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Ambidextrous marketing capabilities and performance: How and when entrepreneurial orientation makes a difference

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ABSTRACT

There are two marketing capabilities situated at the product-market interface: customer management (CM) and new product development (NPD). Both are ambidextrous given they involve exploitation and exploration, yet important questions remain unanswered. Is it beneficial to have higher combined levels of exploitation and exploration? Or should these be balanced? What internal and external factors might influence these two forms of ambidexterity? This study examines these issues using data from a sample of U.S. manufacturers. We find that entrepreneurial orientation (EO) differentially affects the exploration-exploitation balance within CM and NPD, in dynamic environments. Performance improves when there is higher combined ambidexterity in both CM and NPD; it suffers when NPD ambidexterity is imbalanced by an emphasis towards exploration. CM can be similarly imbalanced yet has no adverse impact. A moderated mediation analysis reveals that EO has both positive and negative associations with performance under different environmental conditions.

1. Introduction

Reeves and Harnoss (2015) observe that S&P 500 firms outperform their peers if they are ambidextrous. That is, they employ both exploration and exploitation strategies. There are however, two ways to view ambidexterity and this has created some debate as to which is more effective (Junni, Sarala, Taras, & Tarba, 2013). As explained by Cao, Gedajlovic, and Zhang (2009), a firm might seek to maximize the overall magnitude of ambidexterity by pursuing high levels of exploration and exploitation simultaneously. This is referred to as 'combined ambidexterity' (Cao et al., 2009; Junni et al., 2013). Alternatively, as per the original arguments from March (1991), a firm might focus on achieving equal levels of exploration and exploitation ('balanced ambidexterity').

Of interest here is that the debate regarding 'combined vs. balanced' ambidexterity remains largely outside the marketing literature. Marketing scholars tend to study ambidexterity in terms of balance and results are mixed. For example, Reinartz, Thomas, and Kumar (2005) show that firms can enhance customer profitability by balancing investments across customer acquisition (exploration) and customer retention (exploitation). In contrast, Josephson, Johnson, and Mariadoss (2016) show that *im*balance can be beneficial. That is, they find that while emphasizing exploitation (advertising expenditure) over exploration (R&D expenditure) increases the firm's risk, it also improves the return on assets.

The dearth of research comparing different forms of ambidexterity in marketing is surprising given the importance of the topic in practice as well as the general management literature. Further, core marketing capabilities such as customer management (CM) and new product development (NPD) have clearly identifiable exploration and exploitation dimensions (Ritter & Geersbro, 2018; Voss & Voss, 2013). Thus, they are ambidextrous in nature. Given CM is "the firm's ability to effectively deploy relational resources" and reflects "the firm's ability to build and maintain beneficial relationships with target customers" (Vorhies, Orr, & Bush, 2011, p. 739) while NPD involves the "organizational routines that purposefully reconfigure the organizational product portfolio" (Schilke, 2014, p. 183), CM and NPD are situated at the product-market interface. This interface is where firms compete and spend significant resources (Ireland, Hitt, & Sirmon, 2003) and as per Bohlmann, Spanjol, Qualls, and Rosa (2013), leads us to study CM and NPD together.

Given these two capabilities are critical to marketing practice (Morgan, 2012; Srivastava, Shervani, & Fahey, 1999) and for performance advantage (Barney, 2014), we reason that marketing scholars and practitioners will benefit from understanding the influences on, and outcomes of, their ambidexterity, be it combined or balanced. Similar arguments regarding ambidexterity in general are made by Benner and Tushman (2015) and O'Reilly and Tushman (2013). These scholars also argue that a firm's ambidexterity is likely to be influenced by both

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internal (organization) and external (environmental) factors.

Following from the above, our research seeks to examine two things. First, we study how a firm's entrepreneurial orientation (EO) affects: 1) combined; and 2) balanced ambidexterity in CM and NPD capabilities, under different environmental conditions. Doing so captures both internal and external influences on the two different forms of ambidexterity. Second, we examine how marketing outcomes are affected when marketing capabilities are characterized by combined vs. balanced ambidexterity. This shows us which is more beneficial to performance. Of note, implicit to our study of balance is that we allow for imbalance in studying ambidexterity's antecedents and outcomes.

Our interest in EO stems from its critical influence on a firm's innovation outcomes (Kraft & Bausch, 2016; Zhou, Yim, & Tse, 2005). Pertinent here is EO's association with both exploitative and explorative activities (Kollmann & Stöckmann, 2014; Lisboa, Skarmeas, & Lages, 2011). Further, because firms with higher EO are proactive and risk-taking (Covin & Slevin, 1989; Miller, 1983), their ambidexterity may be different from those of others (Dess et al., 2003). We make this point because although some examine how the EO-performance relationship is moderated by marketing capabilities (Arunachalam, Ramaswami, Herrmann, & Walker, 2018; Mu, Thomas, Peng, & Di Benedetto, 2017), we position EO as an antecedent to the nature of ambidexterity in those capabilities. Further, because firms characterized by higher levels of EO are more receptive to changes in the environment (Pérez-Luño, Wiklund, & Cabrera, 2011), we study the influence of a dynamic environment. This is because it might lead an entrepreneurially oriented firm to combine exploration and exploitation differently from firms with lower EO.

Disentangling the two forms of ambidexterity is important given past findings on their performance impact is mixed, and very few studies assess balanced and combined ambidexterity concurrently (Junni et al., 2013). Further, although the performance influence of ambidextrous marketing capabilities requires attention (Josephson et al., 2016; Reinartz et al., 2005), research on the topic is limited. For instance, Ramaswami, Srivastava, and Bhargava (2009) study how customer management capability influences customer relationship performance but they do not assess ambidexterity. Similar examples are Hillebrand, Nijholt, and Nijssen (2011), Jayachandran, Sharma, Kaufman, and Raman (2005), and Zhou et al. (2005). As such, we investigate how combined vs. balanced ambidexterity influences customer relationship (CR) and new product (NP) performance, both of which are important marketing outcomes (Katsikeas, Morgan, Leonidou, & Hult, 2016; Moorman & Rust, 1999; Verhoef & Leeflang, 2009). CR performance refers to how well the firm performs on customer satisfaction and retention (Jayachandran et al., 2005). NP performance refers to the speed of new product development, the quality of products, and the value of those products to customers (Moorman & Rust, 1999; Zhou et al., 2005).

With this study, we offer several contributions. At the most general level, we address Junni et al.'s (2013) call for researchers to study combined and balanced ambidexterity together rather than separately. Empirically, our first set of results clearly show that EO has a positive influence on combined ambidexterity in both CM and NPD. In contrast, the results for balanced ambidexterity are mixed. For example, EO is associated with higher exploration relative to exploitation in NPD but it does not create a similar effect for CM. These patterns then change with the introduction of environmental dynamism. In dynamic environments, EO is positively associated with higher exploration (relative to exploitation) for CM. The opposite occurs for NPD. That is, the significant positive effect of EO on higher exploration (relative to exploitation) disappears. Such findings provide new insights to the very scant research on how organizational factors (such as EO), together with environmental conditions, come together to influence ambidextrous capabilities (Benner & Tushman, 2015; O'Reilly & Tushman, 2013). They also provide insight into Green, Covin, and Slevin's (2008) argument that the response of entrepreneurially-oriented firms' to the environment might be detrimental.

In terms of performance, we show that for marketing capabilities at the product-market interface, combined and balanced ambidexterity have distinct influences on relevant outcomes. Combined ambidexterity in CM has a positive relationship with CR performance, and combined ambidexterity in NPD has a positive impact on NP performance. Again however, results for balance are less consistent. We see that if exploration is higher than exploitation for NPD, it is detrimental to NP performance. A similar imbalance for CM does not however, affect CR performance. These results substantiate past findings that being out of balance is not always detrimental (Junni et al., 2013) and they provide new insights into the performance effect of not just marketing capabilities, but their ambidexterity.

Finally, because we study: 1) the EO-ambidexterity relationship; and 2) the ambidexterity-performance relationship, we can assess whether combined and/or balanced ambidexterity in marketing capabilities mediates the EO-marketing performance relationship. Our approach also provides insight to the mechanisms through which EO is associated with performance (Cui, Fan, Guo, & Fan, 2018; Lisboa et al., 2011). The findings show that EO has both positive and negative impacts- through ambidextrous marketing capabilities- in different environmental conditions. This refines our understanding of the important role of EO in marketing strategy, as earlier signaled by (e.g.) Matsuno, Mentzer, and Özsomer (2002) and Zhou et al. (2005). Our results also show the relevance of contingency analysis when studying the EO-performance relationship, and they help reconcile past mixed findings regarding the influence of EO (Arunachalam et al., 2018; Mu et al., 2017; Rauch, Wiklund, Lumpkin, & Frese, 2009).

In the next section, we present our literature review and develop our hypotheses. We frame our research with the marketing strategy, organizational ambidexterity and entrepreneurship literatures as well as contingency theory. We then describe the methodology, measures and analytic approaches. This leads to our results and discussion of findings, followed by limitations and suggestions for future research.

2. Theoretical framework

2.1. Ambidexterity in CM and NPD capabilities

Organizational ambidexterity is rooted in resource-based theory (Day, 2014; Kozlenkova, Samaha, & Palmatier, 2014) and there are two different perspectives regarding the nature and impact of ambidexterity (Junni et al., 2013). One takes the position that firms perform better by pursuing exploration and exploitation in a 'balanced' manner (e.g., He & Wong, 2004; Uotila, Maula, Keil, & Zahra, 2009). This involves the equal pursuit of exploration and exploitation within a capability such as CM or NPD. The other takes the position that performance can be improved by combining exploration and exploitation efforts to achieve an overall 'high' level of ambidexterity. This argument for 'combined' ambidexterity is based on the rationale that exploration and exploitation within a function are orthogonal and can be enhanced either simultaneously or sequentially (Birkinshaw & Gupta, 2013; O'Reilly & Tushman, 2013).

In a rare effort to consider the two perspectives together, Junni et al.'s (2013) meta-analysis shows that balancing exploration and exploitation may not be sufficient for achieving performance advantage, and combining them at higher levels may be more important. Based on this, they argue that studies should assess balanced and combined ambidexterity concurrently. Accordingly, we examine both forms of ambidexterity here, focusing on the marketing capabilities of CM and NPD.

Our interest in CM and NPD is, in part, influenced by Day's (2011) argument that marketing capabilities are susceptible to an exploitative mindset (i.e. they overlook exploration). However, both CM and NPD have dimensions that reflect the two dimensions of ambidexterity (Ritter & Geersbro, 2018; Voss & Voss, 2013). Customer exploration

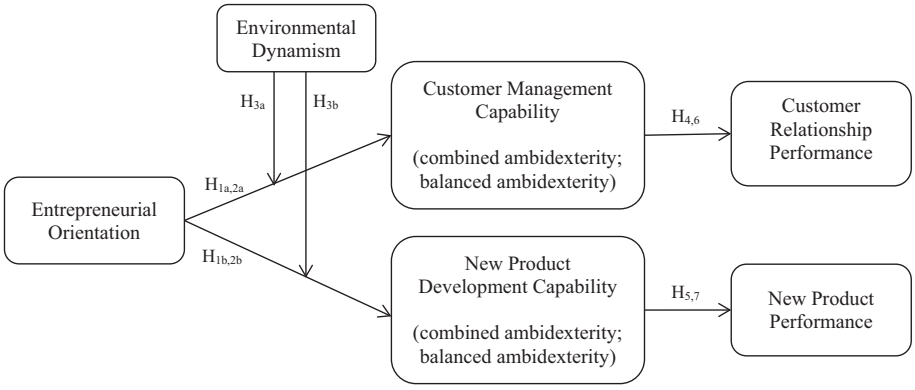

Fig. 1. Research model.

involves developing new markets or customer relationships while customer exploitation improves existing ones. The simultaneous management of these two potentially contradicting strategies is important for improving marketing outcomes such as sales and customer profitability (Nijssen, Guenzi, & van der Borgh, 2017; Ritter & Geersbro, 2018). Likewise, NPD can be exploratory or exploitative (He & Wong, 2004). Exploratory NPD creates newness and diversity in the firm's products and technologies (Atuahene-Gima, 2005; Voss & Voss, 2013). Sometimes this results in radical product innovations with substantial benefits for the firm (Slater, Mohr, & Sengupta, 2014). Exploitative NPD uses existing knowledge to incrementally improve the firm's current products or production technologies (Atuahene-Gima, 2005; Voss & Voss, 2013). As with CM, both explorative and exploitative NPD are beneficial to the firm.

2.2. Internal influences on CM and NPD ambidexterity

A firm's strategic orientation determines its behavior towards the strategies and capabilities that it develops (Atuahene-Gima, 2005; Zhou et al., 2005). As such, this is a primary internal influence. For marketing capabilities such as CM and NPD, there is evidence that an entrepreneurial orientation should be a determinant of exploration and exploitation. For instance, Kollmann and Stöckmann (2014) as well as Lisboa et al. (2011) find that EO is associated with both explorative and exploitative innovation activities. Similarly, Zhang, Edgar, Geare, and O'Kane (2016) show how the interaction between EO and capability-based human resource management is associated with higher innovation ambidexterity. The relevance of EO in the specific context of CM and NPD ambidexterity is reinforced by Mu et al.'s (2017) arguments that EO can determine how knowledge is created and used for NPD. Logic would suggest the same applies for CM.

2.3. External influences on ambidexterity

If the organizational characteristic of EO might influence ambidexterity in CM and NPD, what environmental factors should we consider? A firm's ambidexterity enables it to respond to changes in the environment (O'Reilly & Tushman, 2013; Teece, 2014). That is, the decision to pursue exploration or exploitation can be affected by environmental conditions (Smith & Lewis, 2011) and acknowledging such contingencies is important when studying EO's influence (Rauch et al., 2009). In addition, because firms characterized by EO are innovative, proactive and risk-taking (Miller, 1983), they are, theoretically, in a better position than others to see opportunities in dynamic environments (Green et al., 2008; Pérez-Luño et al., 2011). In addition, while dynamic environments reward exploration, they also provide ample opportunity for combining exploration and exploitation (Rauch et al., 2009; Wilden & Gudergan, 2015). These arguments suggest that the interaction between EO and environmental dynamism might result in exploration-exploitation combinations within CM and NPD that differ from those of other firms.

2.4. Performance outcomes

Finally, we study the effect of combined vs. balanced ambidexterity within CM and NPD on customer relationship and new product performance given the potential of these two marketing capabilities to influence such outcomes. For instance, Jayachandran et al. (2005) and Hillebrand et al. (2011) show that using technology and information for customer management enhances customer relationship performance. In addition, Ramaswami et al. (2009) find partial support for the relationship between CM capability and CR performance as well as NPD capability and NP performance; although they don't study ambidexterity in these capabilities. Zhou et al. (2005) also show that NP performance is associated with both tech- and market-based innovations.

3. Research hypotheses

Our conceptual framework (Fig. 1) illustrates our research hypothesis and process. We begin by examining how EO interacts with environmental dynamism to influence ambidexterity within CM and NPD capabilities (i.e. the left half of the model). We then link these forms of ambidexterity to customer relationship (CR) and new product (NP) performance (i.e. the right half of the model).

3.1. Linking EO and environmental dynamism to CM and NPD ambidexterity

The proactive nature of entrepreneurially oriented firms leads them to try to understand the demands of new markets (Covin & Miles, 1999). Even though their pioneering actions might jeopardize profitability, their risk-taking nature leads them towards experimental learning and thus, exploration (Dess et al., 2003). At the same time, exploitation is expected from these firms because the innovativeness of such firms results in market offers (Kollmann & Stöckmann, 2014) for not only new but existing customers. That is, EO guides the firm to engage in exploitation by researching the market and adjusting products to address extant customer needs (Kollmann & Stöckmann, 2014). Together, these arguments suggest that firms with higher EO are likely to have higher combined ambidexterity in both CM and NPD.

They also imply that exploration is more likely to dominate or be higher than exploitation in entrepreneurially oriented firms. This is because an entrepreneurial culture encourages truly innovative ideas that result in more radical innovations (Kraft & Bausch, 2016). The proactiveness of these firms helps them learn about new customer needs and preferences earlier than the competition, and this can lead to new products ahead of competitors (Matsuno et al., 2002). Firms with

higher EO are also more likely to pursue exploration in an effort to maintain technological leadership (Kollmann & Stöckmann, 2014; Zahra, Sapienza, & Davidsson, 2006; Zhou et al., 2005) and as such, they are more likely to be characterized by higher exploration relative to exploitation in each of CM and NPD. Drawing on the above, we hypothesize that:

H_1. EO is associated with higher combined ambidexterity within: a) CM capability; and b) NPD capability.

H_2. EO is associated with higher exploration relative to exploitation within: a) CM capability; and b) NPD capability.

Beyond the influence of EO, the uncertainty created by dynamic markets provides even more opportunity for firms with high EO to enter new markets and obtain new customers vis á vis customer exploration. A dynamic environment also encourages firms to engage in more product exploration than they might consider under stable conditions (Kreiser, Marino, Davis, Tang, & Lee, 2010). Such a decision reflects the entrepreneurially-oriented firm's proclivity towards innovations that could generated high return (Kollmann & Stöckmann, 2014). In contrast, stable environments discourage firms from product exploration (Zahra & Bogner, 2000) – even if they are characterized by EO– because competitors can easily imitate their actions (Song, Droge, Hanvanich, & Calantone, 2005). This leads us to reason that:

H_3. The positive effect of EO on exploration relative to exploitation within: a) CM capability; and b) NPD capability is stronger when environmental dynamism is high.

3.2. Linking CM and NPD ambidexterity to performance

If a firm's CM capability has high 'combined ambidexterity' the total level of customer exploration plus customer exploitation activities is high. In this situation, customer exploration efforts should increase CR performance by helping to identify and service high value customers in new markets (Arnold, Fang, & Palmatier, 2011). Similarly, customer exploitation should increase CR performance because the firm has systems to better understand and serve its customers, is able identify and prioritize those with high value, and can focus on meeting customer's long-term needs. This, in turn, improves CR performance (Jayachandran et al., 2005; Ramaswami et al., 2009). Accordingly:

H_4. For CM capability, higher combined ambidexterity is positively related to CR performance.

As with CM, high combined ambidexterity for NPD means that the firm's overall level of product exploration plus product exploitation is high. This should lead to better NP performance because a firm that can explore new products and improve existing ones, and is thus able to develop market offers valued by customers (Li & Huang, 2012; Ngo & O'Cass, 2012). In contrast, if the firm struggles with its ability to improve existing products, it loses the knowledge efficiency that comes with product exploitation. This may, for example, reduce the speed of product development (Lubatkin, Simsek, Ling, & Veiga, 2006). Likewise, if the firm does not pursue product exploration, it is locked into established innovation areas and loses the opportunity to develop promising new offers (Rubera, Chandrasekaran, & Ordanini, 2016; Szymanski, Kroff, & Troy, 2007). Therefore, firms with a higher combined ambidexterity for NPD should have higher NP performance. This leads us to hypothesize that:

H_5. For NPD capability, higher combined ambidexterity is positively related to NP performance.

At the same time, not all firms can achieve high combined ambidexterity within CM and NPD. This is because many organizations are resource-limited (Benner & Tushman, 2015; March, 1991) and exploration and exploitation are potentially incompatible strategies that compete for scarce resources (Junni et al., 2013; Teece, 2014). Therefore, it is important to understand how balance within CM and NPD capabilities affects performance. This leads to our next arguments.

In assessing balanced ambidexterity, we also study imbalance. That is, when exploitation is higher relative to exploration (and vice versa). If exploitation is higher (relative to exploration) in a firm's CM capability, better CR performance should result in terms of customer satisfaction and retention. This is because the firm emphasizes the processes that support closer relationships with existing customers, allowing them to learn about and serve them better (Keramati, Mehrabi, & Mojir, 2010; Reimann, Schilke, & Thomas, 2010). The opposite is true for firms where customer exploration dominates exploitation. This is because the focus on acquiring new customers and/or entering new markets prevents the firm from attending to existing customers. This should lower CR performance (Jayachandran et al., 2005). We therefore hypothesize:

H_6. Higher exploration than exploitation in CM is negatively related to CR performance.

Our arguments are slightly different for NPD. That is, if NPD ambidexterity is dominated by either exploration or exploitation, NP performance should suffer. This is because although emphasizing product exploration might contribute to radical innovation, extend the product range, or help the firm enter new areas of technology, the benefits of risky and costly NPD can be quickly diminished by competitors (Mizik & Jacobson, 2003; Vorhies et al., 2011). Thus, any value created by emphasizing product exploration over exploitation might disappear. Emphasizing product exploration might also reduce NPD speed because exploration takes more time than exploitation (Kyriakopoulos & Moorman, 2004; Molina-Castillo, Jimenez-Jimenez, & Munuera-Aleman, 2011), and requires more time to generate meaningful results (Atuahene-Gima, 2005; Danneels, 2008; Fernhaber & Patel, 2012). This does not however, mean that higher exploitation in NPD- relative to exploration-is necessarily beneficial. For example, although it might enable the firm to incrementally improve product quality (Molina-Castillo et al., 2011), emphasizing exploitation can lead to a success trap that limits the firm from taking advantage of technological opportunities; opportunities that could lead to innovative new products valued by customers (He & Wong, 2004; Lubatkin et al., 2006; Uotila et al., 2009; Wei, Yi, & Guo, 2014). Therefore, a balance between product exploration and product exploitation should lead to higher NP performance than will an imbalance, i.e. where one dimension of ambidexterity is emphasized over the other. These arguments lead us to hypothesize:

H_7. For NPD capability, balanced ambidexterity is positively related to NP performance.

4. Methodology

4.1. Data collection

The empirical context for this study is U.S.-based manufacturing firms. Following recent practice in marketing (e.g., Brown, Zablah, Bellenger, & Johnston, 2011; Dahlquist & Griffith, 2014), data were collected with an online survey panel hosted by the market research firm Research Now. We conducted two rounds of data collection with a temporal separation of one year. The first round collected data for all variables of interest; the second round collected data for capabilities and performance variables, thus allowing us to assess the potential for common method variance.

Members of the Research Now national respondent pool received an invitation and incentive to participate, resulting in 917 potential respondents. However, to qualify for our study, we only include single business unit firms or autonomous business units within larger firms. Likewise, we exclude joint ventures and firms that obtain resources,

ideas, and technology from a larger organization. This ensured that exploration and exploitation occur within the same business unit (Vorhies et al., 2011). We also excluded firms six years or younger, following Zahra, Ireland, and Hitt (2000). This is because such firms are prone to the liability of newness (Partanen, Chetty, & Rajala, 2014; Peng & Luo, 2000) and their perceptions of the environment might be different from those of older firms. Firms with 20 employees or less are excluded because they may have different reactions to the environment due to their smallness (Davidsson (1989). Also, a lack of network ties and resources (Sheng, Zhou, & Li, 2011) may prevent very small firms from developing diverse capabilities. Finally, we exclude service firms because the nature of their NPD is fundamentally different from that of manufacturers.

Given the above selection criteria, 229 firms (25%) were qualified, and from these, we received 141 (62%) usable responses. Median firm age and size are 37 years and 250 employees, respectively, and 65% of the sample have < 500 employees. The final sample includes firms from different industries with over half of the firms being from computer and electronics (23.4%), automotive (14.2%), food and beverage (9.9%), and chemicals (9.2%). Beyond these, many 'other' industries are reported. This ensures variation in the environmental conditions of the firms under study. Despite this heterogeneity, our sample does not include all manufacturing firms. This is because we exclude young and very small firms, and we focus on single business unit firms or autonomous business units. Nearly half the firms serve business markets (48%) while 33% focus on B2C markets and 19% serve both B2C and B2B. Using the key informant approach for data collection, our respondents are senior managers knowledgeable about the strategic actions within their firm (e.g., senior marketing managers, general managers). The experience of respondents with their firms and their industries averages 14.02 and 21.07 years, respectively. Finally, 70% of the sample firms are privately held.

To assess the survey data, nonresponse bias was examined by comparing early and late respondents on all study variables. No significant difference was found. We obtained age and size data for 58 firms in the sample of 141. Correlations between the secondary and survey data were 0.89 and 0.98 for age and size, respectively. Respondents also self-reported their knowledge by answering: "How knowledgeable were you on the issues covered in this survey?" with a seven-point scale (1 = "not at all knowledgeable" and 7 = "highly knowledgeable"). The mean score on this item was 6.06.

4.2. Measures

Our research studies managerial issues in firms that are largely, small to medium-sized and privately held, and so we rely on multi-item measures of managerial perceptions. We adopted or adapted all scales from prior literature (see Appendix). Unless otherwise noted, all measures employ seven-point Likert scales (1 = Strongly Disagree, 7 = Strongly Agree). The score for each variable is obtained by averaging the items. Of note, we asked respondents to consider two different time frames in their answers: 1) the last five years for independent and moderator variables, and 2) the last two years for the intervening and outcome variables. This allows us to establish a temporally staggered sequence of events, starting with the antecedents and leading to the outcomes. It reduces the likelihood that the latter types of variable occurred at the same time as the former, and thus, helps overcome some of the weaknesses of cross-sectional data. In addition, they are typical time frames used in strategy research (e.g., Gibson & Birkinshaw, 2004; Hsieh, Tsai, & Chen, 2015; Stettner & Lavie, 2014; Zhou et al., 2005), and providing a temporal reference point is appropriate when assessing firm-level variables (Patel, Messersmith, & Lepak, 2012). The survey was pre-tested with four academic experts and four industry experts to ensure face validity. Minor changes in wording were made based on pre-test feedback.

4.2.1. Main variables

The primary dependent variables are customer relationship (CR) performance and new product (NP) performance. As explained in various studies (Gruber, Heinemann, Brettel, & Hungeling, 2010; Lubatkin et al., 2006; Song et al., 2005), respondents tend to prefer perceptual performance measures over objective data because the latter (e.g., profits or revenue) are considered confidential. In addition, using multi-dimensional measures based on perceived performance allows comparisons across (e.g.) time and industry, and past research on smaller firms shows high correlations between perceptual performance measures and objective data (Chandler & Hanks, 1993; Dess & Robinson, 1984). Accordingly, we measure CR performance with two items adapted from Jayachandran et al. (2005) and Ramaswami et al. (2009) capturing customer satisfaction and customer retention. NP performance is measured with three items adapted from Moorman and Rust (1999) and Zhou et al. (2005). These items assess the speed of new product development, the quality of products, and product value to customers.

The combined and balanced ambidexterity measures for CM and NPD capabilities are derived from the dimensions of exploration and exploitation (Birkinshaw & Gupta, 2013). This means that we assess each of: 1) customer exploration, 2) customer exploitation, 3) product exploration, and 4) product exploitation. Customer exploration is measured with three items from Lubatkin et al. (2006). These capture the extent to which the firm has approached new markets or customer groups in managing their customer portfolio. The customer exploitation measure uses five items adapted from Ramaswami et al. (2009) and Vorhies et al. (2011). They focus on the extent to which the firm serves the needs of existing customers. Product exploration and exploitation are measured with three and five items, respectively, adapted from He and Wong (2004) and Schilke (2014). The items for product exploration assess the extent of newness and diversity in technologies and products, while those for product exploitation measure the extent to which the firm has improved existing products or production technologies.

To determine the combined ambidexterity score for each marketing capability, we follow others in using the additive approach and thus rely on the sum of exploration and exploitation (e.g., Fernhaber & Patel, 2012; Jansen, Tempelaar, Van den Bosch, & Volberda, 2009; Lubatkin et al., 2006). Of note, summing exploration and exploitation and multiplying them are alternative approaches for measuring combined ambidexterity (Birkinshaw & Gupta, 2013; Junni et al., 2013). We chose the former because substantive tests by different studies (e.g., Jansen et al., 2009; Lubatkin et al., 2006; Zhang et al., 2016) show the additive approach to be superior. To make the resulting scores for combined ambidexterity consistent with our other seven-point scales, we divide them by two.

To measure balanced ambidexterity, we employ the approach used by Uotila et al. (2009) and Wei et al. (2014). For example, to obtain the score for balance within CM capability, we divide customer exploration by the sum of customer exploration and exploitation. This scale is between 0 and 1 (with the balance point at 0.5). With an increase in this score, exploration increases relative to exploitation and vice versa. The advantage of using this approach to construct the balance measure-rather than using the absolute difference between exploration and exploitation-as per (e.g., He & Wong, 2004)- is that it shows whether the firm emphasizes exploration over exploitation, or vice versa.

EO is measured with a seven-item scale adapted from Covin and Slevin (1989) and Lumpkin and Dess (2001). Following other research (Kollmann & Stöckmann, 2014; Lumpkin & Dess, 2001), we removed Covin and Slevin's item: 'tendency to be ahead of other competitors in introducing novel ideas or products'. EO is measured using a seven-point semantic differential scale. Following Rauch et al. (2009), each dimension of EO is the mean score of its underlying items, and EO is the mean score of its three dimensions (proactive; innovative; risk-taking).

Finally, environmental dynamism is assessed with the average of two measures: 1) market uncertainty; and 2) technological turbulence.

For both measures, we adapt items from De Luca and Atuahene-Gima (2007) and Jaworski and Kohli (1993). The four items regarding market uncertainty assess the rate of change in customer needs and preferences, and the uncertainty surrounding them. The four technological turbulence items assess changes and complexity in the firm's technological environment.

4.2.2. Control variables

We control for several factors in our study. These include firm age, firm size, competitive intensity, primary market (i.e. B2B, B2C, both), and whether the firm is public or private. Firm age influences a firm's competitive advantage and the behavior that underpins its capabilities (Schilke, 2014; Zahra et al., 2000). Therefore, older firms may respond differently to their environment compared to younger counterparts. Size can also be influential because larger firms may commit more resources for building or combining capabilities (Schilke, 2014) while smaller firms are more nimble in making changes to capabilities (Bohlmann et al., 2013; Verwaal & Donkers, 2002). Also, competitive intensity may pressure firms to develop specific capabilities in order to stay in competition (Barreto, 2010). This is measured using four items adapted from Jaworski and Kohli (1993) and Jayachandran et al. (2005). A firm's primary market may also impact the way it approaches CM and NPD (Yli-Renko, Autio, & Sapienza, 2001). Finally, public and private firms may have different reactions to their environment because they have different types of stakeholders.

5. Results

5.1. Reliability and validity

We examined scale validity by assessing inter-item correlations and reliability estimates and conducting both exploratory and confirmatory factor analysis. This led to the deletion of three items (see Appendix). The reliability coefficients of all variables exceed 0.70. Confirmatory factor analysis (CFA) was used to further validate the measures and to establish convergent and discriminant validity. Considering the high number of indicators, we ran two CFA models on theoretically related constructs.

The first CFA includes the CM, NPD, and performance variables. This model's results suggest good fit (chi-square = 178.92, degrees of freedom = 132, $p = .00$, CFI = 0.97, GFI = 0.89, TLI = 0.96 and RMSEA = 0.05). The second CFA model includes the independent and multi-item control variables (i.e. environmental dynamism, EO as a second-order construct, and competitive intensity). The model has an acceptable fit (chi-square = 193.58, degrees of freedom = 122, p = .00, CFI = 0.94, GFI = 0.87, TLI = 0.93 and RMSEA = 0.07). All factor loadings are significant at $p < .001$. Composite reliabilities range from 0.76 to 0.90, and the average variance extracted (AVE) measures range from 0.51 to 0.74. These results provide evidence for convergent validity.

We assessed discriminant validity by performing chi-square difference tests between restricted and unrestricted models for each pair of constructs in the two CFA models (Anderson & Gerbing, 1988). For the pairwise comparisons, the unrestricted model is significantly better than the restricted model ($p < .05$) except for the CR performance and NP performance comparison in which the unrestricted model was only marginally better ($p = .08$). Therefore, we loaded the items of these two constructs onto a single construct. The chi-square difference test showed that the original model has a significantly lower chi-square. These results provide support for discriminant validity.

5.2. Common method variance (CMV)

The data for independent and outcome variables were obtained from a single informant within each firm, and so we pay attention to the possibility of CMV. First, we contacted the same respondents one year after the initial survey. They were invited to complete a survey that included all the performance items and a reduced version of the CM and NPD measures (see Yli-Renko et al. (2001) for a similar approach). We received 79 responses, representing a response rate of 56%. Respondents were instructed to provide answers using the same timeframes from the initial survey. The correlation between CR performance in the first and second rounds is 0.61 ($p < .001$) and the correlation for NP performance is 0.52 ($p < .001$). The correlations for customer exploration, customer exploitation, product exploration, and product exploitation range from 0.40 to 0.62, all significant at $p < .001$. The consistency of responses between the two rounds of data indicates that CMV is not likely to drive the results. This is because respondents are not able to recall their previous responses with such temporal separation (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) and we reason that our study should not be affected by the 'single survey-single respondent' challenge.

Second, we compared secondary data against primary data for firm age and size and found them to be highly consistent. Third, the variables for balanced ambidexterity (i.e. exploration relative to exploitation within CM capability; exploration relative to exploitation within NPD capability) are derived variables. Results are less likely to be biased by CMV with derived variables (unlike directly measured variables). Fourth, we employed different scale anchors (i.e. semantic differential scales and Likert scales) following Podsakoff et al. (2003) and Rindfleisch, Malter, Ganesan, and Moorman (2008).

Fifth, a marker variable (MV) was used, following Lindell and Whitney (2001). An MV is a theoretically unrelated variable in the questionnaire that should not have a significant correlation with at least one of the study's variables. If any correlation between the MV and the study's variable is observed, that correlation will be used to adjust the correlations among the study's constructs and their significance (e.g., Sheng et al., 2011; Verhoef & Leeflang, 2009). The MV in our research is an item measuring economic confidence: "How much confidence do you have in your national economy today?" This item is not theoretically related to the variables in this study and has previously been used as an MV in the marketing literature (Josiassen, 2011; Verhoef & Leeflang, 2009). The correlations between the MV and the key variables ranged from −0.10 to 0.08 with an average size of 0.03. None were significant ($p < .05$). One methodological advantage of an MV is that it can be used as a filtering question that separates the flow of questions from predictors to outcome variables (Podsakoff et al., 2003). Because this temporal separation reduces the likelihood that the respondents' answers to the subsequent questions are motivated by their prior responses, the potential for common method variance is reduced.

Other considerations reduce the effect of CMV in this study. These include our use of knowledgeable respondents and guaranteeing respondents complete anonymity. We also have interaction terms and refer to Siemsen, Roth, and Oliveira's (2010) investigation of the influence of CMV on interaction effects. They conclude that even if CMV were present: "…finding significant interaction effects…should be taken as strong evidence that an interaction effect exists" (p. 470). Table 1 presents the correlations and descriptive statistics for key variables.

5.3. Hypothesis testing

We used hierarchical regression analysis to test the hypotheses. We regressed EO on environmental dynamism to obtain residuals free from the influence of this environmental factor.

Then, we performed the analysis using residuals as the indicator of EO (Luo, Rindfleisch, & Tse, 2007; Menguc, Auh, & Yannopoulos, 2014; Zhou & Li, 2012). Table 2 provides a summary of the hypotheses and results.

We first entered the control variables for each relationship, followed by the main effects and interaction effects. As shown in Table 3 (Models 2 and 4), EO is positively related to combined ambidexterity within CM

Table 1
Correlations and descriptive statistics.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Firm age (log)	1.00													
2. Firm size (log)	0.31**	1.00												
3. Competitive intensity	0.06	0.08	1.00											
4. B2B	0.05	−0.09	0.01	1.00										
5. B2C	−0.09	−0.08	−0.06	−0.67**	1.00									
6. Public	0.19*	0.51**	−0.10	−0.07	−0.06	1.00								
7. Environmental dynamism	−0.07	0.12	0.30**	−0.09	0.03	−0.08	1.00							
8. EO	−0.05	0.15	−0.01	−0.01	−0.13	0.06	0.11	1.00						
9. Combined ambidexterity within CM capability	0.12	0.03	0.16	0.14	−0.21*	−0.06	0.08	0.30**	1.00					
10. Combined ambidexterity within NPD capability	−0.03	0.22**	0.05	0.02	−0.22**	0.07	0.18*	0.54**	0.54**	1.00				
11. Exploration relative to exploitation within CM capability	−0.06	−0.15	0.00	0.02	−0.02	−0.04	0.01	0.02	0.34**	−0.10	1.00			
12. Exploration relative to exploitation within NPD capability	0.04	0.22**	−0.05	−0.03	−0.01	0.07	0.15	0.21*	0.06	0.28**	−0.11	1.00		
13. CR performance	−0.06	−0.02	0.17*	0.01	−0.13	−0.13	0.04	0.22**	0.40**	0.30**	0.03	−0.11	1.00	
14. NP performance	−0.06	−0.02	0.13	−0.01	−0.04	−0.16	0.20*	0.34**	0.35**	0.41**	−0.03	−0.07	0.69**	1.00
Mean	1.59	2.52	5.41	0.48	0.33	0.30	4.23	4.53	5.46	5.27	0.48	0.49	5.16	5.05
Standard deviation	0.31	0.89	1.05	0.50	0.47	0.46	1.13	1.17	0.92	0.89	0.06	0.07	1.08	1.02

All significance tests are two-tailed.
* $p < 0.05$.
** $p < 0.01$.

($\beta = 0.30$, $p < .001$) and NPD ($\beta = 0.48$, $p < .001$). This provides support for H_1. The results for balance are less consistent. H_{2a} is not supported because the effect of EO on exploration relative to exploitation within CM is not significant (see Table 3, Model 6). However, as shown in Table 3 (Model 9), EO is positively associated with exploration relative to exploitation within NPD ($\beta = 0.17$, $p < .05$). This provides support for H_{2b}. Consistent with H_{3a} (see Table 3, Model 7 and Fig. 2a), the effect of the interaction between EO and environmental dynamism on exploration relative to exploitation within CM is positive and significant ($\beta = 0.27$, $p < .05$). However, in contrast with our expectations, the positive effect of EO on exploration relative to exploitation within NPD is diminished (see Table 3, Model 10 and Fig. 2b) when environmental dynamism is high ($\beta = -0.31$, $p < .001$). Therefore, H_{3b} is not supported.

We now turn to the performance consequences of the two forms of ambidexterity within each of CM and NPD. Table 4 shows that combined ambidexterity for CM capability is positively related to CR performance ($\beta = 0.32$, $p < .01$). This provides support for H_4. Likewise, combined ambidexterity for NPD is significantly associated with NP performance ($\beta = 0.34$, $p < .001$), providing support for H_5. Our results do not support H_6 because CR performance is not affected by higher exploration relative to exploitation in CM capability. To test H_7, we regressed NP performance on the square of exploration relative to exploitation within NPD capability (see Model 7 in Table 4). This allows us to assess if balanced ambidexterity within NPD has a positive effect on NP performance by checking for an inverted U-shaped relationship between: 1) exploration relative to exploitation within NPD; and 2) NP performance. However, the results show that although higher exploration relative to exploitation within NPD has a significant negative effect on NP performance ($\beta = -0.18$, $p < .05$), balanced ambidexterity within NPD is not associated with NP performance. Therefore, we do not find support for H_7.

There are significant effects for several control variables worth noting. Competitive intensity has a marginal positive effect on CR performance ($\beta = 0.15$, $p < .1$). This.

is expected because firms try to keep their customers more satisfied when there is increased competition. In addition, CR performance is lower for firms that pursue only B2C markets ($\beta = -0.23$, $p = .05$). This is again not surprising given B2B firms and those serving both markets are likely to have stronger customer relationships because they tend to deal with fewer customers who generally have larger purchases. Turning to NP performance, the only effect is from public firms who are marginally lower on this metric ($\beta = -0.19$, $p < .1$).

In other relationships, combined ambidexterity for CM is marginally lower in B2C firms ($\beta = -0.21$, $p < .1$). This perhaps explains the lower CR performance for this type of organization given our results show that CR performance benefits from higher combined ambidexterity within CM. We note too that B2C firms have lower combined

Table 2
Summary of hypotheses and results.

Hypothesis			Effect	T-value	Supported
H_{1a}: EO	+	Combined ambidexterity within CM capability	0.30	3.67***	Yes
H_{1b}: EO	+	Combined ambidexterity within NPD capability	0.48	6.61***	Yes
H_{2a}: EO	+	Exploration relative to exploitation within CM capability	0.04	0.40	No
H_{2b}: EO	+	Exploration relative to exploitation within NPD capability	0.17	1.99*	Yes
H_{3a}: EO × environmental dynamism	+	Exploration relative to exploitation within CM capability	0.27	3.08**	Yes
H_{3b}: EO × environmental dynamism	+	Exploration relative to exploitation within NPD capability	−0.31	−3.86***	No
H_4: Combined ambidexterity within CM capability	+	CR perf	0.32	3.30**	Yes
H_5: Combined ambidexterity within NPD capability	+	NP perf	0.34	3.48***	Yes
H_6: Exploration relative to exploitation within CM capability	−	CR perf	−0.11	−1.18	No
H_7: Exploration relative to exploitation within NPD capability	∩	NP perf	−0.28	−0.51	No

Standardized estimates are reported; all significance tests are two-tailed.
* $p < 0.05$.
** $p < 0.01$.
*** $p < .001$.

Table 3
Antecedents of ambidexterity within CM and NPD capabilities.[a]

Control variables	Combined ambidexterity within CM capability		Combined ambidexterity within NPD capability		Exploration relative to exploitation within CM			Exploration relative to exploitation within NPD capability		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Firm age	0.10 (1.16)	0.14 (1.62)	−0.11 (−1.28)	−0.05 (−0.6)	−0.02 (−0.23)	−0.01 (−0.15)	−0.02 (−0.28)	−0.02 (−0.27)	0.01 (0.11)	0.02 (0.26)
Firm size	0.01 (0.08)	−0.05 (−0.48)	0.24* (2.41)	0.14 (1.57)	−0.17† (−1.63)	−0.18† (−1.69)	−0.19 (−1.79)	0.27** (2.67)	0.22* (2.14)	0.23* (2.30)
Competitive intensity	0.14 (1.61)	0.14† (1.67)	0.01 (0.15)	0.00 (0.02)	0.02 (0.19)	0.01 (0.12)	0.01 (0.17)	−0.08 (−0.97)	−0.11 (−1.28)	−0.12 (−1.40)
B2B	−0.02 (−0.14)	0.03 (0.27)	−0.19† (−1.69)	−0.11 (−1.13)	−0.03 (−0.22)	−0.02 (−0.16)	0.05 (0.41)	−0.02 (−0.19)	0.01 (0.12)	−0.06 (−0.58)
B2C	−0.21† (−1.87)	−0.14 (−1.28)	−0.34** (−3.04)	−0.23* (−2.31)	−0.05 (−0.40)	−0.04 (−0.32)	0.01 (0.04)	−0.02 (−0.15)	0.02 (0.21)	−0.03 (−0.26)
Public	−0.08 (−0.80)	−0.06 (−0.68)	−0.06 (−0.64)	−0.03 (−0.36)	0.04 (0.43)	0.05 (0.47)	0.08 (0.79)	−0.08 (−0.81)	−0.06 (−0.58)	−0.09 (−0.99)
Predictors										
EO		0.30*** (3.67)		0.48*** (6.61)		0.04 (0.40)	0.05 (0.59)		0.17* (1.99)	0.15† (1.86)
Environmental dynamism		0.05 (0.63)		0.15* (2.06)		0.03 (0.31)	−0.01 (−0.08)		0.15† (1.70)	0.19* (2.27)
EO × environmental dynamism							0.27** (3.08)			−0.31*** (−3.86)
R^2 (Adjusted R^2)	0.08 (0.04)	0.17 (0.12)	0.12 (0.08)	0.36 (0.32)	0.02 (−0.02)	0.03 (−0.03)	0.09 (0.03)	0.06 (0.02)	0.11 (0.05)	0.20 (0.14)
ΔR^2	–	0.09***	–	0.23***	–	0.00	0.07**	–	0.05*	0.09***

Standardized estimates are reported; t-values in parentheses; all significance tests are two-tailed.
[a] Model 2 tests H_{1a}, Model 4 tests H_{1b}, Model 6 tests H_{2a}, Model 9 tests H_{2b}, Model 7 tests H_{3a}, and Model 10 tests H_{3b}.
† $p < .10$.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

ambidexterity within NPD (β = −0.34, p < .01) as do B2B firms (β = −0.19, p < .1). This suggests that firms pursuing both B2C and B2B markets have a higher combined ambidexterity for NPD than firms pursuing only one market. In addition, compared to smaller firms, larger firms have higher combined ambidexterity within NPD (β = 0.24, $p < .05$). Larger firms are also lower on customer exploration relative to customer exploitation (β = −0.17, p < .1) and higher on product exploration relative to product exploitation (β = 0.27, p < .01).

5.4. Robustness checks and additional analyses

We performed additional analyses to check the robustness of the results and to provide additional insights. First, we performed a path analysis to cross-check the results of hypothesis testing. Results were consistent with those obtained from hierarchical regression analysis. That is, EO is positively related to combined ambidexterity within CM (β = 0.30, p < .001) and NPD (β = 0.48, p < .001). The relationship between EO and exploration relative to exploitation within CM is not significant. However, EO is positively related to exploration relative to exploitation within NPD (β = 0.15, p = .05). In addition, the interaction between EO and environmental dynamism is positively related to exploration relative to exploitation within CM (β = 0.27, p < .01) and negatively related to exploration relative to exploitation within NPD (β = −0.31, p < .001). Regarding the performance consequences of the two forms of ambidexterity, combined ambidexterity within CM is positively related to CR performance (β = 0.37, p < .001). Likewise, combined ambidexterity within NPD is positively related to NP performance (β = 0.24, p < .05). Finally, exploration relative to exploitation within CM is not related to CR performance but exploration relative to exploitation within NPD is negatively related to NP performance (β = −0.21, p < .01).

Second, we performed the main analysis again using the different industries (computer and electronics, automotive, food and beverage, chemicals, other) as additional control variables. This enabled us to assess whether the major industries in the sample differed from each other or from the 'other' group with respect to the outcome variables. In addition, we assessed the effect of industry controls on the main results of the study. The main results of the study remain generally constant with either no change or very small changes in effect sizes and significance levels. In addition, we found no industry-specific effects on our results at $p < .05$.

Third, because some of the effects on performance were unexpected for balanced ambidexterity, we performed additional analyses by splitting the sample based on the exploration and exploitation focus for each of CM and NPD. Keeping in mind that balance is a measure between 0 and 1, firms above 0.50 on exploration relative to exploitation within CM are exploration-dominant; those below 0.50 are exploitation-dominant. The same applies for NPD. This allowed us to look for relationships between capabilities and performance when all the firms in the sample emphasize exploration over exploitation or vice versa. We performed the regression analysis for each subsample. Firms pursuing exploration and exploitation equally (i.e. they are at the balance point) are included in each analysis to test how performance is affected as firms move away from the balance point.

The results show that when firms become exploration-dominant in CM, CR performance is not affected by varying degrees of it (β = 0.08, $p > .10$). However, when they emphasize exploitation in CM, CR performance is improved although the relationship is not very strong (β = 0.23, p = .05). In other words, CR performance reduces as firms move from emphasizing customer exploitation towards the balance point, but it does not reduce further when they move away from the balance point to focus more on customer exploration. For NPD, when firms become exploration-dominant, NP performance is reduced by higher degrees of it (β = −0.27, $p = .02$). On the other hand, NP performance is not influenced when firms are exploitation-dominant.

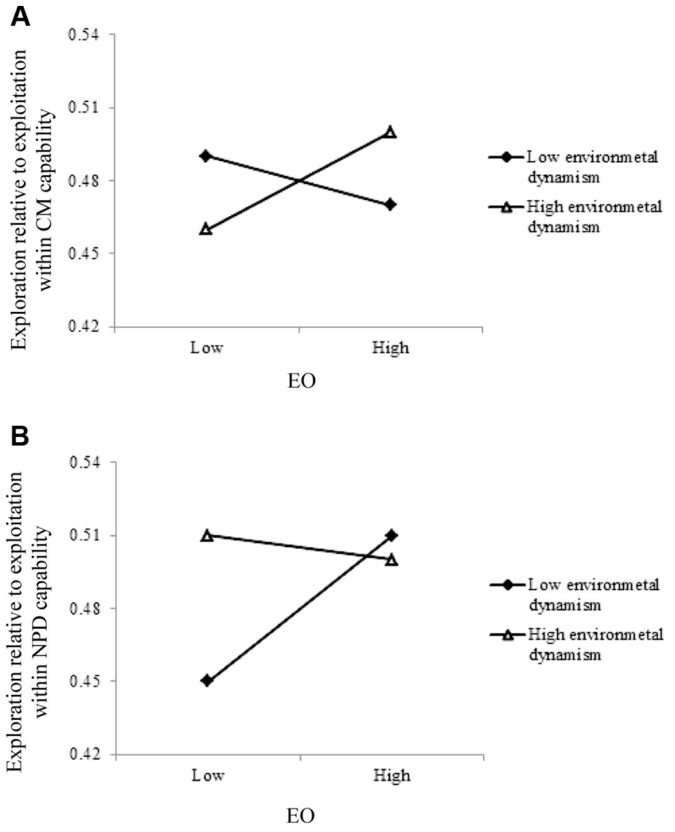

Fig. 2. a. Impact of EO × environmental dynamism on exploration relative to exploitation within CM capability. b Impact of EO × environmental dynamism on exploration relative to exploitation within NPD capability.

Thus, as firms move from a focus on product exploitation towards the balance point, NP performance is not affected but it starts to reduce when they move from the balance point towards an emphasis on product exploration.

Finally, we tested the relationships between EO, environmental dynamism, CM and NPD ambidexterity, and performance in a moderated mediation framework. Preacher, Rucker, and Hayes (2007) recommend use of the bootstrapping method over normal-theory methods when testing indirect effects because it makes no assumptions about the shape of the sampling distribution. We performed this test using Hayes' Process moderated mediation model with 10,000 bootstraps (Hayes, 2013). The findings (Table 5) show that in all environmental conditions, EO has a positive effect on CR and NP performance through combined ambidexterity for CM and NPD capability, respectively. In addition, EO is negatively related to NP.

performance, mediated by higher exploration relative to exploitation within NPD, when environmental dynamism is low. Finally, the relationship between EO and CR performance is not mediated by any imbalance within CM. This indicates that higher EO is positively related to CR performance irrespective of whether the firm emphasizes customer exploration over customer exploitation, or vice versa.

6. Discussion

This research conceptualizes and investigates: 1) how different forms of ambidexterity in two core marketing capabilities are influenced by certain internal and external factors (entrepreneurial orientation; environmental dynamism); and 2) the relationships between different forms of ambidexterity in these capabilities and performance.

Our findings offer several contributions. First, results reinforce arguments from resource-based theory that merely having resources (such as capabilities) does not lead to performance advantage (Barney, 2014; Day, 2014). Combining exploration and exploitation within capabilities is one way that firms can increase the value of their resources and protect against imitation (Gruber et al., 2010; Kozlenkova et al., 2014), particularly in an era of competitive advantage (Day, 2014). However, with lower levels of EO, a firm's CR and NP performance is consistently diminished because of lower combined ambidexterity for both CM and NPD. These results expand our understanding regarding the important role of EO (e.g., Matsuno et al., 2002; Zhou et al., 2005).

Second, in showing that firms with a higher EO have higher combined ambidexterity within both CM and NPD, our findings support arguments regarding the importance of internal culture factors in enhancing ambidexterity (Benner & Tushman, 2015; O'Reilly & Tushman, 2013). However, we also show that balanced ambidexterity is influenced by the interaction of the firm's strategic posture and environmental context. This can be explained by contingency theory regarding the choice between exploration and exploitation strategies in different environments (Smith & Lewis, 2011). As seen in our study, firms with a higher EO increase exploration relative to exploitation within NPD but not CM. Then, the results are reversed when we introduce conditions of environmental dynamism. Thus, although we expected entrepreneurially oriented firms to increase their emphasis on exploration in dynamic environments, it is the firms low in EO that do so. Further, keeping in mind that balanced ambidexterity within CM and NPD is differentially affected by EO in dynamic environments, this leads to an undesirable outcome for new product performance. To the best of our knowledge, these results offer new insight and highlight the effect of the environment on strategic decisions by the firm's top managers (Mitchell, Shepherd, & Sharfman, 2011). Further, they provide some insight into entrepreneurially-oriented firms' strategic missteps in response to the environment (Green et al., 2008).

Third, we contribute to the ambidexterity-performance literature by providing support for arguments that combined (rather than balanced) ambidexterity is more important to performance advantage (Birkinshaw & Gupta, 2013; Junni et al., 2013; O'Reilly & Tushman, 2013) and our finding that imbalanced ambidexterity adversely impacts performance is consistent with Wei et al. (2014). Unlike them however, we show that an emphasis on exploitation is not necessarily detrimental, at least in the short term. This adds support to arguments that an imbalance between exploration and exploitation is not always adverse in its effects (Josephson et al., 2016; Junni et al., 2013). These results also provide some insights to the debate on combined vs. balanced ambidexterity. They show that although combined ambidexterity can be positive across capabilities and performance measures, results for balance are less consistent. These inconsistencies reinforce Junni et al.'s (2013) point that both perspectives should be studied concurrently.

Fourth and related to the above, we show how different forms of ambidexterity within CM and NPD mediate the relationship between EO and key marketing outcomes, under different environmental conditions. For example, although EO is positively associated with performance through combined ambidexterity, it is negatively associated with NP performance when environmental dynamism is low. This is because EO increases the emphasis on product exploration. This signals that research should accommodate contingencies such as those explored here to show the relationship between EO and performance. Accordingly, our findings offer insight into why Rauch et al.'s (2009) meta-analysis on the impact of EO reveals mixed results.

6.1. Theoretical implications

Our study has implications for theoretical developments concerning organizational ambidexterity and entrepreneurial orientation in the marketing strategy literature. Several studies in the marketing literature have linked EO to marketing strategies and capabilities (e.g., Lisboa et al., 2011; Matsuno et al., 2002; Zhou et al., 2005). In addition,

Table 4
Performance consequences of ambidexterity within CM and NPD capabilities.[a]

Control variables	CR Performance			NP Performance			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Firm age	−0.07 (−0.77)	−0.09 (−1.06)	−0.10 (−1.19)	−0.05 (−0.61)	−0.03 (−0.41)	−0.04 (−0.49)	−0.05 (−0.57)
Firm size	0.03 (0.29)	0.00 (0.02)	0.03 (0.30)	0.06 (0.62)	−0.02 (−0.19)	0.01 (0.11)	0.02 (0.16)
Competitive intensity	0.15† (1.71)	0.10 (1.26)	0.08 (1.03)	0.10 (1.17)	0.07 (0.94)	0.06 (0.73)	0.07 (0.82)
B2B	−0.15 (−1.26)	−0.12 (−1.12)	−0.13 (−1.17)	−0.08 (−0.70)	−0.01 (−0.13)	−0.02 (−0.15)	−0.01 (−0.13)
B2C	−0.23† (−1.97)	−0.12 (−1.12)	−0.12 (−1.09)	−0.10 (−0.87)	0.05 (0.45)	0.06 (0.51)	0.05 (0.48)
Public	−0.14 (−1.39)	−0.11 (−1.15)	−0.11 (−1.22)	−0.19† (−1.87)	−0.15† (−1.68)	−0.16† (−1.77)	−0.16† (−1.81)
Predictors							
Combined ambidexterity within CM capability		0.32** (3.30)	0.37** (3.32)		0.16† (1.69)	0.19† (1.77)	0.20† (1.81)
Combined ambidexterity within NPD capability		0.10 (1.02)	0.11 (0.99)		0.34*** (3.48)	0.36** (3.36)	0.33** (2.83)
Exploration relative to exploitation within CM capability			−0.11 (−1.18)			−0.08 (−0.93)	−0.09 (−0.98)
Exploration relative to exploitation within NPD capability			−0.17* (−2.09)			−0.18* (−2.18)	0.11 (0.19)
Exploration relative to exploitation within NPD capability squared							−0.28 (−0.51)
R^2 (Adjusted R^2)	0.07 (0.03)	0.21 (0.16)	0.24 (0.18)	0.05 (0.01)	0.23 (0.18)	0.26 (0.20)	0.26 (0.20)
ΔR^2	–	0.14***	0.03	–	0.18***	0.03	0.00

Standardized estimates are reported; *t*-values in parentheses; all significance tests are two-tailed.

[a] Model 2 tests H_4, Model 5 tests H_5, Model 3 tests H_6, and Model 7 tests H_7.

† $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 5
Conditional indirect effect of EO on performance.

Mediators	Moderator	Conditional indirect effect					
	Environmental dynamism	CR performance			NP performance		
		Effect (SE)	LLCI95	ULCI95	Effect	LLCI95	ULCI95
Combined ambidexterity within CM capability	−1.13 (−1SD)	0.08 (0.05)	0.01	0.20	0.04 (0.03)	0.00	0.14
	0 (Mean)	0.10 (0.05)	0.04	0.22	0.05 (0.04)	0.00	0.15
	1.13 (+1SD)	0.13 (0.07)	0.02	0.29	0.06 (0.05)	0.00	0.19
Combined ambidexterity within NPD capability	−1.13 (−1SD)	0.02 (0.06)	−0.07	0.16	0.11 (0.06)	0.03	0.25
	0 (Mean)	0.02 (0.05)	−0.07	0.15	0.11 (0.05)	0.02	0.22
	1.13 (+1SD)	0.02 (0.06)	−0.07	0.16	0.11 (0.06)	0.02	0.25
Exploration relative to exploitation within CM capability	−1.13 (−1SD)	0.02 (0.02)	−0.01	0.11	0.02 (0.02)	−0.01	0.09
	0 (Mean)	−0.01 (0.01)	−0.05	0.01	0.00 (0.01)	−0.05	0.01
	1.13 (+1SD)	−0.03 (0.03)	−0.13	0.01	−0.03 (0.03)	−0.11	0.01
Exploration relative to exploitation within NPD capability	−1.13 (−1SD)	−0.07 (0.04)	−0.18	0.00	−0.07 (0.04)	−0.17	−0.01
	0 (Mean)	−0.02 (0.02)	−0.11	0.00	−0.02 (0.02)	−0.10	0.00
	1.13 (+1SD)	0.02 (0.03)	−0.02	0.11	0.02 (0.03)	−0.02	0.09

Unstandardized estimates are reported; control variables: firm age, firm size, competitive intensity, B2B, B2C, public; LLCI (ULCI): lower level (upper level) bias-corrected 95%.
Confidence intervals (number of bootstraps = 10,000); bootstrapping standard errors in parentheses.

although numerous studies in strategic management have examined organizational ambidexterity and its antecedents and outcomes (e.g., Cao et al., 2009; Gibson & Birkinshaw, 2004; He & Wong, 2004; Jansen et al., 2009; Lubatkin et al., 2006), there are very few efforts to extend this theoretical concept to marketing strategy. Therefore, by incorporating the insights from contingency theory, we expand EO's application in the marketing strategy literature by: 1) linking it to ambidexterity in two marketing capabilities, 2) showing how two forms of ambidexterity concurrently affect two important marketing outcomes, and 3) providing new insights into how EO is related to marketing outcomes through ambidextrous marketing capabilities.

6.2. Managerial implications

Our research has useful implications for managers. We reinforce Day's (2011) arguments that to create competitive advantage, firms need to engage in adaptive experimentation and vigilant market learning. Based on our findings, to increase combined ambidexterity (exploration plus exploitation) in customer management and new product development capabilities, firms should invest in being entrepreneurially oriented. That is, proactive, innovative and risk-taking. This, in turn, should improve customer relationship performance and new product performance, respectively. At the same time, managers in firms with a high level of EO may consider reducing it when the environment becomes stable because the cost of that orientation may not pay off in terms of CM or NP outcomes. On a related point, this highlights the need for managers to carefully monitor levels of market uncertainty and technological turbulence given the moderating effect of environmental dynamism on the EO-ambidexterity relationship.

We also flag the impact of an ambidexterity 'imbalance.' That is, focusing on product exploration over product exploitation negatively affects NP performance. This suggests that firms with limited resources could avoid emphasizing product exploration, at least in the short term. Implications differ for CM capability because a focus on customer exploration had no negative performance impact. Further, higher levels of customer exploitation (relative to customer exploration) can slightly improve CR performance. Thus, if CR is the outcome, exploitation vis à vis relationship management is key (Ernst, Hoyer, Krafft, & Krieger, 2011; Reimann et al., 2010).

6.3. Limitations and suggestions for future research

Certain limitations are relevant to our study; limitations that also create opportunities for future investigation. As noted earlier, we asked respondents to consider different timeframes for our independent and dependent variables. While helpful in overcoming some of the limitations of cross-sectional data, this does not amount to a true longitudinal design which is a better approach for testing causal relationships. Future research could employ such a design to enrich these results. Second, although our additional analysis revealed no industry-specific effects, considering that our data come from different industries, we cannot rule out the possibility of unique effects within industries.

Third, our sample includes only manufacturing firms. Future research could study service firms and compare the results to those obtained in this study. For instance, service companies invest more in customer relationship management processes due to the length and nature of relationships in service contexts. Therefore, the results in that context might be different from those obtained in this study. On a related point, our sample firms were, on average, established small and medium-sized enterprises. Although firm age or size does not determine entrepreneurial behavior, it would be relevant to compare our findings with data from younger, smaller organizations.

Fourth, we tested the effect of environmental dynamism in this study and controlled for competitive intensity. Future research should investigate other factors that might impact the exploration-exploitation relationships within ambidextrous marketing capabilities. For example, it would be appropriate to study the EO-capabilities-performance relationship in different contexts given the potential influence of, for example, regulatory environments or cultural norms on entrepreneurial and marketing behavior. Finally, we relied on managerial perceptions of new product performance to test our hypothesis. Future research could provide further insights by measuring new product performance using objective data such as the number of new products introduced by the firm.

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Appendix A. Measurement items

Items	Factor loading	α	CR	AVE
Market uncertainty		0.82	0.85	0.59
Customer needs and product preferences changed quite rapidly	0.68			
Customer product demands and preferences were highly uncertain	0.93			
It was difficult to predict changes in customer needs and preferences	0.77			
Market competitive conditions were highly unpredictable	0.67			
Technological turbulence		0.88	0.89	0.68
It was very difficult to forecast technology developments in our industry	0.55			
The technology environment was highly uncertain	0.90			
Technological developments were highly unpredictable	0.93			
Technologically, our industry was a very complex environment	0.87			
Entrepreneurial orientation		0.79	0.89	0.74
Innovativeness				
In general, the top managers of our firm have favored…	0.47			
A strong emphasis on the marketing of tried-and-true products 1 2 3 4 5 6 7 A strong emphasis on R&D, technological leadership, and innovations				
Proactiveness	0.88	0.72	0.76	0.51
In dealing with its competitors, our firm…	0.72			
Has typically responded to actions which competitors initiate 1 2 3 4 5 6 7 Has typically initiated actions to which competitors then respond				
In dealing with its competitors, our firm…	0.64			
Has seldom been the first business to introduce new products, administrative techniques, operating technologies, etc. 1 2 3 4 5 6 7 Has often been the first business to introduce new products, administrative techniques, operating technologies, etc.				
In general, the top managers of our firm have had…	0.77			
A strong tendency to “follow the leader” in introducing new products or ideas 1 2 3 4 5 6 7 A strong tendency to be ahead of other competitors in introducing novel ideas or products				
Risk-taking	0.94	0.83	0.83	0.63
In general, the top managers of our firm have had…	0.68			
A strong inclination for low-risk projects (with normal and certain rates of return) 1 2 3 4 5 6 7 A strong inclination for high-risk projects (with chances of very high returns)				
In general, the top managers of our firm have believed that …	0.85			
Owing to the nature of the environment, it is best to explore it gradually via cautious, incremental behavior 1 2 3 4 5 6 7 Owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives				
When confronted with decision-making situations involving uncertainty, our firm …	0.83			
Has typically adopted a cautious, “wait-and-see” posture in order to minimize the probability of making costly decisions 1 2 3 4 5 6 7 Has typically adopted a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities				
Customer exploration		0.79	0.81	0.68
Our firm has used new ways to satisfy customer needs [a]				
Our firm has acquired new customer segments	0.90			
Our firm has entered new markets	0.75			
Customer exploitation		0.87	0.85	0.59
Our firm had systems to better understand and serve its customers [a]				
Our firm has routinely established a “dialogue” with target customers	0.72			
Our firm has focused on meeting customers' long term needs to ensure repeat business	0.84			
Our firm has worked systematically to maintain loyalty among attractive customers	0.81			
Our firm has routinely enhanced the quality of relationships with attractive customers	0.69			
Product exploration		0.78	0.81	0.60
Our firm has introduced new generations of products	0.78			
Our firm has extended its product range	0.93			
Our firm has entered new technology fields	0.57			
Product exploitation		0.87	0.90	0.63
Our firm has improved existing product quality	0.85			
Our firm has reduced production costs	0.75			
Our firm has improved production flexibility	0.88			
Our firm has improved yield	0.88			
Our firm has reduced material consumption	0.59			
Customer relationship performance *(Relative to stated objectives in the last 2 years: 1 = Worse, 4 = As planned, 7 = Better)*		0.84	0.85	0.73
Customer satisfaction	0.86			
Customer retention	0.85			
New product performance *(Relative to stated objectives in the last 2 years: 1 = Worse, 4 = As planned, 7 = Better)*		0.80	0.78	0.55
Speed of new product development	0.70			
Product quality	0.81			
Value of products to customers (quality/price)	0.71			
Competitive intensity		0.77	0.76	0.52
Competition in our industry was intense	0.80			
Anything that one competitor offered to the market, others readily matched	0.72			
Price competition was a major characteristic of our industry	0.64			
In our industry, one heard of a new competitive move almost every day[a]				

All multi-item scales are measured using seven-point Likert scale (1 = Strongly Disagree, 7 = Strongly Agree) unless otherwise noted.
CR = Composite reliability; AVE = Average variance extracted; All factor loadings are significant at $p < .001$.

[a] Removed from analysis.

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