Details of the analysis are available upon request.

Table 4
OLS regression results for sales growth (t + 1 over t).

Independent variable	Model 1	Model 2	Model 3	Model 4
Log (number of employees _t)	0.007 (0.004) +	0.006 (0.004)	0.006 (0.004) +	0.006 (0.004)
Log (sales _t)	-0.003 (0.006)	-0.002 (0.006)	-0.002 (0.006)	-0.003 (0.006)
Return on equity _t	-0.015 (0.018)	-0.012 (0.017)	-0.013 (0.016)	-0.014 (0.016)
Equity to debt _t	-0.002 (0.004)	-0.001 (0.003)	-0.001 (0.003)	-0.001 (0.003)
Market volatility _t	0.001 (0.004)	0.001 (0.004)	0.001 (0.004)	0.001 (0.004)
Market competitiveness _t	0.005 (0.005)	0.006 (0.005)	0.006 (0.005)	0.007 (0.005)
Customer type dummies	IN	IN	IN	IN
Industry type dummies	IN	IN	IN	IN
Absorptive capacity _t	-0.005 (0.005)	-0.003 (0.005)	-0.003 (0.005)	-0.007 (0.005)
Marketing exploration	0.001 (0.005)	-0.014 (0.006)*	-0.013 (0.005)*	-0.014 (0.005)*
Marketing exploitation	-0.001 (0.005)	0.011 (0.006) +	0.009 (0.005) +	0.009 (0.005) +
Marketing ambidexterity		0.023 (0.007)***	0.038 (0.009)***	0.040 (0.009)***
Marketing ambidexterity ²			0.008 (0.003)*	0.009 (0.003)**
Marketing ambidexterity × Absorptive capacity				0.016 (0.007)*
Marketing ambidexterity ² × Absorptive capacity				0.008 (0.003)**
Intercept	0.097 (0.109)	-0.053 (0.117)	-0.151 (0.124)	-0.139 (0.124)
F (df1,df2)	0.90 (15,302)	1.69* (16,301)	2.02* (17,300)	2.17** (19,298)
R ²	0.05	0.08	0.10	0.11
Incremental F (df1,df2)		11.38*** (1,301)	6.47* (1,300)	3.53* (2,298)
Max VIF	2.62	4.87	4.89	4.91

Notes: +p < 0.1; *p < 0.05; **p < 0.01; ***p < 0.001 (two-tailed test). N = 318. Heteroscedasticity-robust standard errors appear in parentheses. Interaction terms are formed using mean-centered variables.

3.5. Robustness checks

We performed a series of robustness checks (Table 5) to test the sensitivity of our main results to (1) the length of the lag between MA and sales growth, (2) alternative operationalizations of the MA construct, (3) the presence of an interaction between marketing exploitation and exploration, (4) firms with simultaneously high or low exploitation and exploration, (5) time-invariant omitted variables, and (6) endogeneity.

In Model 5, we assessed whether the impact of MA on sales growth would appear with a longer time lag. For this analysis, the dependent variable was the sales growth from 2010 to 2012. In general, MA remains a significant predictor over a longer period (b = 0.051, p < 0.01). However, the quadratic effect of MA and the interactions with AC become insignificant. Notably, all of these terms (the interactions with AC and the quadratic effects) maintain their signs and magnitudes. Arguably, this result may occur because of increased standard errors caused by the longer time frame.

In Models 6 and 7, we demonstrate that the reported results of the hypotheses testing are invariant to alternative measurements of the MA construct. In essence, MA reflects the alignment of marketing exploration and exploitation. In the main analyses, we assessed this alignment as a reverse-coded absolute difference between the constructs of marketing exploration and marketing exploitation, obtained by aggregating the five individual marketing mix components (Table 2), *MM_explor_i* and *MM_exploit_i*, i = 1, ..., 5. In other words, in the main analysis, we operationalized MA as the following:

$$\text{Marketing Exploration} = \frac{1}{5} \sum_{i=1}^n \text{MM_exploit}_i, \tag{1}$$

$$\text{Marketing Exploitation} = \frac{1}{5} \sum_{i=1}^n \text{MM_exploit}_i, \tag{2}$$

$$\begin{aligned} \text{Marketing Ambidexterity} &= 7 - |\text{Marketing Exploration} - \text{Marketing Exploitation}| \\ &= 7 - \left| \frac{1}{5} \sum_{i=1}^n \text{MM_exploit}_i - \frac{1}{5} \sum_{i=1}^n \text{MM_exploit}_i \right| \end{aligned} \tag{3}$$

However, Eq. (3) is obviously not the only way to assess the exploration–exploitation alignment. We tested the possibility of assessing this alignment using alternative measures, including balance as the Euclidean distance between marketing exploration and exploitation in the five-dimensional space (Model 6) and as the city-block distance (Model 7). The five dimensions correspond to the five spectrums of marketing activities (*MM_explor_i* and *MM_exploit_i*, i = 1, ..., 5) that underlie the aggregated measures for marketing exploration (Eq. (1)) and marketing exploitation (Eq. (2)). The Euclidean and city-block distances were assessed in the following ways:

$$D_{\text{Euclidean}} = \sqrt{\sum_{i=1}^5 (\text{MM_exploit}_i - \text{MM_exploit}_i)^2}, \tag{4}$$

$$D_{\text{city-block}} = \frac{1}{5} \sum_{i=1}^5 |\text{MM_exploit}_i - \text{MM_exploit}_i| \tag{5}$$

To be consistent with the definition of MA, the distance measures

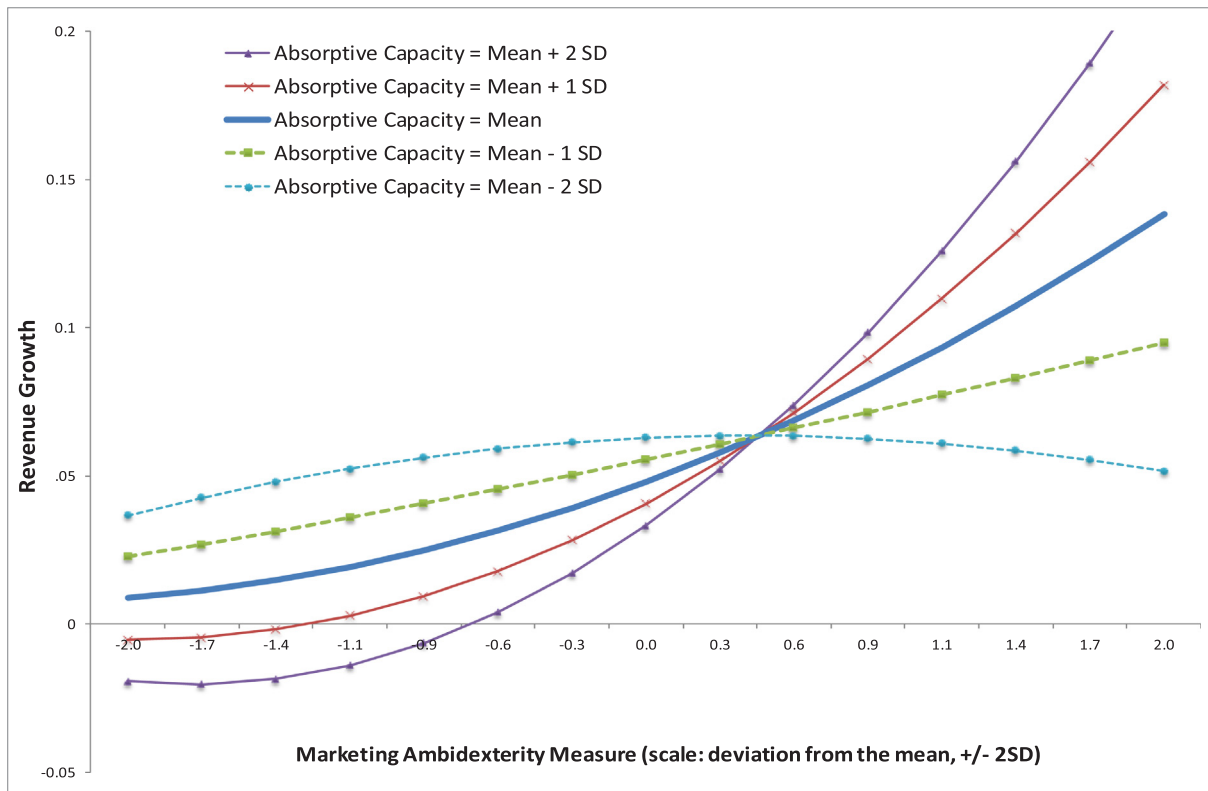


Fig. 1. Relationship between marketing ambidexterity and sales growth moderated by the absorptive capacity. Notes: (1) This interaction chart is based on the regression estimates in Model 4 (Table 3). (2) SD: standard deviation.

were reverse-coded by subtracting them from the scale maximum (shown below), and thus smaller distances imply a greater balance between marketing exploration and exploitation:

$$\text{Marketing Ambidexterity}_{Euclidean} = \sqrt{180} - D_{Euclidean}, \tag{6}$$

$$\text{Marketing Ambidexterity}_{\text{city-block}} = 6 - D_{\text{city-block}} \tag{7}$$

The scale maxima in Eqs. (6) and (7) are obtained by inserting the maximally distant measures of the marketing mix dimensions (e.g., $MM_{\text{explores}}_i = 7$ and $MM_{\text{exploits}}_i = 1$, $i = 1, \dots, 5$) into the corresponding distance Eqs. (4) and (5). Overall, the regression results hold true regardless of the computational methods used for MA (Eqs. (3), (6), and (7), corresponding to Models 4, 6, and 7), further validating our earlier findings.

Prior studies have examined the interaction effect between marketing exploration and exploitation (e.g., Kyriakopoulos & Moorman, 2004). Therefore, we assessed whether our MA construct accounts for the variance of sales growth after controlling for this interaction. For this assessment, we add to Model 8 the multiplicative term CMA_MUL (marketing exploration \times marketing exploitation) and its square CMA_MUL², as well as their interactions with absorptive capacity, to the main model (Model 4). The results of Model 8 reveal that the CMA_MUL terms and their interactions with absorptive capacity are not significantly related to sales growth. Also, the main hypothesis-testing results regarding the effect of “balanced” MA remain unchanged when controlling for all the CMA_MUL terms. Furthermore, removing the “balanced” MA terms from Model 8 does not lead to significance of any CMA_MUL terms.

In addition, in Model 9 we tested the additive combination of marketing exploration and exploitation (CMA_ADD = marketing exploration + marketing exploitation). Note that in Model 9 we had to drop marketing exploration and exploitation as controls, as otherwise the effect of their sum cannot be estimated. We find that adding the CMA_ADD terms and their interactions with absorptive capacity to the

model neither changes the main results nor yields any additional significant terms. Also, omitting the “balanced” MA terms from Model 9 does not change the significance of any CMA_ADD terms. Overall, direct testing of alternative specifications of MA, operationalized as either a multiplicative (CMA_MUL) or an additive (CMA_ADD) term, provides strong evidence that the “balanced” MA is the key driver of firms’ sales growth.

In this study, MA is operationalized as the balance between marketing exploitation and marketing exploration, which can be attained when both variables are at either high or low levels. However, firms in these two situations may conceivably have significantly different sales performance.⁸ We performed additional analysis to rule out this possibility. First, we created a binary dummy variable ($D_{\text{high-high}}$), which took the value of 1 for firms reporting simultaneously high (above Mean + 1 SD) exploitation and exploration levels. Then, we created two new variables ($D_{\text{high-high}} \times \text{MA}$ and $D_{\text{high-high}} \times \text{MA}^2$) and added these three variables to the main model (Model 4 in Table 4). We find that these variables were not statistically significant and that the main regression results remained unchanged with regard to the magnitude and significance of the regression coefficients on MA, MA², and their interactions with absorptive capacity. Likewise, we created a binary dummy variable ($D_{\text{low-low}}$), which took the value of 1 for firms having simultaneously low (below Mean – 1 SD) exploitation and exploration levels. Two new variables ($D_{\text{low-low}} \times \text{MA}$ and $D_{\text{low-low}} \times \text{MA}^2$) were created and added to the main model. Regression results were similar to those reported above. In sum, these results indicate that the effect of MA on sales growth is invariant between firms having both high exploitation/exploration and firms having both low exploitation/exploration.

In further robustness tests, we assessed whether the relationship

⁸ We are sincerely grateful to an anonymous reviewer for pointing out this situation.

Table 5
Robustness checks.

Independent variable	Model 5 (two-years impact: $t + 2$ over t)	Model 6 (MA: Euclidean distance)	Model 7 (MA: City-block distance)	Model 8 (Adding Explor \times Exploit)	Model 9 (Adding Explor + Exploit)
Log (number of employees _{t})	0.001 (0.006)	0.006 (0.004)	0.006 (0.004)	0.005 (0.004)	0.006 (0.004) +
Log (sales _{t})	0.005 (0.009)	-0.003 (0.006)	-0.003 (0.006)	-0.003 (0.006)	-0.003 (0.006)
Return on equity _{t}	-0.041 (0.023) +	-0.013 (0.016)	-0.014 (0.017)	-0.013 (0.016)	-0.015 (0.016)
Equity to debt _{t}	0.005 (0.005)	-0.002 (0.003)	-0.001 (0.003)	-0.001 (0.003)	-0.002 (0.004)
Market volatility _{t}	-0.005 (0.006)	0.001 (0.004)	0.000 (0.004)	0.001 (0.004)	0.001 (0.004)
Market competitiveness _{t}	0.009 (0.007)	0.005 (0.005)	0.005 (0.005)	0.008 (0.005)	0.007 (0.005)
Customer type dummies	IN	IN	IN	IN	IN
Industry type dummies	IN	IN	IN	IN	IN
Absorptive capacity _{t}	-0.002 (0.008)	-0.007 (0.006)	-0.007 (0.005)	-0.011 (0.007)	0.000 (0.024)
Marketing exploration	-0.028 (0.010)**	-0.008 (0.006)	-0.010 (0.005) +	-0.019 (0.041)	-
Marketing exploitation	0.018 (0.010) +	0.005 (0.006)	0.007 (0.005)	0.006 (0.041)	-
Marketing ambidexterity	0.051 (0.016)**	0.011 (0.003)***	0.033 (0.009)***	0.041 (0.010)***	0.033 (0.009)***
Marketing ambidexterity ²	0.007 (0.006)	0.001 (0.001)*	0.008 (0.003)**	0.010 (0.005)*	0.010 (0.003)**
Marketing ambidexterity \times Absorptive capacity	0.007 (0.011)	0.004 (0.002)	0.012 (0.007) +	0.019 (0.007)**	0.018 (0.007)*
Marketing ambidexterity ² \times Absorptive capacity	0.004 (0.005)	0.001 (0.001)*	0.007 (0.003)*	0.010 (0.003)**	0.008 (0.003)**
Combined multiplicative marketing ambidexterity					
CMA_MUL				0.003 (0.014)	
CMA_MUL ²				-0.000 (0.000)	
CMA_MUL \times Absorptive capacity				0.005 (0.004)	
CMA_MUL ² \times Absorptive capacity				-0.000 (0.000)	
Combined additive marketing ambidexterity					
CMA_ADD					0.005 (0.013)
CMA_ADD ²					-0.000 (0.001)
CMA_ADD \times Absorptive capacity					-0.001 (0.006)
CMA_ADD ² \times Absorptive capacity					0.000 (0.000)
Intercept	-0.275 (0.203)	0.002 (0.114)	-0.079 (0.120)	-0.127 (0.209)	-0.153 (0.149)
F (df1, df2)	1.53† (19,298)	1.55 + (19,298)	1.74* (19,298)	2.11** (23,294)	1.91* (21,296)
R ²	0.08	0.09	0.10	0.13	0.11

Notes: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed test). $N = 318$. Heteroscedasticity-robust standard errors appear in parentheses. Interaction terms are formed using mean-centered variables.

between MA and sales growth is dependent on the aggregate level of exploitation and exploration. We summed these two variables and then created two interaction terms: (exploitation + exploration) \times MA and (exploitation + exploration) \times MA². Adding these terms to Model 4 did not change the main regression results. The added variables were also not significant. Overall, these robustness checks clearly show that the effect of MA on sales growth is robust.⁹

Finally, to test the possibility of biased estimates caused by time-invariant omitted variables, we added the lagged dependent variable to the main regression. Importantly, adding the prior year growth rate (2010 over 2009) into the regression for future growth rate (2011 over 2010) essentially leads to within-firm regression estimation when all across-firm heterogeneity that stems from time-invariant omitted variables is accounted for in the lagged dependent variable. The previously reported main results remain unchanged.¹⁰

To test whether our results are vulnerable to a possible endogeneity threat, we performed a 2SLS estimation of the main regression model (Model 4). In this analysis, we treated MA and all its interaction terms as endogenous. As instruments for MA, we used three additional measures, including collaboration with suppliers (4 items), collaboration with customers (4 items), and customers' shared knowledge (5 items).¹¹ Arguably, these instrumental variables would not contribute to firms' sales performance directly, since interfirm partnerships and the

(footnote continued)

current-period sales growth ($b = -0.06$; $p = 0.120$). In general, although the model specification with a lagged dependent variable (i.e., firm growth in 2010 as one of the predictors of growth in 2011) to a large extent mitigates omitted variable bias by controlling for all time-invariant factors, the lagged dependent variable in such models may not predict the outcome according to Gibrat's law (e.g., Goddard, McMillan, & Wilson, 2006; Hamilton, Shapiro, & Vining, 2002; Sutton, 1997).

¹¹ Owing to space constraints, the scales of the instrumental variables are not reported. However, they are available from the authors upon request.

⁹ Detailed results are available from the authors upon request.

¹⁰ In our context, past sales growth does not have a significant impact on the

knowledge exchanged within those partnerships must first be exploited to improve the effectiveness and efficiency of firms' operations and marketing function, which would subsequently lead to higher marketing performance. The additional instruments for the interaction terms were obtained by multiplying the three instrumental variables with the respective moderators. The first-stage regression results suggested that the instruments were good predictors of MA ($R^2 = 0.55$, $F = 11.20$, $p < 0.001$), and the model was not over-identified according to the robust test of over-identification (Wooldridge, 1995): $\chi^2(3) = 1.34$, $p = 0.72$. However, the endogeneity test failed to reject the null hypothesis for the robust test of endogeneity ($\chi^2(6) = 3.27$, $p = 0.77$; robust regression $F(6,289) = 0.42$, $p = 0.86$), suggesting that the MA variable can be treated as exogenous.

4. Discussion

This research investigates the implications of pursuing marketing ambidexterity for firms' sales performance and the moderating role of absorptive capacity. Drawing on the combined survey and archival financial data gathered from 318 private firms, we find that MA is positively associated with sales growth in an upward concave manner at medium and high levels of AC and is negatively associated with sales growth at low levels of AC. We assessed MA as the absolute value difference between the level of exploitation and exploration, both aggregated across a firm's marketing activities. In robustness tests, we showed that the effect of MA is insensitive to alternative measures that reflect the alignment of exploitation and exploration within each of the five marketing actions, suggesting that MA can be achieved via an alignment across or within a firm's marketing actions.

The results from the varying coefficients estimations indicate that the quadratic effect of MA on sales growth is stronger among firms with high levels of marketing exploitation. This result means that when AC is at the sample average, firms with higher than average marketing exploitation benefit the most from pursuing MA. Thus, our results clearly show that, on average, MA has a positive effect on sales growth and the effect is much stronger for firms exhibiting higher than average exploitation. This finding helps to address the question of whether a firm that has low levels of both marketing exploitation and marketing exploration performs better than one with either high exploitation or high exploration. Apparently, a firm can reap the full sales benefits from the pursuit of MA only when it reaches a threshold of marketing exploitation.

Since MA is composed of marketing exploitation and exploration, the coefficient on MA indeed captures the indirect effects of marketing exploitation and exploration on sales growth via MA. Two scenarios based on the results of Model 4 (Table 4) illustrate the implications of MA's effect together with the main effects of its components. In the first scenario, we assume that a firm's primary focus is on marketing exploitation (i.e., exploitation is higher than exploration) and thus the level of its MA is low. In this case, ceteris paribus, a unit increase in exploration would yield a negative main effect of -0.014 and simultaneously a positive indirect effect of 0.049 through a unit increase in MA, resulting in a total marginal effect of 0.035 on sales growth. Thus, firms with a dominant exploitation focus can improve sales performance by increasing marketing exploration and aligning it more with the level of marketing exploitation (i.e., a higher level of MA).

The second scenario is opposite to the first one. When a firm's primary focus is on marketing exploration (i.e., exploration is higher than exploitation) and thus the level of its MA is low, a unit increase in marketing exploitation would yield a positive main effect of 0.009 coupled with a positive indirect effect of 0.049 through a unit increase in MA. The resulting total marginal effect of marketing exploitation on sales growth is 0.058 , which is 6.4 times greater than the main effect of marketing exploitation. Apparently, firms with a dominant exploration focus can boost sales by increasing marketing exploitation and aligning it with the level of marketing exploration. More importantly, the benefit

to a firm from achieving convergent levels of marketing exploitation and exploitation (higher MA) is much greater than the benefit from increasing exploitative activities alone.

Notably, our results are robust after controlling for a set of firm factors as well as the "combined" MA, operationalized as the interaction or sum between marketing exploitation and exploration (Models 8 and 9, Table 5). These alternative model specifications show that the interaction between the "combined" MA and AC is not significantly associated with sales growth.

4.1. Theoretical contributions

Our study enriches the literature on MA in several ways. First, the emergent literature on marketing exploitation and exploration often implies the occurrence of MA but rarely provides an unambiguous definition. This lack of conceptual clarity hinders the comparability of results across studies and the further development of this literature. To address this limitation, we refine the conceptualization of MA as the bilateral, balanced focus of the marketing function on both marketing exploitation and exploration. As we demonstrate the implications of pursuing this "balanced" MA for firms' sales performance, the study adds new knowledge to prior research that examines ambidexterity primarily in the product innovation domain and its associated effects on new product performance (e.g., Atuahene-Gima, 2005; Kyriakopoulos & Moorman, 2004).

Our definition of MA implicitly holds the view that firms can gain competitive advantage by putting similar levels of effort into marketing exploitation and exploration. Since marketing exploitation and exploration address customers' existing and emerging needs respectively, MA in essence reflects firms' ability to cope with the dynamic competitive environments through resource reconfiguration and thus it constitutes a dynamic capability (O'Reilly & Tushman, 2008). Dynamic capabilities not only are rare, causally ambiguous, and inimitable but also help firms adapt to changing market conditions. Although dynamic capabilities are essential for organizational adaptation, prior research on the performance outcomes of marketing capabilities largely adopts a static view in conceptualizing capabilities (e.g., Angulo-Ruiz et al., 2014; Morgan, Vorhies, & Mason, 2009). By refining the concept of MA, this study offers marketing scholars a useful conceptual lens for considering the dynamic characteristics of marketing capabilities in future research.

Second, previous studies that examine the joint effects of marketing exploitation and exploration on firm performance often view exploitation and exploration as complementary and measure the ambidexterity construct as the product or sum of marketing exploitation and exploration (e.g., Kyriakopoulos & Moorman, 2004). This approach implies that firms can improve performance by putting extra effort into either exploitation or exploration without the need to consider the trade-offs between these two spheres of activities (Cao et al., 2009). However, the goals of exploitation and exploration as well as their associated organizational processes conflict (Gupta, Smith, & Shalley, 2008). Therefore, our conceptualization of the MA construct acknowledges the trade-offs between marketing exploitation and exploration (Birkinshaw & Gupta, 2013), and the operationalization of MA is grounded in this implicit understanding. In other words, firms that achieve higher levels of MA are presumably capable of managing the competing demands between marketing exploitation and exploration, and transforming the inherent tensions into a synergistic portfolio of marketing programs (Smith & Tushman, 2005). We theorize and empirically confirm that firms have higher sales performance when they achieve balanced levels of exploitation and exploration. Our results also validate that this "balanced" MA accounts for unique variance of sales growth whereas the product and sum of marketing exploitation and exploration do not.

Third, prior research has examined several contingency factors, including market orientation (Kyriakopoulos & Moorman, 2004),

supplier collaboration (Ho & Lu, 2015), and customer need tacitness (Zhang et al., 2015), that affect either the independent or the joint effects of marketing exploitation and exploration. However, these studies have not considered the fact that pursuing MA involves mobilization of market-oriented knowledge within and across a firm's boundary. Thus, the complementary role of organizational knowledge-processing capabilities has not been examined. Addressing this gap, this study shows that the MA–sales growth relationship is contingent on the level of AC. When a firm's level of AC is medium to high, MA contributes to sales growth. In contrast, when a firm's level of AC is inadequate, MA might hurt the firm's performance. These findings demonstrate that AC enables firms to integrate and assimilate the conflicting knowledge arising from marketing exploitation and exploration. As a result, firms high in AC are more ready to benefit from the simultaneous pursuit of marketing exploitation and exploration.

The present study also echoes the marketing literature that underscores the criticality of market-oriented learning for firms to achieve sustained competitive advantage (Day, 2011). Research suggests that when a firm broadens its knowledge base, it enhances its ability to coordinate across organizational units, facilitates cross-fertilization of knowledge, and reduces managers' confinement to their own thought worlds, all of which liberate firms from complacency (Baker & Sinkula, 1999; Moorman & Miner, 1997; Slater & Narver, 1995). The present study enriches this literature by showing that merely engaging in market-driven learning through either exploitation or exploration is insufficient to boost sales performance (Xiong & Bharadwaj, 2011). Instead, firms should strive to achieve comparable proficiency in both marketing exploitation and exploration and use AC as a complementary mechanism to amplify the sales impact of MA. Our findings also show that while AC acts as a catalyst for MA's positive effect on sales growth, it is not significantly related to sales growth. Since AC is a cross-functional organizational capability whereas MA is a functional capability, their significant interaction suggests that knowledge systems and processes cutting across functions and hierarchies may boost the performance of other organizational functions (e.g., supply chain management). By validating the facilitative role of AC in the marketing function, the present study informs the AC literature and opens up new avenues for future study of the role of AC in other functions' pursuits of ambidexterity.

Several of our findings offer insights to the organizational ambidexterity literature. First, the positive curvilinear effect of MA on sales growth suggests that MA can trigger customer demand for a company's products or services in an exponential manner. Since customer demand is a function of perceptions and attitudes, future research should examine how firms' ambidextrous strategies may change customers' perception and attitude toward a firm's products—an aspect that has been overlooked in prior research on organizational ambidexterity.

Second, we find that the two distinct operationalizations of ambidexterity have differing effects on firms' sales performance. Specifically, the “balanced” MA, but not the “combined” MA, has a positive impact on sales growth. This result implies that customers respond more favorably to firms' balanced deployment of marketing programs that ensure both coherence and novelty. Nevertheless, customers' response may be conditional on their traits since considerable consumer research shows that the cognitive and affective characteristics of consumers affect how they react to marketing programs (e.g., Lee & Pounders, 2019; Mandler, Won, & Kim, 2017). Therefore, future ambidexterity research should examine how specific customer traits or market segment characteristics drive the differential impact of balanced and combined specifications of organizational ambidexterity on firm performance.

Third, we assessed MA as convergent levels of exploitation and exploration aggregated both *across* five major marketing activities and *within* each of these marketing domains. The results are robust to these alternative measures and suggest that firms can achieve MA through an overall alignment across marketing domains or through targeted alignment within each marketing domain. Research on organizational

ambidexterity can follow our approach to examine the implications of different types of alignment in corporate activities for balanced ambidexterity.

Lastly, prior research provides evidence that AC moderates the ambidexterity–firm performance relationship in the context of technology sourcing (Rothaermel & Alexandre, 2008) but our findings are distinct in several ways. First, MA represents functional ambidexterity whereas technology sourcing entails strategic corporate activities and thus represents organizational ambidexterity. In addition, since technology sourcing is part of a firm's innovation strategies, the finding that AC, as an organization-wide knowledge-processing capability, contributes to the performance of innovation strategies is not theoretically surprising. However, since marketing and technology sourcing entail vastly different goals, processes, and activities (Lavie, Kang, & Rosenkopf, 2011), examining the moderating role of AC in MA's sales impact is a valid theoretical undertaking. Importantly, by finding AC to be a necessary condition for the realization of sales increments from pursuing MA, this study spurs scholars to consider the interplay between marketing capabilities and other cross-functional capabilities in theory construction.

4.2. Managerial implications

Our findings resonate with the viewpoint of Day (2011), who contends that for firms to survive in a market environment characterized by accelerating complexity, deep market insights must be amplified, disseminated, and acted on swiftly to build adaptive marketing capabilities. However, MA entails both benefits and costs. On the one hand, by combining balanced levels of exploitative and exploratory marketing efforts, firms high in MA are well positioned to seize market opportunities, enabling them to increase sales from existing and new customers. On the other hand, firms must be wary of the inherent tensions in the simultaneous pursuit of exploitation and exploration. The divergent goals and conflicting organizational processes may undermine managers' efforts to build comparable levels of competence in exploitative and exploratory marketing actions (higher MA). Managers must also be vigilant in identifying market opportunities that could be seized by deploying MA.

The increasing marginal effect of MA on sales growth implies that firms are financially justified in allocating resources and managerial effort to shift the strategic focus of their marketing function from a unilateral to a balanced focus. In fact, our findings indicate that a one standard deviation increase in MA results in a 3.8% increase in sales growth while other factors are kept at the sample means. The strength of the MA–sales growth relationship is notable, suggesting that firms should consider adopting MA as a competitive strategy.

However, simultaneous management of exploitation and exploration is a daunting task, since inertia may prevail in firms having a dominant strategic emphasis. Ambidexterity research suggests that firms could overcome the inertia of pursuing ambidexterity by implementing fundamental changes to incentive schemes and by cultivating an organizational culture that embraces contradictions (Gibson & Birkinshaw, 2004; Kaplan & Henderson, 2005). Senior managers should practice paradoxical thinking and acquire skills to address contradictions in decision making (Smith & Tushman, 2005). By accepting contradictions as an organizational reality, managers are better prepared to achieve balanced levels of marketing exploitation and exploration.

Another major obstacle firms encounter in materializing the sales benefits of MA is the lack of organizational learning capabilities. Therefore, managers must assess the extent to which their firms have the requisite structures, systems, and policies to support intra- and inter-organizational learning. Without these organizational attributes, firms may find that pursuing MA may create abundant inconsistent information that leads to managers' cognitive overload and clouds their judgment in marketing decision making. In contrast, when a firm has

built an adequate level of AC, the new information and knowledge arising from exploitation and exploration can be put into productive use for designing marketing programs, increasing the sales performance of MA. In this respect, prior research suggests that firms' AC requires establishment of cross-functional interfaces, socialization mechanisms, and subordinates' participation in strategic decision-makings (Jansen et al., 2005). Overall, although pursuing MA poses challenges, when properly managed it could constitute a dynamic capability that enables firms to gain improved efficiency and long-term sustainability.

4.3. Limitations

This study has several limitations. First, to test the relationship between MA and firms' sales growth, we assumed that firms' allocation of resources to marketing exploitation and exploration remains unchanged. This assumption might not hold in highly volatile environments. Although this study controlled for market volatility, firms competing in volatile environments might continuously adjust their marketing actions to respond to changing customer preferences and behaviors—thereby also changing the balance between marketing exploitation and exploration. Future studies would benefit from using longitudinal data that include variables capturing both firms' MA and firms' performance over time.

Second, although the result of a robustness test indicates that the effect of MA is invariant between firms having high, medium, and low exploitation/exploration, this result should be interpreted with caution. The sampled firms are relatively high in exploitation (mean = 4.9 out of 7.0), exploration (mean = 4.6 out of 7.0), and MA (mean = 6.43 out of 7.0). Thus, the limited number of truly low exploitation/exploration firms prevents us from ruling out the possibility that MA's impact may not apply to firms with very low levels of exploitation/exploration.

Third, the limitations of the available data did not allow us to control for certain specific measures of organizational resource endowment (e.g., different dimensions of slack resources), which may affect firms' choices regarding complex ambidexterity strategies. However, in our study, the variables reflecting general resource endowment, including firm size and potential slack, were not significantly correlated with the MA measure, and controlling for them in the regression models did not change the results of the hypotheses testing.

Last, this study examined sales growth as a major indicator of a firm's marketing performance. Although this measure reliably represents the effectiveness of marketing actions, it does not capture the additional costs incurred by exercising MA. Since the literature offers little theoretical guidance regarding the cost implications of MA, more research is needed to identify the types and levels of costs involved when a firm pursues MA, such as coordination costs, information-processing costs, and opportunity costs.

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