

Research paper

Completing the market orientation matrix: The impact of proactive competitor orientation on innovation and firm performance

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ABSTRACT

The concept of market orientation comprises four components: customer and competitor orientations, each with a proactive and responsive dimension. Studies have considered both responsive and proactive customer orientation. Competitor orientation, however, has been investigated more narrowly. Research has focused specifically on its responsive dimension, a firm's posture of quickly responding to its competitors' actions and their offerings; but has largely disregarded proactive competitor orientation, a firm's posture towards altering the market's competitive behavior in its favor. This study investigates the role of responsive and proactive competitor orientation on influencing innovation and firm performance, as well as the mediating effects of technology and learning orientation. Utilizing a unique dataset that combines primary and time-lagged secondary data from 306 firms, we find that both responsive and proactive competitor orientation are observable drivers of performance in the market, but in notably different ways. Proactive competitor orientation drives innovation performance, directly and through technology orientation. Responsive competitor orientation, instead, enhances firm performance through learning orientation. By providing insights about the proactive side of competitor orientation, this study supplements and completes the so called "market orientation matrix". This framework provides guidance for leaders to develop and manage a practical application of, and future research on market orientation.

1. Introduction

Sometimes companies make strategic moves that are out of sync with industry norms and create initial disruption, yet ultimately reshape the competitive marketplace. They can be more innovative than their competitors and fundamentally transform an industry, effectively setting new directions for the entire market. Firms which appear to do this successfully, repeatedly act with a proactive stance towards their competitors. Proactive competitor orientation is a cultural foundation that facilitates a firm's ability and proclivity to anticipate and influence the actions of existing and potential new competitors (Narver & Slater, 1990). To date, however, the marketing literature has considered the concept of competitor orientation narrowly by focusing on its responsive side. Research has scarcely considered what constitutes a proactive competitor orientation and has left the construct's performance effects unexplored. Therefore, we investigate the role of competitor orientation in a more comprehensive way. We study both, responsive and proactive competitor orientation and their performance effects and, thus, address

a significant gap in the existing market orientation (MO) literature.

Proactive competitor orientation is part of market orientation, which is an operationalization of the marketing concept. In their foundational work, Narver and Slater (1990) indicate the concept of MO is comprised of four components, which form a two by two matrix (which we term MO matrix hereafter): responsive and proactive customer orientation, and responsive and proactive competitor orientation. However, research has predominantly focused on firms' responsiveness, either to their customers (e.g., Genc, Dayan, & Genc, 2019), or to both their customers and their competitors (e.g., Han, Kim, & Srivastava, 1998). Proactiveness has been considered to a much lesser extent. Where it has been, the literature only takes proactive orientation towards customers into consideration (e.g., Narver, Slater, & MacLachlan, 2004; Stanko & Bonner, 2013). Missing from the matrix is the fourth component of MO; a firm's proactive orientation towards competitors. And yet, proactive competitor orientation is strategically crucial as emphasized by Jaworski and Kohli (2017, p.11): "...a firm that sets the rules in an industry – often leads the industry. And others end up following the firm, playing

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by its rules to their detriment.” Although the idea of defining, constructing, and managing the evolution of markets is not novel, there have not been any empirical investigations of this clearly observable phenomenon.

Netflix, for instance, exhibits proactive competitor orientation as an inherent part of its culture. It has consistently blazed its own trail and forced others to follow, while thwarting competitors—not just once, but systematically. Netflix started video mail order when Blockbuster was the king of the retail video rental industry. They focused on video streaming when the nascent technology seemed to lack a clear path to maturity; competitors initially watched from the sidelines. Partnering with TV manufacturers to put a “Netflix button” on remote controls that enabled direct access to its services, it pioneered a direct to consumer mindset in a hyper competitive marketplace dominated by behemoths. It developed algorithms to forecast customer preferences; and started creating its own content when streaming was expected to be a strictly flow-through service. Every step has been both innovative and in contrast to common competitor paths—but each has yielded even greater levels of success. Netflix’s strategic and tactical activities are consistently proactive relative to competitors, and outside the boundaries of industry norms; often leaving competitors scrambling to be responsive. Case in point is the massive number of broadcast entertainment incumbents and new competitors clamoring to enter the streaming app space that Netflix effectively created (Gallagher, 2020). This increased competition creates new challenges, but repeated time and again, these strategic moves clearly suggest a cultural imperative that influences a firm’s innovation and performance outcomes. Despite proactive competitor orientation’s apparent theoretical and empirical importance for competitive advantage in the marketplace, it has not been conceptualized well; nor have studies empirically tested whether or not proactive competitor orientation drives firms’ performance. This leaves the field with an incomplete understanding of MO, which makes it difficult to fully answer the fundamental question of why some market oriented firms perform better than others.

Further, all markets undergo relentless change which creates continuous pressure for businesses. No competitive position is safe from eventually being challenged or taken over by competitors. In the attempt to continuously develop their market offerings and to sustain their competitive advantage, specifically in an era of significant technological progress (Gotteland, Shock, & Sarin, 2020), firms augment their externally oriented MO with internally oriented strategic orientations. Accordingly, we consider learning orientation (Slater & Narver, 1995; Zhou, Yim, & Tse, 2005) and technology orientation (Han, Kim, & Kim, 2001; Spanjol, Qualls, & Rosa, 2011) as mediators in the relationship between competitor orientation and innovation and firm performance. Overall, we contribute to the literature in several ways. First, we conceptually develop and empirically test the construct of proactive competitor orientation; this effectively completes the MO matrix that implements the marketing concept often alluded to in the literature, but never fully realized. Second, we delineate proactive competitor orientation from responsive competitor orientation, and empirically observe the differential effects of the individual components of MO on both innovation performance and firm performance. Third, we extrapolate the mediating effects of technology orientation and learning orientation on the relationship between the decomposed competitive orientation constructs of the MO matrix and performance.

Fundamentally, our results elucidate means through which a firm can be successful in its innovation efforts and create a market advantage by effectively developing and deploying a proactive competitor orientation. We provide a foundation to further extend knowledge of the distinct mechanisms and outcomes of MO overall, and of proactive competitor orientation, in particular.

2. Theoretical foundations and conceptual framework

Proactive competitor orientation is a constituent component of MO,

one of the most studied concepts in the marketing literature (Kirca, Jayachandran, & Bearden, 2005). MO, in turn, is considered a firm-level strategic orientation, which is a philosophy that influences a firm’s strategy, structure, and processes, and guides its interactions with its stakeholders (Noble, Sinha, & Kumar, 2002). The literature offers insights into how and why firms choose strategic and structural configurations in order to pursue their innovation and performance goals. Thus, the term “strategic orientation” is effectively a gestalt phrase that incorporates different cultural orientations, where the sum of the parts represents the global philosophy of the firm.

In line with studies of MO (e.g., Atuahene-Gima & Ko, 2001; Day & Wensley, 1988), and of strategic orientations in general (e.g., Lumpkin & Dess, 1996), our study rests on the strategic choice perspective. The strategic choice perspective builds on the belief that how organizations choose and decide upon courses of strategic action is an essential determinant of organizational outcomes (Child, 1997). Strategic actions can be internally and externally oriented. Examples for *externally oriented* actions are moving in or out of given markets to secure favorable demand conditions, whereas *internally oriented* actions may involve a configuration of technology and work organization that is compatible with the scale and nature of operations planned. A key strategic issue, however, is the alignment of externally oriented actions (towards the market) with internal organizational capabilities (Child, 1997). The conjunction of internally oriented actions with externally oriented actions will determine organizational performance.

Further, the strategic choice perspective argues that organizations are not merely passive recipients of environmental influence, but also have the opportunity and power to reshape the environment. Thus, market developments are subject to both organizational action and environmental forces. The implications of strategic choice theories for firm strategy are that organizations should take into account the multiple ways in which they can interact with their environments through the process of mutual adaptation between the organization and its environment (Tan & Tan, 2005). Accordingly, the strategic choice perspective recognizes both, a re-active and a pro-active aspect of strategic decision making towards the environment. It rests on the perception of the environment as constraining or enabling. In the first case (constraining), organizations perceive environmental circumstance as given, thus, as constraining for their choice of strategic action. As a result, organizations *respond* to the environment. In the second case (enabling), organizations perceive the environment as shapeable and, accordingly, behave *proactively*. They create choice possibilities through external relationships for example by appealing to regulatory bodies to offset constraints (Child, 1997).

2.1. Market orientation

MO refers to the extent to which firms’ value, enable, and encourage a behavior in accordance with the marketing concept. The marketing concept stipulates that for firms to achieve sustained success, the key is to identify and satisfy customer needs more effectively than their competitors (Kirca et al., 2005). Further, MO is considered to be externally focused, as it is a primary means through which firms interact with their environment (i.e., customers and competitors) (Day & Wensley, 1988). Two perspectives of MO can be distinguished; a behavioral (Kohli & Jaworski, 1990) and a cultural perspective (Narver & Slater, 1990). The behavioral perspective describes MO in terms of organizational activities that are related to market intelligence, while the cultural perspective is related to organizational norms and values. Our research falls into the cultural strand of MO research; we present MO as an organizational culture that engenders a focus on implementing the marketing concept. Thus, MO creates a unifying mindset for the behavior of employees and departments within the organization. Accordingly, MO is a set of assumptions and understandings that employees share about the organization’s imperative that guides interactions with the marketplace, in order to create exceptional value for buyers and, correspondingly,

exceptional firm performance.

The cultural perspective of MO is fundamentally conceptualized as having two externally focused dimensions; either emphasizing customers or competitors. The context of these dimensions is considered to be either proactive or responsive (Kohli & Jaworski, 1990; Narver & Slater, 1990). We organize these dimensions into a simple framework (see Fig. 1), a two by two matrix, which we term the MO matrix.

Firms that are *customer oriented* put the interests of customers first. They believe profit is a reward for creating the highest possible value and satisfaction for customers (Deshpandé, Farley, & Webster Jr, 1993). These firms acquire and utilize knowledge about customers as to continuously provide superior customer value (Han et al., 1998). *Competitor oriented* firms believe that no customer benefit is safe from being matched or exceeded by competitors. They acquire knowledge about competitors in order to understand how their firm compares to competitors, in order to find ways to outperform them. Overall, a customer orientation focuses on meeting demand, while a competitor orientation is concerned with competing for demand (Lumpkin & Dess, 1996).

Responsive firms adapt to customers' needs or to competitors' challenges. This involves developing an innate understanding of their target customers observable wants and needs. It also entails having a firm grasp of competitors strategies and actions, which can be found by conducting benchmarking studies and other environmental scanning activities. On the other hand, being *proactive* is associated with a forward looking perspective and involves taking the initiative with the purpose of shaping the environment for one's own advantage (Narver & Slater, 1990). Hence, proactive firms identify latent needs, leverage market opportunities and act with an opportunity-minded perspective by setting new trends and creating demand as they introduce new products or services (Miller & Friesen, 1983).

A significant stream of research has elicited the performance effects of MO, but a majority of these studies have considered MO as a holistic, unidimensional construct, with either responsive customer orientation, or both responsive customer and responsive competitor orientations, as underlying dimensions (e.g., Baker & Sinkula, 1999; Hult & Ketchen Jr, 2001; Zhou et al., 2005). The relatively few studies that regard MO multidimensionally have also focused only on the responsive side of MO.

They have considered the components of responsive customer orientation or both, responsive customer and responsive competitor orientation (e.g., Noble et al., 2002). Some empirical research has broadened the view of customer orientation and has considered the differential effects of both, responsiveness and proactiveness (e.g., Atuahene-Gima, Slater, & Olson, 2005; Narver et al., 2004) (see Appendix). To our knowledge, however, no study has extended the view of competitor orientation to study the proactive competitor orientation component of MO. As shown in Fig. 1), this leaves one of the quadrants of the MO matrix incomplete. In this study, we build on the existing body of literature and complete the MO matrix. Doing so, we contribute to a more complete understanding of MO.

2.1.1. Proactive competitor orientation

To conceptualize *proactive competitor orientation*, we build on the foundations of market-driving organizations (Jaworski, Kohli, & Sahay, 2000). Driving markets entails a firm's engagement in strategic activities to proactively change the compositions, roles, or behaviors of other market players. Market-driving firms change how competitors act, and without the focal firm's intervention, those players would develop different strategies. The concept of market-driving is broadly encompassing and refers to *all* stakeholders in the market including customers, competitors, suppliers, distributors, complementors etc. We build on these concepts to derive and specify the nature of proactive competitor orientation.

We define proactive competitor orientation as a firm's values, and beliefs that are directed towards gaining an edge over their competitors through actions which alter the competitive structure and behavior of the market. Proactive competitor oriented firms believe that predicting future competitive behavior and that changing their competitive environment to their own benefit provides them competitive advantage. Most obviously, such firms' posture is to forge ahead by creating and capturing new markets before competitors, or to elicit new customer preferences that effectively create new marketspaces. [Salesforce.com](https://www.salesforce.com), for example, moved CRM software into the online space, creating a cloud-based platform that could be accessed by smaller companies that do not have the resources for an internal solution. Proactively oriented firms believe they can also alter the competitive landscape by

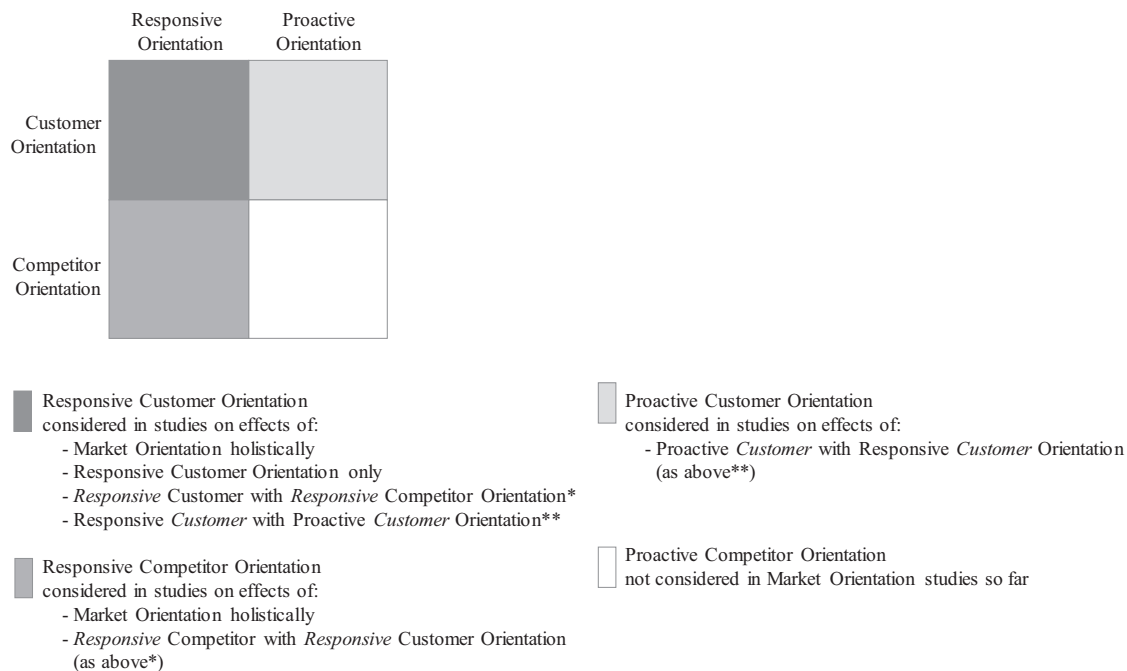


Fig. 1. Empirical studies on MO (holistically and with its components).

eliminating competitors through hostile takeovers or acquisitions (Jaworski et al., 2000). Further, firms believe they can intervene by shaping market constraints for competitors; for example, by setting technological standards, steering governmental regulations, or inducing network effects to their advantage. In sum, firms with a proactive competitor orientation perceive themselves as leaders or shapers rather than followers or adaptors; they are convinced they can influence competitors by anticipating, guiding, shaping, and even provoking their actions, as opposed to strictly reacting to them.

Thus, proactive competitor orientation is related to pioneering concepts such as first-mover advantage, which denotes the competitive advantage that a firm gains by being first to the market with a product or service (Lieberman & Montgomery, 1988). Moving first allows a firm to preempt scarce resources, establish buyer switching costs or establish strong brand recognition, enabling the firm to capture market share and to dominate the market space. However, to implement a first-mover strategy and to turn the objective of being first to the market into actual outcomes and firm benefits, it is not sufficient to put the relevant structures and processes in place (Deshpande & Webster Jr, 1989). It is essential for a fundamental shared set of values and beliefs that put “beating competitors by entering the market first” in the center of a firm’s consideration of strategy and operations. A firm’s proactive competitor orientation offers such beliefs and values.

2.1.2. Responsive competitor orientation

A *responsive competitor orientation* is defined as a firm’s posture of quickly responding to its competitors’ actions and their offerings in order to gain a competitive advantage. This posture is reflected in the beliefs and values and, and in the understanding that organizational members share about the firm (Day & Wensley, 1988; Narver & Slater, 1990). Accordingly, responsive competitor oriented firms use their rivals as a frame of reference, and seek to make their products more favorable over their competitors’ products. Means to achieve this include taking actions to re-position products by adding features, by being less expensive, or by finding more effective channels of distribution. Basically, responsive competitor orientation refers to a firm’s strategic imperative to answer the competition by directly and intensely responding to their offerings (Day & Wensley, 1988; Han et al., 1998; Im & Workman Jr, 2004).

Although the literature on MO has left proactive competitor orientation and its effects largely overlooked, research has evaluated responsive competitor orientation and its performance effects. The studies that have considered its effects on firm performance indicate positive relationships (e.g., Voss & Voss, 2000); but, effects on innovation performance, as evident from Table 1, are broadly mixed.

Moreover, extant empirical studies deploy the term competitor orientation without distinguishing its responsive or proactive nature. The majority of these studies consistently conceptualize and measure responsive competitor orientation. In part, however, the literature is ambiguous. Studies use elements of proactive competitor orientation in their hypotheses, but measure responsive competitor orientation when testing these hypotheses (Augusto & Coelho, 2009; Yang, Wang, Zhu, & Wu, 2012). By delineating both, responsive and proactive competitor orientation, and by testing their differentiated effects, we seek to contribute to resolve this ambiguity and, overall, to bring more clarity to this relationship.

2.2. Mediating roles of learning and technology orientation

Rooted in the strategic choice perspective, our study recognizes that internal capabilities are essential for an organization to successfully perform its externally oriented actions (Child, 1997). Internally focused strategic orientations in the realm of MO are most commonly operationalized by technology orientation and learning orientation. Specifically, the literature recognizes both, learning (Baker & Sinkula, 2007; Slater & Narver, 1995) and technology orientation (Han et al., 2001;

Spanjol et al., 2011) as mediators that bridge the relationship between innovation performance and its antecedent market orientation. Accordingly, we consider these internally focused strategic orientations as mediators that are key to the transformation of competitor orientation into innovation outcomes and firm based performance (e.g., Farrell & Oczkowski, 2002; Noble et al., 2002; Zhou et al., 2005).

2.2.1. Technology orientation

Technology has become ever more pervasive in all aspects of life, and has become integral to almost everything, including retail, personal communications and media (e.g., social media), and entertainment (e.g., streaming services). In this paradigm, technological capabilities can inhibit or enable an organization’s actions in the marketplace. If a firm’s technologies mismatch with its strategic actions in the environment, opportunities may be lost, or inefficiencies can increase costs. Technology is recognized as being crucial to master and deploy if the full potential benefits of MO are to be realized in an era of rapid technological change (Gotteland et al., 2020). As a result, the extent of technological focus and capacity increasingly determines the innovation strategies being followed, the new products being developed, and the level of organizational performance being achieved (Jeong, Pae, & Zhou, 2006). Accordingly, prior research has emphasized technology orientation as a significant determinant of innovation performance (e.g., Gatignon & Xuereb, 1997; Spanjol et al., 2011; Yang et al., 2012). While engagement in innovation is one of the possible results, however, alternative intended or emergent outcomes are possible; examples include, lower prices, comprehensive marketing campaigns, or to merge with or acquire another company or technology.

Companies differ in their appreciation of the potential role of technology in achieving competitive advantage; technology oriented firms consider technical knowledge as a crucial source of competitive advantage. These firms assign a pivotal role to technological superiority in determining market success and believe that they will be pushed out of the market due to more and more dated technology if they do not continuously invest in regeneration of these capabilities. Firms with a technology orientation consistently devote resources into the latest equipment, and by experimenting with pioneering processes. Accordingly, a technology orientation is defined as a firm’s tendency towards mastering state-of-the-art technology that is reflected by their allocation of capital and resources to adopt and develop the latest technological knowledge (Han et al., 2001). In line with the literature, we recognize technology orientation as an important means to convert competitor orientation to performance. Accordingly, we incorporate the construct in our framework.

2.2.2. Learning orientation

Likewise, in the attempt to uncover the process through which MO affects organizational outcomes, research has identified conceptually (Slater & Narver, 1995) and established empirically (e.g., Atuahene-Gima et al., 2005; Zhou et al., 2005) organizational learning as a key mediator. Whether driven by customers or competitors, all markets are subject to constant change which creates for firms the need to continuously engage in organizational learning. To replenish their products and services to maintain or increase their value to customers, thus, to sustain their competitive advantage, they need to learn so they can adapt (Levitt & March, 1988; March, 1991).

A firm’s learning orientation is defined as an organizational culture “that reflects the value that a firm places not only on adroitly responding to changes in the environment but also on constantly challenging the assumptions that frame the organization’s relationship with the environment” (Baker & Sinkula, 1999, p. 412). Accordingly, firms that are oriented towards learning explicitly focus on the generation and acquisition of new knowledge that is potentially useful for the organization, the evaluation of the potential value of the acquired information, and the transformation of this information into knowledge in order to adapt to environmental changes (Slater & Narver, 1995). Learning

Table 1
Extant empirical studies on the innovation and firm performance effects of responsive competitor orientation.

Sources (references are available upon request)	Empirical setting	Innovation performance	Firm performance	Measures of innovation performance	Measures of firm performance
Lukas, Ferrell (2000)	JAMS US manufacturing firms	Negative		Line extensions, me-too- and new-to-the-world products (more innovative is associated with more negative the effect)	
Frambach et al. (2003)	IJRM Dutch firms from diverse industries (e.g., food, textile, chemicals, machinery equipment, fabricated metal products)	Negative		Number of incremental and radical new products	
Gatignon, Xuereb (1997)	JMR U.S. durable consumer goods, services, industrial technology, computers	Negative, positive ¹		Performance indication based on a single product: innovation success	
Im, Workman (2004)	JM U.S. manufacturing firms (hi-tech)	Positive		Performance indication based on a single product: e.g., novelty, meaningfulness, relative sales, market share, roi, profitability	
Atuahene-Gima (2005)	JM Chinese electronics firms	Positive ²		Innovation: radical and incremental (% of total sales, # of products, frequency a firm introduced radical/incremental products)	
Augusto, Coelho (2009)	IMM Largest Portuguese companies from diverse industries (e.g., chemicals, agriculture, telecom, hotels)	Positive ³		New-to-the-world innovations (# of products new to firm & market and degree of launched products' innovativeness)	
Yang et al. (2012)	JPIM Chinese service (e.g., finance, telecom) and manufacturing firms (e.g., vehicles, textiles, chemicals)	Positive ⁴		New product performance (innovation independent)	
Ledwith, O'Dwyer (2009)	JPIM Small Irish manufacturing firms (making industrial & consumer products)	Positive	Non-sign.	New product performance (market, financial, and product performance, customer acceptance, timing)	Organizational performance (market share, increase in sales, profitability, percentage of sales by new products, ROI)
Chuang et al. (2015)	JPIM Chinese high-technology electronic information firms	Positive		New product creativity (new product novelty and meaningfulness)	
Van Riel et al. (2004)	JPIM European, U.S., Japanese firms (e.g., electronics, telecom, engineering)	Non-sign. ⁵		Short, long term, indirect success	
Spanjol et al. (2011)	JPIM Personal and household products industry	Non-sign. ⁵		New product ideation novelty and volume	
Liu, Atuahene-Gima (2018)	IMM Chinese high-tech firms	Non-sign. ⁶		Objectives for market share by new products	ROA, ROI, profitability
Spanjol et al. (2012)	JPIM German and Swiss manufacturing and services firms	Non-sign. ⁵		Innovation: radical (new-to-the-world product), incremental (extension, modification, or improve-ment of a product, cost reduction, relaunch)	
Han et al. (1998)	JM Banking industry from a midwestern state	Non-sign.		Number of technical and administrative innovations	Business performance (net income growth and ROA)
De Luca et al. (2010)	JPIM Italian biotechnology industry	Non-sign. ⁵	Non-sign.	Achieved R&D objectives	Organizational performance (perceived: related to stated objectives, main competitors)
Gao (2007)	IJRM Chinese brands of consumer products (durable & nondurable) & services	Positive	Positive	Product performance (innovation independent)	Profitability, sales growth
Voss, Voss (2000)	JM Theaters		Positive		Objective (tickets, subscribers, surplus/ deficit etc.); subjective (performance compared with peer theaters)
Noble et al. (2002)	JM Retail		Positive		ROS, ROA
Smirnova et al. (2011)	IMM Russian industrial firms		Positive		Growth, adaptability, and customer satisfaction
Thornton et al. (2015)	IMM UK services and manufacturing firms		Positive		Relationship portfolio effectiveness, firm profitability
Frambach et al. (2016)	JBR Dutch manufacturing companies and service providers		Positive		Financial performance (self-report on profitability and ROA relative to competition)
Zhou et al. (2007)	JIBS Worldwide hotel industry		Non-sign.		Perceived: hotel performance relative to major competitors: occupancy, profit, market share)
Desphandé et al. (2012)	ML Cross industry sample		Non-sign.		Perceived (performance relative to major competitors); objective (growth in profitability, sales and market share)
	IMM Greek banking industry		Non-sign.		

(continued on next page)

Table 1 (continued)

Sources (references are available upon request)	Empirical setting	Innovation performance	Firm performance	Measures of innovation performance	Measures of firm performance
Theodosiou et al. (2012)					Sales, market share, profitability, customer satisfaction
Slater et al. (2007)	JAMS	U.S. high-technology manufacturing and service firms	Non-sign., positive ⁷		Global measure of firm performance
Sørensen (2009)	EJM	Danish manufacturing firms	Non-sign., positive ⁸		ROA, based on objective data; market share based on perceived measures

¹ Negative if customer uncertainty is high, positive if low.

² For incremental, not for radical.

³ For low innovativeness cases.

⁴ Only in low competitive, low growth markets.

⁵ Negative.

⁶ Positive but non-sign.

⁷ Non-sing. for prospectors and differentiated defenders, positive for analyzers and low cost defenders.

⁸ Non-sing. on ROA, positive on market share.

oriented firms, for example, accumulate knowledge from experience, derive lessons learned from both successes and failures, or assimilate knowledge from the outside. As a result, they refine routines and existing knowledge (i.e., adaptive learning), question long-held assumptions, and develop new ways of thinking and new norms (i.e., generative learning) (Baker & Sinkula, 1999; Slater & Narver, 1995). Understanding the role of an orientation focused on organizational learning is important for our framework, because it is a means for firms to transform competitor orientation into performance outcomes.

Moreover, results of previous studies that tested the direct paths from responsive competitor orientation to various performance outcomes have been mixed. Im and Workman Jr (2004) and Noble et al. (2002), for example, found that positive effects of responsive competitor orientation on innovation and firm performance respectively, whereas Lukas and Ferrell (2000) find the reverse but De Luca and Atuahene-Gima (2007) find no relationship. These mixed results may indicate, for example, inconsistent mediation effects (MacKinnon, Fairchild, & Fritz, 2007). Thus, we attempt to identify and disentangle the direct and the indirect effects of both competitor orientations on innovation and firm performance with learning and technology orientation as mediators.

In particular, we propose that learning orientation (Slater & Narver, 1995; Zhou et al., 2005) and technology orientation (Han et al., 2001; Spanjol et al., 2011) have mediating roles in the relationship between the decomposed factors of MO, and innovation and firm performance outcomes. Fig. 2 illustrates these relationships.

Overall, our conceptual framework explains the fundamental role of proactive competitor orientation by integrating the external strategic orientations of proactive and responsive competitor orientation along with the internal dimensions of learning and technology orientation, to explain innovation performance and market based outcomes. Next, we present our hypotheses about the relationships between the specific

constructs in the model.

3. Hypotheses development

3.1. Performance effects of proactive competitor orientation

Firms with a proactive competitor orientation consider their external environment as shapeable (Child, 1997) and, accordingly, continuously shape the markets in which they contend by consistently introducing new products and creating new product categories. An inherent understanding and prediction of the current and future relative position and competencies of players in the marketplace enables these firms to compete aggressively, and fundamentally change the landscape in ways that disadvantage competitors. The goal is not market participation or product imitation but competitive innovation that bypasses existing solutions and offerings (Augusto & Coelho, 2009). Proactively oriented firms make moves in the market in a way that preempt competitors' opportunities and force them to be reactive. Accordingly, these firms likely benefit from first-mover advantage by strategically innovating and by launching truly groundbreaking products ahead of the competition (Lieberman & Montgomery, 1988). It is commonly accepted that creating value for customers by solving needs and wants ahead of the competition engenders superior performance (Atuahene-Gima & Ko, 2001). Hence, the higher the proactive competitor orientation of a firm, the more likely it is to innovate effectively and earn economic rents from their efforts. Accordingly, we posit:

H1. Proactive competitor orientation positively affects innovation performance.

Firms with a proactive competitor orientation believe it is important to define and shape the market environment to their benefit, which results in improved firm performance. They accomplish this by deploying

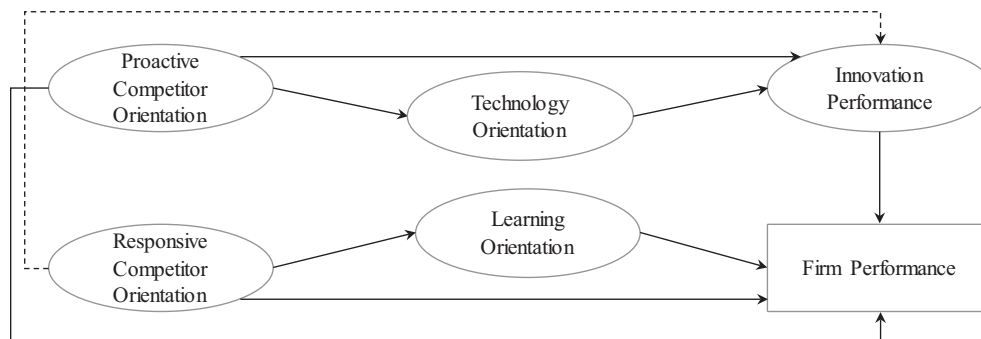


Fig. 2. Conceptual model.

their own competencies effectively, generate new segments in extant markets, or are the first to move into new markets (Lieberman & Montgomery, 1988). As a result of identifying new market spaces, companies that are proactively oriented may be able to gain a leadership position, or even a monopoly for some offerings (at least temporarily). By acquiring and retaining customers, they create and maintain revenues that contribute to overall firm performance.

Firms that are proactively oriented relative to competitors are able to direct or prevent competitive moves to their own advantage by weakening competitors, and/or by exploiting the competitors' weaknesses. They undermine other firms' positions in the market by affecting the bases of their competitive advantage (Gavetti, Helfat, & Marengo, 2017). Through their market position, they can use tactics like framing industry standards in their own favor, implementing patent and licensing strategies, or advocating for the implementation or removal of norms and regulations that play to the firm's own strengths (Jaworski et al., 2000). Moreover, firms that are proactive towards their competitors can preempt rivals in the access and acquisition of scarce assets such as natural resources or skilled workers (Lieberman & Montgomery, 1988). Proactively shaping the competitive landscape can be crucial in developing and maintaining a competitive advantage and impact a firm's overall performance. We therefore hypothesize:

H2. Proactive competitor orientation positively affects firm performance.

Firms with a proactive competitive orientation tend to have a strong proclivity towards mastering cutting edge technology in their pursuit of innovations that fundamentally alter the market (Han et al., 2001). Technologies can serve as means to improve processes, or they can serve as core ingredients for product innovations. It is often technologically superior products that are innovative and offer new value to customers. Firms with high proactive competitor orientation tend to acquire new technological knowledge and deploy cutting edge technologies to offer innovative products with unique benefits (Atuahene-Gima et al., 2005). Further, these firms allocate capital and resources to proactively develop, adopt and deploy the latest technology which they then use to excel in innovation, develop products and services that are novel and provide exceptional value to customers (De Luca, Verona, & Vicari, 2010; Gatignon & Xuereb, 1997; Zhou et al., 2005). For example, when Netflix created their streaming service subsidiary, they drove the market using forward thinking technological tools in both the process of delivery and the product itself. Proactive competitor oriented firms tend to build and maintain their technological edge as an effective means to innovate and shape the market (Han et al., 2001). Thus:

H3. Proactive competitor orientation's effect on innovation performance is mediated by technology orientation

3.2. Performance effects of responsive competitor orientation

Firms with a responsive competitor orientation perceive their room to maneuver as constrained (Child, 1997). They are attracted by the opportunity to imitate new technologies and products of their competitors, as it potentially saves resources and is – compared to developing them – less risky (Child, 1997; Lieberman & Montgomery, 1988). This can save the substantial costs that are associated with basic research and with the development of new technologies and products. In turn, those firms are less likely to develop innovative products. Strongly focusing on competitors likely obscures opportunities for differentiation and diverts attention from the true needs of customers. Therefore, firms that carefully monitor competitors' activities adopt and refine competitors' ideas, and develop me-too products rather than developing their own (Lukas & Ferrell, 2000). Their frame of reference is determined by competitors' actions. With such selective attention they tend to miss out on innovation opportunities (Day & Wensley, 1988; Im & Workman Jr, 2004). In addition, in their haste to respond to competitors, they may

deny their product developers the latitude to develop truly innovative products (Spanjol et al., 2011).

The extant literature presents mixed findings for the relationship between responsive competitor orientation and innovation performance; findings have been positive (e.g., Augusto & Coelho, 2009), non-significant (e.g., De Luca et al., 2010; Han et al., 1998) and negative (e.g., Gatignon & Xuereb, 1997; Lukas & Ferrell, 2000). A closer look at these studies reveals that most studies that find positive relationships have various peculiarities (see Table 1). The effects are observed in settings of low innovativeness (Atuahene-Gima, 2005; Augusto & Coelho, 2009), performance effects are evaluated by means of success of a single product selected by the respondent (Gatignon & Xuereb, 1997; Im & Workman Jr, 2004), or by capturing the performance of firms products independent of their innovativeness (Yang et al., 2012). Further, the majority of studies with non-significant findings report coefficients with negative signs (e.g., De Luca et al., 2010), indicating a latent negative relationship. We conclude that the more responsive competitor orientated firms are, the lower their innovation performance. Accordingly, we hypothesize:

H4. Responsive competitor orientation negatively affects innovation performance.

Firms with a responsive competitor orientation adjust their strategies as a reaction to competitors' moves. They seek to protect and even expand their competitive advantage by quickly responding to competitors and their offerings (Narver & Slater, 1990; Slater & Narver, 1995). Following in their competitors' footsteps, responsive firms can learn from first-movers efforts, and restrict their new product launches to those that have already been successful in the market (Slater, Hult, & Olson, 2007). Further, these firms perceive external circumstances posed by the competitive environment as constraining (Child, 1997). As a result, they narrow their room of action and as they are guided by their competitors' activities. For example, these firms extend their product lines with me-too products and quickly match the marketing initiatives of competitors. While me-too products are not innovative per se, they can contribute to the maintenance or acquisition of market share. Responsive firms may adapt features of products to position favorably in relation to competitors, target early adaptors rather than the innovator segment, and engage in aggressive marketing communication campaigns (Han et al., 1998; Im & Workman Jr, 2004). Moreover, imitation can erode the innovative advantage of the imitated competitor; a me-too product can turn competitors' innovation into a commonplace commodity (Lee, Smith, Grimm, & Schomburg, 2000). Those firms watch costs closely so they can cut prices for example by copying rivals' manufacturing or service processes or supply chain configurations (Day & Wensley, 1988). Accordingly, responsive competitor oriented firms can maintain, or even expand their market share by responding to their competitors' moves (Frambach, Prabhu, & Verhallen, 2003). Since adding products to a firm's portfolio can improve top line revenues, and/or lowering costs can reduce operational costs will enhance a firm's performance, we expect:

H5. Responsive competitor orientation positively affects firm performance.

Firms with a responsive competitor orientation strive to understand the dynamics of the market with a strategic intent to respond to it. They develop a robust learning orientation, and with it, build a solid knowledge base of their current competitors' moves, along with their strengths, weaknesses, strategies, and business capabilities (Slater & Narver, 1995). Responsive firms accomplish this through environmental scanning and competitive intelligence, that includes observing, studying, and evaluating competitors and markets. Further, those firms are able to discern their position relative to their main competitors by performing competitive benchmarking, and conducting consumer studies to form perceptual maps (Narver & Slater, 1990). They can pitch their strengths against a competitor's weaknesses or imitate a

competitor’s strength, thus weaken or nullify rivals’ competitive advantage (Day & Wensley, 1988; Li & Calantone, 1998; Noble et al., 2002). In addition, responsive competitor oriented firms emphasize the development of their competencies by learning more effectively and possibly faster than their competitors. For example, they can use their organizational learning to create a cost advantage to attack their competition with low cost offerings (Lieberman & Montgomery, 1988). Essentially, a dedicated learning orientation acts as a catalyst to transform a responsive orientation towards competitors into firm success. Thus, we hypothesize:

H6. Responsive competitor orientation’s effect on firm performance is mediated by learning orientation.

4. Method

To test our model, we developed a questionnaire following established design rules (Dillman, 2011) and incorporated measures from previous studies that considered strategic orientations, particularly MO (e.g., Gatignon & Xuereb, 1997; Narver & Slater, 1990). Since we collected data in German speaking areas, we translated the measures into German from English, and in order to ensure translations accuracy, we used the back-translation procedure suggested by Brislin (1986). After we developed the initial questionnaire, we conducted two waves of pre-tests to evaluate the quality, face validity, and content validity of the measures. Depending on the feedback we have received, we have modified some items and eliminated others.

4.1. Data

Our final sample consisted of 306 firms in Germany, Switzerland, and Austria. We initially approached 581 companies with emails and follow up phone calls. 358 responded with a completed questionnaire, yielding a 62% response rate. After accounting for incomplete data, 306 usable questionnaires remained. A majority of respondents were heads of R&D, CEOs, or heads of marketing with more than 6 years’ industry experience. Further, we focused on internal consistency and selected the manufacturing industry in Germany, Switzerland, and Austria as our field of study. All firms are in B2B markets, have their own R&D, and produce durable goods. The firms ranged in size from about 130,000 euros annual sales revenue and one employee to about 33 billion euros annual sales revenue and 134,000 employees, with mean size of 354 million euros and 1973 employees respectively. To capture revenue as a measure of firm performance, we employed 2-year time lagged secondary data from publicly available sources, namely Orbis Bureau van

Dijk and Creditreform.

4.2. Measures

We adopted all measurement scales from established scales, with one exception: for proactive competitor orientation we developed a new measure. We followed established procedures for scale development (Churchill Jr, 1979) and generated a list of items to measure Proactive Competitor Orientation. Based on prior related literature (e.g., Jaworski et al., 2000), a pool of 14 items was generated (see Table 2). It consisted of items that reflected the focal firm’s ability to predict future competitors’ behavior (e.g., items 2, 3 and 6) and to change the behavior of its competitors to its own competitive advantage (e.g., item 1, 4, and 5). We used Likert-type seven-point scales with statements rated by respondents from disagree strongly to agree strongly. Further, to reduce response set bias, we reversed the valence of selected questionnaire items. Subsequently, we reduced the scale to an acceptable number of items by two steps: the use of expert judgements and statistical purification procedures. We assessed qualitatively (in two steps) and statistically (exploratory and confirmatory) quality, face validity, and content validity of the measures. First, a questionnaire with the developed set of items was presented to a total of eight academics who were highly knowledgeable about MO. We asked them to highlight all items that were ambiguous and modified those items accordingly. Second, we received feedback from ten marketing and ten non-marketing managers. Then, we asked them to critically assess each item and to point out any item that was ambiguous, poorly worded, or otherwise difficult to answer. Items were retained only if all the evaluators considered the item to be capturing the proactive orientation towards competitors as defined in this study and to be easily understandable. The reduced scale consisted of 9 items. In order to ensure discriminant validity, the factor was further refined to the final set of measures employed.

We measured responsive competitor orientation (Narver & Slater, 1990), learning orientation (Baker & Sinkula, 2007), technology orientation (Gatignon & Xuereb, 1997), and innovation performance (De Luca et al., 2010) constructs based on established scales and using a seven-point Likert scale with endpoints of “1 = strongly disagree” and “7 = strongly agree” (see Table 3 for details).

Our model uses firm revenue as measure of firm performance. As both, MO and R&D efforts require time to take effect, we performed a second round of data collection with a 2-year time lag, a lag that is in line with other market orientation studies (Herhausen, 2016; Jaeger, Zacharias, & Brettel, 2016; Rakthin, Calantone, & Wang, 2016). To avoid common method variance, we collected firm performance data

Table 2
Scale development proactive competitor orientation.

		A	B	C
1	Frequently, we shape our current as well as our future competitive environment e.g., by setting product standards.	o	o	o
2	We make strategic decisions with respect to our products and technologies based on how our current competitors will react to our competitive actions.	o	o	o
3	We observe developments at adjacent markets in order to predict the entry of potential competitors early.	o	o	o
4	In order to be ahead of our competition we proceed offensively-minded when developing and implementing competitive actions.	o	o	o
5	We often implement business methods and management practices from other industries that influence our competitors’ behavior.	o	o	
6	We know our competitors well enough in order to predict their future actions in good time.	o	o	
7	In product and technology development we tend to be guided by the activities of competitors. (reverse scale)	o	o	
8	Our company very often plays a pioneering role when introducing new products or services, technologies or administrative practices.	o	o	
9	Our company typically acts in such a way that competitors are forced to respond.	o	o	
10	Our company initiates market barriers for our competitors.	o		
11	Our company strives to change the number of competitors in the market.	o		
12	We are looking for new opportunities in new business areas, in which our competitors are not yet active.	o		
13	Fundamental changes in our industry we recognize only slowly. (reverse scale)	o		
14	To assess how effective our competitive methods are, we varygate them.	o		

A ... initial item pool	reduced based on qualitative assessment
B ... items included in the questionnaire	reduced based on quantitative assessment
C ... items of final scale	

Table 3
Measures and constructs.

Constructs and measurement items	Factor loading	CR	AVE
Proactive Competitor Orientation (newly developed)		0.784	0.604
Frequently, we shape our current as well as our future competitive environment e.g., by setting product standards.	0.783		
We make strategic decisions with respect to our products and technologies based on how our current competitors will react to our competitive actions.	0.789		
We observe developments at adjacent markets in order to predict the entry of potential competitors early.	0.761		
In order to be ahead of our competition we proceed offensively-minded when developing and implementing competitive actions.	0.775		
Responsive Competitor Orientation (adapted from Narver & Slater, 1990)		0.725	0.550
Frequently, we identify and utilize our competitors' weaknesses to establish competitive advantage.	0.720		
We react to our competitors' actions very quickly.	0.718		
Our top management regularly discusses our competitors' strategies.	0.829		
Information about our competitors' products are considered as a benchmark in our product design.	0.692		
Learning Orientation (Baker & Sinkula, 2007, p. 333)		0.890	0.816
"Below are three approaches that a firm may use to understand why [an undesirable] marketing outcome may have occurred. Please evaluate the extent to which each learning approach is practiced in your organization. <i>Learning Approach 1: Gleaning</i> The firm conducts no systematic research effort to address the undesirable outcome. Example: In the past, managers have attributed slow initial sales of [product innovations to inadequate knowledge of sales personnel about the product's technological features]; they presume this to be the case again [...]. <i>Learning Approach 2: Adaptive Learning</i> The firm engages in a systematic research effort, but within the context of past assumptions about the marketplace [and important customers]. Example: Managers search for a solution to [insufficient sales of a product innovation] under the assumption that [the easy and intuitive operability of the product is the most important criterion for customers to buy the product]. [...] <i>Learning Approach 3: Generative Learning</i> The firm engages in a systematic research effort and is prepared to challenge all marketplace assumptions, if necessary. Example: Managers embrace the potential that [the easy and intuitive operability of the product may no longer be the most important criterion for customers to buy the product]. [...] We would like to understand the extent to which each learning approach is encouraged in your firm. For each statement, assign 100 points across the three learning approaches to indicate the relative preference towards each approach. This approach is supported by our management: 0.931 ... This approach is established practice in our company: ... 0.913 This approach strategy is expected in our company: ... 0.866 ... <i>Learning Approach 1, Learning Approach 2, Learning Approach 3</i> "			
Technology Orientation (adapted from Gatignon & Xuereb, 1997)		0.805	0.561
We constantly monitor the development of all technologies that are used in our market (technology monitoring).	0.729		
We regularly scan a wide range of fields of technology that go beyond the core technologies used in our market (technology scanning).	0.756		
Our new products are at least state of the art.	0.767		
In the development of new products, our company always uses advanced technologies.	0.697		
We show a high degree of initiative in developing new technologies.	0.793		
Innovation Performance (adapted from De Luca et al., 2010)		0.802	0.629

Table 3 (continued)

Constructs and measurement items	Factor loading	CR	AVE
In the last 3 years, to which extent has your company's R&D achieved its stated objectives with regard to:			
... innovative products generated	0.747		
... achieving technological leadership in the industry	0.732		
... the ability to attract new engineers / scientists with outstanding knowledge and skills.	0.789		
... building a high reputation in the industry for its performance	0.894		
Responsive Customer Orientation (adapted from Narver & Slater, 1990)		0.809	0.636
We frequently and systematically track our customers' satisfaction.	0.842		
We constantly monitor our level of commitment and orientation to serving customer needs.	0.739		
We pay close attention to our after-sales service.	0.781		
We regularly use research procedures, e.g., personal interviews, focus groups, and surveys, to gather customer information.	0.824		
Proactive Customer Orientation (adapted from Narver et al., 2004)		0.856	0.699
We regularly examine the operational procedures of our products' users in order to reveal new as well as latent needs.	0.778		
We extrapolate key trends to gain insight into what users in a current market will need in the future.	0.810		
We incorporate solutions to unarticulated customer needs in our new products and services.	0.897		
We continuously try to discover additional needs of our customers of which they are unaware.	0.855		
Interfunctional Coordination (adapted from Narver & Slater, 1990)		0.929	0.738
R&D & Marketing/Sales personnel... ... often interact.	0.901		
... communicate openly.	0.876		
... entirely work together in setting goals and priorities concerning innovation.	0.927		
... have similar views.	0.785		
... frequently share information about our customers' satisfaction.	0.789		
... collectively develop and evaluate new possibilities to innovate.	0.865		

Notes: AVE = average variance extracted. CR = composite reliability, Seven-point scales were used (1 = "disagree strongly," and 7 = "agree strongly") unless otherwise noted.

from public data bases.

In order to ameliorate the potential impact of contextual factors in product innovation research, we added control variables. First, we controlled for the other MO components, namely responsive and proactive customer orientation, and inter-functional coordination. Our measures for those are based on the established scales (Narver et al., 2004; Narver & Slater, 1990). Firm size (number of employees), firm age, and R&D expenditures (percentage of firm sales allocated to R&D) are controlled for because of their potential impact on new product launches (Yeoh & Kendal, 1999).

We used several procedural and statistical techniques to control for common method bias. At the procedural level, following Santos-Vijande, López-Sánchez, and Rudd (2016), we conducted a pre-test of study to improve the wording of our scale items, ensured respondents' anonymity and confidentiality, and asked the respondents to be as honest as possible. Most importantly though, we used external and objective data sources for our dependent variable (i.e., firm performance) as well as two control variables (i.e., firm age and firm size). Doing so helps to minimize concerns related to common method bias as well as improve the face validity of our study (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). When it comes to the statistical techniques to address common method bias, we conducted Harman's one factor test (Podsakoff et al.,

2003) and found that there was no single factor that accounted for more than 25% of the variance, which is below the 50% critical value (Podsakoff & Organ, 1986).

5. Results

We used partial least squares based structural equation modeling (PLS-SEM) to test our hypotheses. Compared to other covariance-based structural equation modeling methods, PLS-SEM does not require a large sample size (Santos-Vijande et al., 2016) and normality of data, (Hair, Sarstedt, Ringle, & Mena, 2012) while producing comparable results. Further, PLS-SEM is more appropriate for the exploratory nature of our study (Santos-Vijande et al., 2016). While PLS-SEM estimates measurement and structural models simultaneously, following the recommendations of Hulland (1999) we begin with the interpretation of the measurement model, reliability, and validity; and then proceed with the structural model.

5.1. Measurement model

The results of the analyses for the measurement model are presented in Table 3. All item loadings are significant at $p < 0.01$ level and higher than 0.60 (Anderson & Gerbing, 1988; Hulland, 1999) (Table 3). Table 4 presents the correlation matrix and descriptive statistics of the measures. The single item secondary measure of firm size correlates highly with revenue. However, PLS-SEM has been shown to help mitigate the effects of shortcomings that may exist in data (Hult, Morgeson, Morgan, Mithas, & Fornell, 2017). Moreover, composite reliability scores are higher than 0.8, and the average variances extracted (AVEs) are higher than 0.5, in support of convergent validity (Bagozzi & Yi, 1988) (Table 3). When it comes to discriminant validity, we found that the correlation between any pair of constructs was smaller than the corresponding square root of AVE values of those constructs, in support of discriminant validity (Fornell & Larcker, 1981) (see Table 4). Overall, the analyses for the measurement model suggest that the construct items measure their intended latent variables.

5.2. Structural model

The results of the structural model are provided in Table 5. The t-statistic values were calculated using a bootstrap method with 5000 subsamples as recommended by Hair et al. (2012). The hypothesized model explains a significant portion of the variance in the final dependent variable (73% for revenue). Additionally, following Tenenhaus, Vinzi, Chatelin, and Lauro (2005), we calculated the geometric mean of the average communality and the average R2 of the endogenous latent variables as a measure of goodness-of-fit (GoF) to validate our model and found a GoF value of 0.056, indicating a good fit.

We found that proactive competitor orientation positively affects innovation performance ($\beta = 0.202$; $p < 0.10$) while it has a negative,

Table 5
Structural model results.

Relationship	Standardized coefficient	p-value
Main effects		
Proactive Competitor Orientation → Technology Orientation	0.310	0.000***
Proactive Competitor Orientation → Learning Orientation	0.064	0.596
Proactive Competitor Orientation → Innovation Performance	0.202	0.097*
Proactive Competitor Orientation → Firm Performance	-0.013	0.862
Responsive Competitor Orientation → Technology Orientation	0.362	0.001***
Responsive Competitor Orientation → Learning Orientation	0.311	0.016**
Responsive Competitor Orientation → Innovation Performance	-0.305	0.008***
Responsive Competitor Orientation → Firm Performance	0.025	0.726
Technology Orientation → Innovation Performance	0.301	0.002***
Technology Orientation → Firm Performance	-0.036	0.594
Learning Orientation → Innovation Performance	-0.083	0.371
Learning Orientation → Firm Performance	0.140	0.008***
Innovation Performance → Firm Performance	0.142	0.096*
Control effects		
Responsive Customer Orientation → Innovation Performance	0.325	0.001***
Responsive Customer Orientation → Firm Performance	0.073	0.403
Proactive Customer Orientation → Innovation Performance	0.240	0.009***
Proactive Customer Orientation → Firm Performance	-0.033	0.565
Interfunctional Coordination → Innovation Performance	0.091	0.287
Interfunctional Coordination → Firm Performance	-0.077	0.223
Firm Size → Innovation Performance	0.250	0.006***
Firm Size → Firm Performance	0.846	0.000***
Firm Age → Innovation Performance	-0.033	0.688
Firm Age → Firm Performance	-0.138	0.235
R&D Expenditures → Innovation Performance	0.195	0.055*
R&D Expenditures → Firm Performance	-0.129	0.034**
R ² . Technology Orientation	0.321	
R ² . Learning Orientation	0.098	
R ² . Innovation Performance	0.529	
R ² . Firm Performance	0.729	

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

The p-value bootstrap is computed using 5000 subsamples (Henseler, Ringle, & Sinkovics, 2009).

Table 4
Shared correlations among constructs.

	Mean	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1) Firm Performance	3.54	2.380	<i>1.00</i>											
2) Proactive Competitor Orientation	4.29	1.19	0.27	<i>0.78</i>										
3) Responsive Competitor Orientation	4.98	1.16	0.15	0.49	<i>0.74</i>									
4) Technology Orientation	5.31	1.00	0.14	0.49	0.52	<i>0.75</i>								
5) Learning Orientation	3.98	1.63	0.19	0.22	0.34	0.23	<i>0.90</i>							
6) Innovation Performance	4.79	1.13	0.28	0.53	0.24	0.50	0.13	<i>0.79</i>						
7) Proactive Customer Orientation	4.81	1.19	0.23	0.51	0.53	0.47	0.29	0.54	<i>0.84</i>					
8) Responsive Customer Orientation	4.63	1.17	-0.09	0.32	0.35	0.21	0.42	0.39	0.30	<i>0.80</i>				
9) Interfunctional Coordination	5.23	1.16	-0.02	0.30	0.43	0.40	0.22	0.34	0.37	0.34	<i>0.86</i>			
10) Firm Size	1.96	11.73	0.84	0.27	0.11	0.14	0.04	0.24	0.22	-0.24	-0.03	<i>1.00</i>		
11) Firm Age	35.29	35.71	0.17	0.03	-0.02	0.07	0.16	0.03	-0.07	0.12	-0.11	0.28	<i>1.00</i>	
12) R&D Expenses	4.05	1.61	-0.24	0.17	0.04	0.11	-0.12	0.36	0.28	0.19	0.12	-0.19	-0.21	<i>1.00</i>

Square root of the average variance extracted (AVE) is in italics on the diagonal. Correlations are below the diagonal.

but statistically insignificant impact on firm performance ($\beta = -0.013$; $p > 0.10$). Therefore, H1 is supported while H2 is not. We found that proactive competitor orientation positively affects technology orientation ($\beta = 0.310$; $p < 0.01$), which, in turn, increases innovation performance ($\beta = 0.301$; $p < 0.01$). Further, proactive competitor orientation positively affects innovation performance. This relationship is significant at $p < 0.10$ level ($\beta = 0.202$; $p = 0.054$). Therefore, following Baron and Kenny (1986), we concluded that we had partial mediation and, using Zhao, Lynch Jr, and Chen’s (2010) approach to testing mediation, we found that 31.6% of the effect of proactive competitor orientation on innovation performance is mediated by technology orientation, in support of H3.

When it comes to responsive competitor orientation, our results showed that it decreases innovation performance ($\beta = -0.305$; $p < 0.01$), supporting H4. However, its impact on firm performance, while positive as hypothesized, is not statistically significant ($\beta = 0.025$; $p > 0.10$). Therefore, H5 is not supported. When it comes to our second mediation hypothesis, H6; we found that responsive competitor orientation positively affects learning orientation ($\beta = 0.311$; $p < 0.05$), which, in turn, increases firm performance ($\beta = 0.140$; $p < 0.05$). On the other hand, while responsive competitor orientation positively affects firm performance, this relationship is not statistically significant ($\beta = 0.025$; $p > 0.10$). We conclude that we find full mediation (Baron & Kenny, 1986) and that, using Zhao, Lynch, and Chen’s approach to testing mediation, 63.8% of the effect of responsive competitor orientation on firm performance is mediated by learning orientation, in support of H6. Please refer to Fig. 3 and Table 6 for an overview and a summary of our hypothesized effects and findings.

5.3. Post-hoc analyses

Previous research has established that the effects of MO may differ for small and large firms (e.g., O’Dwyer & Ledwith, 2010), for young and mature firms (e.g., Dibrell, Craig, & Hansen, 2011), and for firms that differ in their R&D expenses (e.g., Lin, Lee, & Hung, 2006). Thus, to identify boundary conditions that may render proactive competitor orientation more or less effective for improving performance outcomes, we conducted additional analyses specifically aimed at establishing the extent to which our empirical results may vary based on a firm’s size, age, and R&D expenses. Following earlier studies (e.g., Grinstein, 2008;

Table 6
Hypothesized effects and results.

H1	Proactive competitor orientation positively affects innovation performance.	Supported
H2	Proactive competitor orientation positively affects firm performance.	Not supported
H3	Proactive competitor orientation’s effect on innovation performance is mediated by technology orientation.	Supported
H4	Responsive competitor orientation <i>negatively</i> affects innovation performance.	Supported
H5	Responsive competitor orientation positively affects firm performance.	Not supported
H6	Responsive competitor orientation’s effect on firm performance is mediated by learning orientation.	Supported

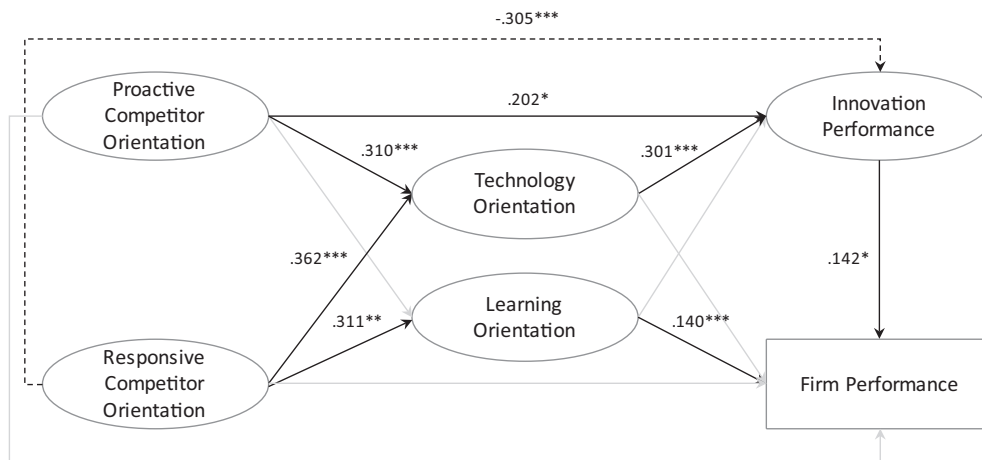
Homburg & Pflesser, 2000), we divided our sample into subgroups using the median split for each variable. We then performed a multi-group PLS estimation. For an overview of the results of our post-hoc analyses see Table 7.

With regard to firm size, we found that the impact of responsive competitor orientation on firm performance is positive for larger firms,

Table 7
Results of post hoc analyses.

	Firm size		Firm age		R&D expenses	
	Large	Small	Old	Young	High	Low
Responsive CO → Firm performance	++	-				
Responsive CO → Innovation performance					-	+
Responsive CO → Learning orientation			++	-		
Responsive CO → Technology orientation			++	+		
Proactive CO → Innovation performance → Firm performance			-	++		
Proactive CO → Technology orientation → Innovation performance					++	+

CO: competitor orientation



*** $p < 0.01$ ** $p < 0.05$ * $p < 0.1$

Line codes:

solid line: significant path
grey line: indicates the path is not significant
dotted line: denotes negative relationship

Control variables:

Responsive customer orientation Firm size
Proactive customer orientation Firm age
Interfunctional coordination R&D expenses

Fig. 3. Structural model results.

while it is negative for smaller firms ($\beta_{\text{large}} = 0.333$ $\beta_{\text{small}} = -0.409$ $p < 0.10$). With regard to firm age, we found that the impact of responsive competitor orientation on learning orientation is positive for older firms and slightly negative for younger firms ($\beta_{\text{old}} = 0.575$ $\beta_{\text{young}} = -0.093$ $p < 0.10$), while its impact on technology orientation is stronger for older firms than it is for younger firms ($\beta_{\text{old}} = 0.577$ $\beta_{\text{young}} = 0.099$ $p < 0.10$). Further, the effects of proactive competitor orientation on innovation performance and innovation performance on firm performance are slightly negative for older firms, while they are positive for younger firms ($\beta_{\text{old}} = -0.081$ $\beta_{\text{young}} = 0.493$ $p < 0.05$ and $\beta_{\text{old}} = -0.041$ $\beta_{\text{young}} = 0.410$ $p < 0.10$, respectively). Finally, with regard to R&D expenditures we found that the effects of proactive competitor orientation on technology orientation and on innovation performance are, while both positive, are stronger for firms with higher R&D Expenditures ($\beta_{\text{highRD}} = 0.499$ $\beta_{\text{lowRD}} = 0.042$ $p < 0.05$ and $\beta_{\text{highRD}} = 0.619$ $\beta_{\text{lowRD}} = 0.024$ $p < 0.10$, respectively). However, the impact of responsive competitor orientation on innovation performance is negative for firms with higher R&D expenditures, while it is positive for firms with lower R&D expenditures ($\beta_{\text{highRD}} = -0.645$ $\beta_{\text{lowRD}} = 0.085$ $p < 0.05$).

6. Discussion

MO is a function of competitor and customer orientations, as well as proactiveness and responsiveness (Narver & Slater, 1990). However, the MO literature has primarily focused on three out of four components of MO (Jaworski et al., 2000): responsive customer and competitor orientation (e.g., Lukas & Ferrell, 2000; Slater et al., 2007), and much less on proactive customer orientation (Atuahene-Gima et al., 2005; Iyer, Davari, Zolfagharian, & Paswan, 2019; Narver et al., 2004; Stanko & Bonner, 2013). Proactive competitor orientation, however, has inadvertently been overlooked by the literature. Yet, identifying and executing on prospective opportunities relative to competitors is also crucial for firms to realize a competitive advantage in the marketplace.

The contributions of our study are threefold. First, we elaborate on proactive competitor orientation from its limited conceptualization in the literature and develop a valid measure of it. Second, we explore the role of proactive competitor orientation in achieving successful innovation and firm performance, and empirically identify its contribution to objective performance outcomes. As a result, we resolve an inherent deficiency of the literature that impedes the advancement of the theoretical understanding of the concept of MO and its practical application to management strategies. Third, we offer a simple framework: the MO matrix which allows us to organize the constituent dimensions found in the extant literature, to uncover gaps in knowledge, and to develop the proactive competitor orientation construct that completes the matrix. Our study therefore provides foundations to guide future research.

6.1. Theoretical contribution

6.1.1. Proactive competitor orientation

In our study, we specify proactive competitor orientation as a firm's proclivity towards influencing and shaping the competitive space, making strategic market moves based on the anticipated response of competitors, and conducting market scanning to forecast new competitors to the market space. Firms that are proactively oriented relative to their competitors, are offensively minded when developing and implementing competitive actions. Our empirical findings suggest proactive competitor orientation plays a critical role in innovation performance. This is an important finding as innovation is a key part of firms' performance, competitiveness and long-term survival (Rubera & Kirca, 2012).

Further, our study contributes to a recent but growing discussion on proactiveness and market shaping, which appears not only in the marketing literature (Jaworski & Kohli, 2017; Nenonen, Storbacka, & Windahl, 2019) but also in the strategy literature (Gavetti et al., 2017;

Patvardhan & Ramachandran, 2020). Specifically, by eliciting the role and effects of proactive competitor orientation, we address respective calls by these literatures for inquiry about corporate means that enable firms to shape, model, and manage markets and that are increasingly indicated as being key to creating competitive advantages in the marketplace.

We contribute to the theoretical understanding of MO, as we show how the construct and its effects are distinct from responsive competitor orientation. This insight helps to resolve an ambiguity in the marketing literature. Empirical studies have used the concept of competitor orientation without differentiating its proactive or responsive nature. For example, studies proposed positive effects induced by proactive competitor orientation, but the measures employed actually captured responsive competitor orientation (Augusto & Coelho, 2009; Yang et al., 2012), inviting confusion into the interpretation of negative results. Our study helps to resolve this ambiguity and confusion. We have determined it is important to conceptually and empirically distinguish the proactive and responsive components of competitor orientation and, accordingly, align conceptualization and operationalization of the respective competitor orientation construct. Importantly, we establish proactive competitor orientation as being (directly and indirectly) impactful on both innovation and firm performance.

6.1.2. Performance effects

Our study illustrates how proactive competitor orientation affects performance. Thereby, we show that not only the constructs of responsive and proactive competitor orientation are distinct, but that the effects they exert differ by the paths they employ to achieve performance outcomes.

With regard to proactive competitor orientation we find, unexpectedly, that it does not directly impact market based firm performance but exerts its effects through innovation performance. Thus, our study indicates that competitive advantage (reflected in firm performance) is not based strictly on exhibiting proactive values per se. Instead, it is crucial for firms to have an innovation orientation, introduce new products to the market and influence the structure of the market in such a way as to engender others following.

Further, we identify technology orientation as a crucial mediator between proactive competitor orientation and innovation performance. Thus, we address calls by the literature that underline the need for a better understanding of "why some firms succeed in shaping markets whereas others fail to do so despite strong efforts." (Jaworski & Kohli, 2017, p. 11). Future research could, for example, study technology orientation as a mediator to proactive customer orientation. This will also help promote a better understanding of the full strategic potential of MO.

Specifically, our additional analyses reveal that the partial mediation of technology orientation of the relationship between proactive competitor orientation and innovation performance is particularly effective for young firms, while it is slightly negative for mature firms. The latter have established technological assets (such as machinery or software), a knowledge base and routines by which the firms conduct their regular business. Firms that have gained positive returns with these things may develop path-dependence and organizational rigidity; previous innovations can build inertia from which it is difficult to break free (Coombs & Hull, 1998). On the other hand, young firms tend to lack deep business experience, well established structures, or a comprehensive technological knowledge base. This allows them to transform their proactive posture towards competitors into innovation. They are also able to enact a technology orientation to be more explorative, be more open to investments in the latest technologies or to incorporate variety of technological tools that are independent of a past. This provides a foundation for unconventional, creative ways of recombining internal and external knowledge to successfully generate innovation (Coat, Holm, Krafft, & Quattraro, 2018).

Moreover, the effect, that proactive competitor orientation unfolds

and advances its effects on innovation through technology orientation is amplified by those firms that invest more in R&D. Acquiring new technology and developing innovations borne by an orientation to leapfrog competitors or even have them follow will be more successful if more resources are available to be allocated for R&D expenditures.

Responsive competitor orientation does not generally exert direct positive effects on firm performance. As our post-hoc analyses elicit, a positive effect does exist but for large firms, but it is detrimental for small firms. Firms with a responsive competitor orientation seek to secure their market share and profits through strategic approaches that render competitor's offerings to commodity status. This can include activities such as introducing me-too products, dramatically lower prices, or by responding with aggressive marketing communications campaigns. While large firms have the respective resources and capacities, small firms are disadvantaged (Grinstein, 2008).

Further, we find that responsive competitor orientation's effect on firm performance is mediated by learning orientation, which is consistent with earlier findings that identify learning orientation as an important mediator of MO's relationship with performance (Baker & Sinkula, 1999; Noble et al., 2002). However, that effect is particularly beneficial for mature firms and slightly negative for young firms. A learning orientation comprises a firm's response to environmental (here competitors') change by systematically analyzing this change, by assessing the change against firms' extant knowledge and assumptions about the marketplace and its paradigms, by possibly challenging these assumptions and by developing new ways of thinking and acting (Baker & Sinkula, 1999). Young firms have limited experience, limited resources, and still build their knowledge base and their routines. Due to their short history, young firms they have less to unlearn. They simply do not have long-held assumptions to be questioned, perceptual filters to be eradicated that would bias which new information is attended to, or established routines to be overhauled (Baker & Sinkula, 2007; Zahra, Sapienza, & Davidsson, 2006). With limited resources and a limited repertoire of prior experience, young firms may benefit more from improvisation than a learning orientation to counter competitors' moves effectively (Zhou et al., 2005).

Finally, we find that responsive competitor orientation is negatively related to innovation performance, with the effect being amplified through increased R&D allocation. Guided by a culture that focuses on responding to what competitors do may result in the enhanced activities supported by additional resources to lead to undifferentiated products, rendering the organization even less innovative. Unexpectedly, our analyses identify that technology orientation acts as a mediator and can turn the negative direct effect of responsive competitor orientation on innovation performance into a positive one (indicating an inconsistent mediation; MacKinnon et al., 2007). This mediated and positive effect is stronger for older firms than for younger ones. Firms that have been in business for a longer period of time are likely to have the opportunity to make capital heavy investments in technology and the associated expertise to manage such systems. Firms working to respond to their competitors' actions may seek to ensure they stay proficient in emergent technologies. In turn, these new technologies may allow those firms to innovate (Han et al., 2001).

6.1.3. MO matrix

Based on the initial conceptualization of MO by Narver and Slater (1990) we present the MO matrix, a simple framework which offers several contributions to the literature. First, the matrix comprehensively reflects the original conceptualization of one of the most important topics in the marketing literature. Considering extant MO studies through the lens of the MO matrix reveals that interpretation, consideration, and discussion of MO has been disproportionately concentrated on reactive orientations. Research has focused on firms' responsiveness to the detriment of proactiveness, as illustrated above; and, has definitively dedicated more attention to firms' orientation relative to customers, rather than to competitors. Our study addresses these issues and

helps to mitigate the imbalance. We provide greater insight into the competitor side of MO by adding proactive orientation to its responsive counterpart, and contribute to the mitigation of the imbalance between firms' responsiveness and proactiveness, as well as to that between firms' orientations towards customers and competitors.

Second, the MO matrix emphasizes that MO is multifaceted, and indicates that MO's performance effects may be more complex than initially thought. This offers avenues for future research. The matrix can provide a frame to study the balance between all four MO components, and to consider whether or not the pursuit of responsive and proactive competitor orientation or of all MO components can, or should be, concurrent. Trade-offs, and how firms can determine and manage such trade-offs are theoretical considerations to be taken up by future research. Alternatively, the matrix can provide a frame to study complementarity, interaction, balance, or even substitution effects of the four MO components. Thus, it can enable future research to expand extant knowledge e.g., on the optimal balance of responsive and proactive customer orientation (Herhausen, 2016) or on the complementarity of responsive customer and responsive competitor orientation (Grinstein, 2008). Overall, our study provides a stronger foundation for the continued theoretical development of MO, and allows for future research to achieve a deeper understanding of how this concept can be deployed in the marketplace.

6.2. Managerial implications

Our results allow for a more effective implementation of the marketing concept, which is fundamental for any organization. The marketplace has become increasingly dynamic, and competitive spaces are more crowded than ever. By identifying proactive competitor orientation as a driver of performance, firms can enhance their competitiveness by broadening their stance towards competitors. Rather than focusing on responding to competitors' moves, our results suggest it is possible to shape the market ahead of competitors and provide insight into the mechanisms to do so.

Proactive competitor orientation is particularly effective for younger firms. Their young age suggests path dependency is less ingrained, which allows them to act without legacy and an unencumbered mindset; thinking outside the (industry) box and innovating to bypass competitors. Further, these firms can enhance these effects if they allocate R&D expenses sufficiently to transform ideas triggered by a proactive stance towards competitors into innovation.

Moreover, we find that responsive competitor orientation is particularly effective for older and larger firms (which often correlates). While younger firms try to secure their position in the market, older firms have established their position, are more structured, and are likely to have deep knowledge their competitors moves, strengths, strategies etc. (Narver & Slater, 1990). They can leverage this systematically and thoroughly analyze market situations to develop their strategies for responding to their competitors. Larger firms have the means and resources to profitably respond to their competitor's moves. Their size allows them to attain economies of scale, an important means to not only develop me-too products but also position them with a lower price as gain market share and to render their competitors innovation a commodity. Also, larger firms tend to have the resources to accompany such moves by aggressive marketing communications campaigns, where smaller firms often lack the resources for such moves.

Yet, firms that follow a responsive competitor orientation should limit their R&D expenses, since deploying resources as a follower will not yield improved innovation outcomes or product differentiation. Instead, resources should be allocated more directly to support responsive products, through actions such as aggressive marketing communications, cost and price reductions etc.

Overall, leaders who can establish a culture that emphasizes understanding new technologies and encourages firm members to act on such technological opportunities, will achieve successful innovation and, in

turn, firm outcomes. Our findings regarding the mediation of the relationship between the dimensions of competitor orientation and performance outcomes by technology orientation suggests a cultural predisposition towards technology will generally aid competitor orientated firms in their innovation efforts. However, this is even more important for responsive competitor oriented firms than for proactive competitor oriented firms, as it helps the first to turn negative innovation effects of following competitors into positive ones. This offers an additional path for responsive competitor orientated firms to attain performance benefits. However, implementing both paths in a quest to achieve exceptional market performance is more complex. It requires developing a strong set of technology and learning orientations and, with it, focus and clarity of leadership’s vision. Leaders need to establish a set of structures, processes and routines that establish cultural norms desired. Narratives, for example can be established to convey key values that contribute to organizational culture, and capture the evolving nature of organizational practices that influence culture (Brown & McMillan, 1991).

7. Limitations and future research

The study is limited in a number of ways. As is common with survey based studies, the generalizability of our results is limited. We tested our hypotheses with data from firms whose businesses are technology and product-based, and who operate in B2B settings. Whether the relationships between constructs differ for non-tech products, services, or in B2C settings remains to be studied. Likewise, our empirical findings are based on European data from the German-speaking region. Although this region shares many characteristics with other developed economies, the generalizability of our findings may be limited due to cultural and structural homogeneity. Future research should investigate the role and importance of proactive competitor orientation not only in other developed markets, but also in emerging economies.

The vast majority of all studies focused on MO have considered pairs of the four MO components; this is true whether MO is measured multidimensionally or if it is considered as a unidimensional construct (see Table 3). Likewise, we have only studied two components; proactive and responsive competitor orientation. While such studies provide insight, they provide a partial and potentially biased picture of reality and leave the full strategic potential of MO untapped. Future research should strive to understand a more complete picture by taking all four components into consideration.

MO can be considered as a unidimensional (e.g., Baker & Sinkula, 1999), multidimensional (e.g., Lukas & Ferrell, 2000), or a second-order factor (e.g., Menguc & Auh, 2006); the nature of how the concept is measured is a function of the phenomenon being considered. In the effort to identify and isolate the role and relationships of proactive competitor orientation, we employed a disaggregated form of MO. In other contexts, a holistic view of MO may be more appropriate. Future research should consider this variation more fully. Considering MO as multidimensional, studies could investigate the independent effects of each component in the presence of all other MO components. Thereby, more light could be shed on complementarity, interaction, or even substitution effects. Qualitative comparative analyses (Rihoux & Ragin, 2008) could help to understand, whether there exists equifinality where,

for example, different bundles of MO components and other strategic orientations (e.g., learning and technology orientation) lead to the same performance outcomes. In settings where MO is considered as a formative or a unidimensional construct, future research should likewise empirically capture all four components.

Further, the relationships tested in our model could be refined. While we tested for linear relationships, future research could study non-linear relationships (Tsai, Chou, & Kuo, 2008). In addition, we capture proactive competitor orientation, learning orientation and innovation performance as comprehensive measures. Future research could build on our newly developed measure for proactive competitor orientation and develop a more fine-grained understanding of the construct and its effects. Research could, for example, take up and expand conceptually on the two underlying elements of proactive competitor orientation (predicting and shaping) (Urbany & Montgomery, 1998). Empirically, it could test its unidimensionality vis-à-vis a two-dimensional structure and shed light on potentially different direct and mediated performance effects of the two dimensions. Likewise, different styles of organizational learning could be considered such as gleaning, adaptive learning, and generative learning (Baker & Sinkula, 2007). Moreover, prior research indicates different performance effects of single strategic orientations on incremental vs. radical innovation outcomes (Atuahene-Gima, 2005; Spanjol et al., 2011). Firms that are more heavily focused on a proactive competitor orientation may follow ambitions in challenging existing products and services and in differentiating their market offerings. Hence, future studies may distinguish between incremental and radical or disruptive innovation performance as intermediate outcome variables. As ever, decisions on whether to include more variables must be weighed by the trade-off between parsimony and comprehensiveness.

Finally, this study focuses on differentiating competitor orientation, conceptualizing proactive competitor orientation, and identifying the effects of it on performance outcomes. Our findings provide a basis for further research in this under-studied component of market orientation. An important consideration for future studies are the boundary conditions of the performance effects of proactive competitor orientation. As earlier research has noted, the environmental context of an organization may be important for the effects of market orientation (Grinstein, 2008; Jaworski & Kohli, 1993). This infers that environmental conditions such as competitive hostility, customer volatility, or technological turbulence may render proactive competitor orientation more or less effective (Menguc & Auh, 2006). The performance effects of proactive competitor oriented firms that operate for example in quasi-monopoly markets may be less likely to benefit from their proactive competitor orientation. Yet, altering the competitive structure and changing the competitive environment in such markets may be difficult. In markets of high competitive intensity, a proactive competitor orientation may be more effective (Kohli & Jaworski, 1990). This area of study is likely to yield interesting results for academics, and actionable insights for managers.

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Appendix: Empirical studies of MO components as antecedents to innovation and/or firm performance

Sources (references are available upon request)	Journal	Market orientation				Innovation performance	Firm performance
		Responsive customer orientation	Proactive customer orientation	Responsive competitor orientation	Proactive competitor orientation		

Salavou et al. (2004)	EJM	◦				◦	
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Sources (references are available upon request)	Journal	Market orientation				Innovation performance	Firm performance
		Responsive customer orientation	Proactive customer orientation	Responsive competitor orientation	Proactive competitor orientation		
Salavou (2005)	JMM	°				°	
Jeong et al. (2006)	IMM	°				°	
Frishammar, Hörte (2007)	TASM	°				°	
Wagner (2010)	IMM	°				°	
Wren et al. (2010)	IMM	°				°	
Genc et al. (2019)	IMM	°				°	
Yang, Tsai (2019)	IMM	°				°	
Appiah-Adu, Singh (1998)	MD	°				°	°
Baker, Sinkula (2009)	JSBM	°				°	°
Weigel, Hadwisch (2018)	IMM	°				°	°
Liu et al. (2002)	IJRM	°					°
Liu et al. (2003)	JBR	°					°
Singh, Ranchhod (2004)	IMM	°					°
Kaya, Seyrek (2005)	JAAB	°					°
Luo et al. (2005)	JAMS	°					°
Jaakkola et al. (2010)	IMM	°					°
Tajeddini (2010)	TM	°					°
Ellis et al. (2011)	IMM	°					°
Grewal et al. (2013)	JAMS	°					°
Ziggers, Henseler (2016)	IMM	°					°
Feng et al. (2019)	JBR	°					°
Neneh (2019)	JSBM	°					°
Gatignon and Xuereb (1997)	JMR	°		°		°	
Lukas and Ferrell (2000)	JAMS	°		°		°	
Frambach et al. (2003)	IJRM	°		°		°	
Im and Workman Jr (2004)	JM	°		°		°	
Van Riel et al. (2004)	JPIM	°		°		°	
Atuahene-Gima (2005)	JM	°		°		°	
Augusto and Coelho (2009)	IMM	°		°		°	
Spanjol et al. (2011)	JPIM	°		°		°	
Spanjol et al. (2012)	JPIM	°		°		°	
Yang et al. (2012)	JPIM	°		°		°	
Chuang et al. (2015)	JPIM	°		°		°	
Liu, Atuahene-Gima (2018)	IMM	°		°		°	
Voss and Voss (2000)	JM	°		°			°
Noble et al. (2002)	JM	°		°			°
Izquierdo, Samaniego (2007)	JMD	°		°			°
Slater et al. (2007)	JAMS	°		°			°
Zhou et al. (2007)	JIBS	°		°			°
Sørensen (2009)	EJM	°		°			°
Smirnova et al. (2011)	IMM	°		°			°
Deshpandé et al. (2012)	ML	°		°			°
Theodosiou et al. (2012)	IMM	°		°			°
Thornton et al. (2015)	IMM	°		°			°
Frambach et al. (2016)	JBR	°		°			°
Han et al. (1998)	JM	°		°		°	
Gao et al. (2007)	IJRM	°		°		°	
Ledwith, O'Dwyer (2009)	JPIM	°		°		°	
De Luca et al. (2010)	JPIM	°		°		°	
Narver et al. (2004)	JPIM	°	°	°		°	
Atuahene-Gima et al. (2005)	JPIM	°	°	°		°	
Tsai et al. (2008)	IMM	°	°	°		°	
Li et al. (2008)	MD	°	°	°		°	
Zhang, Duan (2010)	MD	°	°	°		°	
Ozdemir et al. (2017)	IMM	°	°	°		°	°
Lamore et al. (2013)	JPIM	°	°	°			°
Herhausen (2016)	JBR	°	°	°			°
Kharabsheh et al. (2015)	JSM	°	°	°			°
Jaeger et al. (2016)	IJRM	°	°	°			°
Iyer et al. (2019)	IMM	°	°	°			°
Gotteland et al. (2020)	IMM	°	°	°			°

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