ARTICLE IN PRESS
JBR-08473; No of Pages 13
Journal of Business Research xxx (2015) xxx–xxx
Contents lists available at ScienceDirect
Journal of Business Research

Strategic orientations and performance: A configurational perspective

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ARTICLE INFO

Available online xxxx

Keywords:
Entrepreneurial orientation
Market orientation
Learning orientation
Performance
Organizational configurations
High-technology firms

ABSTRACT

The present paper takes a configurational perspective and investigates the joint effect of entrepreneurial orientation (EO), market orientation (MO), and learning orientation (LO) on growth-based performance of high-technology firms. Applying fuzzy-set Qualitative Comparative Analysis combined with moderated regression analysis, results suggest that performance of high-technology firms depends on configurations, where firms with high levels of EO, MO, and LO outperform firms with other configurations. However, several other configurations of EO, MO, and LO improve performance as well, albeit to a smaller extent. The study offers a more detailed understanding not only which different configurations improve the growth-based performance of high-technology firms, but also which configurations are more successful.

1. Introduction

Strategic orientations are "principles that direct and influence the activities of a firm and generate the behaviors intended to ensure its viability and performance" (Hakala, 2011, p. 199). Entrepreneurial orientation (EO) reflects a firm's degree of risk-taking, proactiveness, and innovativeness (Covin & Slevin, 1989). Market orientation (MO) encompasses a firm's organization-wide generation of market intelligence pertaining to current and future customer needs, dissemination of the intelligence across departments, and organization-wide responsiveness to it (Jaworski & Kohli, 1993). Learning orientation (LO) is firm's ability to generate and use market information by displaying a strong commitment to learning, open-mindedness, and a shared vision (Sinkula, Baker, & Noordewier, 1997).

EO, MO and LO attracted considerable research attention (for a comprehensive overview see e.g., Hakala, 2011). The majority of studies focuses on a *particular* orientation and finds EO (Rauch, Wiklund, Lumpkin, & Frese, 2009), MO (Cano, Carrillat, & Jaramillo, 2004; Kirca, Jayachandran, & Bearden, 2005), and LO (Wang, 2008) to positively influence firm performance. This isolated perspective is problematic, as firms regularly employ multiple strategic orientations (Cadogan, 2012). However, the relationships *between* EO, MO, and LO attract comparably limited research attention to date (Grinstein, 2008; Hakala, 2011). The few existing studies that simultaneously consider EO, MO, and LO 1) analyze parallel direct effects of these orientations on performance (e.g., Hult, Hurley, & Knight, 2004; Laukkanen, Nagy, Hirvonen, Reijonen, & Pasanen, 2013), 2) investigate sequential mediator relationships between orientations (e.g., Liu, Luo, & Shi, 2002, 2003), or 3) aggregate orientations as higher-order factors influencing performance (e.g., Gnizy, Baker, & Grinstein, 2014; Hult & Ketchen, 2001). Yet, no study views EO, MO, and LO as complementary pattern in the sense that strategic orientations are mutually supportive (Hakala, 2011). Hence, the question whether different combinations of strategic orientations-and if yes, which combinations-lead to superior performance remains unanswered.

The present paper takes a configurational perspective and investigates how EO, MO, and LO jointly influence the growth-based performance of high-technology firms. Organizational configurations are "any multidimensional constellation of conceptually distinct characteristics that commonly occur together" (Meyer, Tsui, & Hinings, 1993, p. 1175). The manuscript's key premise is that a firm's ability to align EO, MO, and LO to a unique configuration of firm capabilities enables the company to achieve competitive advantages enhancing its growth-based performance. The importance of fit among a firm's strategic orientations has already been emphasized (Bhuian, Menguc, & Bell, 2005; Ruokonen & Saarenketo, 2009) and organizational configurations are well suited to explain performance (Harms, Kraus, & Reschke, 2007; Ketchen et al., 1997) beyond parallel or contingency approaches (Dess, Lumpkin, & Covin, 1997). Additionally, parallel or mediated direct approaches assume that a certain orientation linearly leads to higher performance in all circumstances (Harms et al., 2007). However, the 'more is better' inferences resulting from such approaches may not lend feasible strategy implications for resource-constrained firms (Cadogan, 2012).

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http://dx.doi.org/10.1016/j.jbusres.2015.07.005
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The study combines two different methodological approaches to validate the theoretical predictions. First, the study employs a set-theoretic approach as is consistent with recent calls in the pertinent literature on how to examine organizational configurations (Fiss, 2007; Woodside, 2013). Set-theoretic methods are particularly useful to analyze organizational configurations as they treat cases as combinations of attributes (i.e., as different configurations) allowing for an assessment how different causes affect relevant outcomes (Fiss, 2007). Hence, set-theoretic approaches are "more closely aligned with the theoretical thrust of configurational theory, which stresses the existence of effects that are not simply linear, additive, and unifinal" (Fiss, 2007, p. 1194). To this end, the study uses fuzzy-set Qualitative Comparative Analysis (fsQCA) (Ragin, 2000, 2006) to obtain a thorough understanding of the different configurations of EO, MO, and LO enabling high-technology firms to achieve superior growth-based performance. Second, the study supplements the fsQCA by multiple regression analyses. That is, we empirically test and graphically display the joint effect-empirically a three-way-interaction (Dess et al., 1997)-of EO, MO, and LO to explain the growth-based performance of high-technology firms.

The study offers three contributions. First, it adds to the strategic orientations literature by reflecting on the internal boundary factors of strategic orientations and their influence on growth-based performance of high-technology firms. Taking a configurational perspective facilitates theoretical advancement as well as practical implications through a better understanding of which strategic orientations high-technology firms should pursue in order to achieve competitive advantages leading to superior growth-based performance. Here, a configurational perspective offers additional insights compared to universal or contingency approaches (Fiss, 2007; Wiklund & Shepherd, 2005).

Second, the study contributes to a more comprehensive understanding of organizational configurations by using a mixed methods approach combining qualitative and quantitative elements as urged by prior researches (Fiss, 2007; Woodside, 2013). Employing fsQCA as well as moderated regression analysis allows not only identifying distinct configurations of EO, MO, and LO leading to higher growth-based performance of high-technology firms but also quantifying which specific configurations are most influential.

Third, the study tests its theoretical predictions on a sample of high-technology firms. Understanding how different configurations of strategic orientations affect normative outcomes is of paramount importance in this context. Being characterized as prospectors (Miles & Snow, 1978), the vital competitive advantage of high-technology firms rests upon firms' ability to develop new and innovative products and to exploit these products on competitive and highly dynamic markets (Engelen, Neumann, & Schwens, 2014) and in narrowly defined niches (Qian & Li, 2003). Hence, strategic orientations reflect the core abilities leading to superior and sustainable company success of high-technology firms (Lau & Bruton, 2011).

2. Background literature

2.1. Strategic orientations

The majority of prior literature focuses on a particular strategic orientation and its effect on firm performance (Gnizy et al., 2014). Research analyzing more than one strategic orientation is comparatively limited (Hakala, 2011). The present study focuses on EO, MO, and LO as their complementary potential enables firms to achieve sustainable competitive advantages (Hult et al., 2004; Ruokonen & Saarenketo, 2009). MO integrates the adaptive processes related to the competitive environment, whereas EO and LO entail processes of matching firms' resources with the external environment. EO reallocates firms' resources through product and market development, while LO facilitates the creation and utilization of knowledge leading to changes in organizational behavior (Grinstein, 2008; Hakala, 2011). Firms need to focus on current (MO) as well as potential (LO) customers and competitors in order to successfully identify and pursue new opportunities (EO) (Rhee, Park, & Lee, 2010).

Table 1 gives an overview on existing research on the interrelationships between EO, MO, and LO. The first group of studies investigates parallel direct effects of EO, MO, and LO on firm performance. For example, Hult et al. (2004) examine parallel direct effects of EO, MO, and LO, on aggregated firm performance in a joint model and find significant positive influences for EO and MO. Likewise, Laukkanen et al. (2013) examine the effects of EO, MO, and LO on business growth across several countries and find significant positive effects for EO and MO. While several studies in this category emphasize the importance to rely on multiple strategic orientations (e.g., Kropp, Lindsay, & Shoham, 2006), it remains unclear how the orientations interact.

The second group of researches analyze mediating relationships between EO, MO, and LO. Here, a particular orientation mediates the effect of other orientations on firm performance. Several studies suggest that particularly LO acts as a mediator for EO and/or MO on different performance dimensions (e.g., Liu et al., 2002; Mu & Di Benedetto, 2011) and innovativeness (an immediate antecedent of performance) respectively (Rhee et al., 2010; Zhou, Yim, & Tse, 2005). In contrast, Rodríguez Gutiérrez, Fuentes Fuentes, and Rodríguez Ariza (2014) suggest that EO mediates the influence of MO as well as LO on growth-based performance.

A third group of researches aggregates EO, MO, and LO as higher-order factors influencing firm performance. For example, Hult and Ketchen (2001) posit that EO, MO, and LO together with innovativeness form the higher-order factor "positional advantage", which, in turn, positively influences several performance indicators. Additionally, Gnizy et al. (2014) advance that EO, MO, and LO build a higher-order dynamic capability labeled "proactive learning culture". This dynamic capability positively contributes to successful foreign market launches of SMEs.

In sum, prior literature accomplished considerable contributions regarding the effects of EO, MO, and LO on firm performance. The findings support the notion that firms pursue different strategic orientations simultaneously in order to be successful (Cadogan, 2012). However, a comprehensive configurational approach analyzing the effect of different configurations of EO, MO, and LO on firm performance is yet missing.

2.2. High-technology firms

The present research focuses on high-technology firms. Following Miles and Snow's (1978) strategy typology, high-technology firms typically embody "prospectors" which proactively find and exploit arising opportunities, observe future trends and adapt to turbulent environments by scanning environmental conditions (Daft & Weick, 1984). Thus, high-technology firms are growth-seekers pursuing business opportunities in a proactive manner.

EO, MO, and LO and their configurations are particularly pertinent in the specific research context of high-technology firms. High-technology firms have to cope with high uncertainties, undertake enormous investments in research and development, and experience shorter product life cycles as well as a fierce competition for new product share (Shan, 1990). Accordingly, high-technology firms can hardly compete in terms of production, promotion, and price. In fact, they achieve their competitive advantage through innovativeness and by operating in market niches (Qian & Li, 2003). Furthermore, high-technology firms operate not only in highly competitive but also in dynamic markets (Engelen et al., 2014). Consequently, the exploitation of new opportunities and the development of new ideas are crucial for competitive advantages and firm growth.

The dynamic and rapidly changing markets that high-technology firms operate in enable these firms to grow (Eisenhardt & Schoonhoven,

Please cite this article as: Deutscher, F., et al., Strategic orientations and performance: A configurational perspective, *Journal of Business Research* (2015), http://dx.doi.org/10.1016/j.jbusres.2015.07.005

Table 1
Prior quantitative-empirical literature on the interplay of EO, MO, and LO.

Author	Year	Journal[a]	Key findings concerning the interplay of orientations
Prior studies investigating parallel direct influences of EO, MO, and LO on firm performance			
Barrett, Balloun, and Weinstein	2005	IJNVSM	MO, LO, and LO highly correlate with performance.
Barrett, Balloun, and Weinstein	2005	SAM	MO, LO, and LO highly correlate with performance.
Hult, Hurley, and Knight	2004	IMM	EO and MO directly impact performance. LO has no significant direct effect on performance. Innovativeness partially mediates the respective relationships among MO, LO, EO, and performance.
Kropp, Lindsay, and Shoham	2006	IMR	MO and LO positively influence international entrepreneurial business venture performance.
Laukkanen, Nagy, Hirvonen, Reijonen, and Pasanen	2013	IMR	EO and MO have a positive effect on business growth in SMEs in both Hungary and Finland.
Prior studies investigating mediating relationships between EO, MO, as well as LO and firm performance			
Lin, Peng, and Kao	2008	IJM	LO mediates the relationship between MO (but not EO) and innovativeness.
Liu, Luo, and Shi	2002	IJRM	EO, MO, and LO positively impact performance (i.e., marketing program dynamism). LO mediates the impact of EO and MO on performance (i.e., marketing program dynamism).
Liu, Luo, and Shi	2003	JBR	MO is highly correlated with LO, EO, and performance (i.e., marketing program dynamism) in Chinese state-owned enterprises.
Mu and Di Benedetto	2011	R&DM	EO and MO are positively related to new product commercialization performance. LO mediates the relationship between EO as well as MO and new product commercialization performance.
Rhee, Park, and Lee	2010	Tech	LO affects innovativeness, which is an immediate antecedent of performance (i.e., profitability, sales growth, and market share relative to primary competitor). LO mediates the relationship between EO and MO and innovativeness.
Rodriguez-Gutierrez, Fuentes-Fuentes, and Rodriguez-Ariza	2014	JSBM	EO, MO, and LO positively impact the growth-based performance of women-owned firms. EO mediates the influence of MO as well as LO on growth-based performance.
Zehir and Eren	2007	JAAB	MO and EO positively impact business performance. EO partly mediates the effect of LO on business performance.
Zhou, Yim, and Tse	2005	JoM	EO, MO, and LO significantly impact innovation, which is an immediate antecedent of firm and product performance. LO partially mediates the relationship between EO and MO and innovation.
Prior studies aggregating EO, MO, and LO as higher-order factors influencing firm performance			
Gnizy, Baker, and Grinstein	2014	IMR	EO, MO, and LO form a higher-order factor "proactive learning culture" that impacts firm's foreign market launch success.
Hult and Ketchen	2001	SMJ	EO, MO, and LO together with innovativeness form a higher-order factor "positional advantage" that positively impacts firm performance (i.e., five-year average change in ROI, income, and stock price).
Lonial and Carter, 2015	2015	JSBM	EO, MO, and LO form a higher-order factor "positional advantage" that positively impacts SMEs' relative performance.

[a] EBR = European Business Review; EJM = European Journal of Marketing; IMM = Industrial Marketing Management; IJM = International Journal of Manpower; IJNVSM = International Journal of Nonprofit & Voluntary Sector Marketing; IJRM = International Journal of Research in Marketing; IMR = International Marketing Review; JAAB = Journal of American Academy of Business; JBR = Journal of Business Research; JoM = Journal of Marketing; JSBM = Journal of Small Business Management; R&DM = R&D Management; SAM = SAM Advanced Management Journal; SMJ = Strategic Management Journal; and Tech = Technovation.

1990). Hence, growth is very important for high-technology firms and gained considerable recognition in prior literature. For example, Qian and Li (2003) find that an innovator position, niche operation, and internationalization positively affect sales growth of high-technology firms. Similarly, Hamilton, Shapiro, and Vining (2002) emphasize that growth rates of high-technology firms are innovation-driven, whereas Wales, Patel, Parida, and Kreiser (2013) show that innovativeness, risk-taking, and proactiveness facilitate high growth for high-technology firms. Appiah-Adu and Ranchhod (1998) find that MO positively influences growth of market share, as high-technology markets offer growth potentials based on a latent demand for new and innovative products.

3. Theory and hypotheses

The premise of a configurational perspective (Wiklund & Shepherd, 2005) is that in organizations certain strategic, structural, process or environmental factors build clusters in specific configurations (Meyer et al., 1993). Superior firm growth is then the result of a consistency among these factors, which forms a competitive advantage (Miller, 1996). Firms that are able to align specific factors will outperform other firms, whereas firms that are unable to build such alignments are disadvantaged (Wiklund & Shepherd, 2005).

Firms' strategic orientations are capabilities that are potentially complementary and may collectively lead to competitive advantages (Hult & Ketchen, 2001). Organizational capabilities represent "complex bundles of skills" and "are so deeply embedded in the organizational routines and practices that they cannot be traded or imitated" (Day, 1994, p. 38). Complementary capabilities are mutually supportive (Tanriverdi & Venkatraman, 2005). Complementary patterns emerge from unique combinations of capabilities that are hard to imitate and generate synergies leading to superior firm growth. Firms that are able to align different strategic orientations in a superior configuration over their competitors achieve sustainable competitive advantages enhancing growth-based performance (Hult et al., 2004).

EO, MO, and LO are interrelated constructs with mutually dependent influences on growth-based performance. Firms with a high level of EO are innovative, proactive and risk-taking, which likely promotes the introduction of new products and services (Lumpkin & Dess, 1996). However, in order to grow, entrepreneurial firms have to orient themselves towards market demands (Zahra, 2008). These attributes relate to market oriented firms closely monitoring and responding to market demands and customers' needs (Jaworski & Kohli, 1993). Furthermore, learning oriented firms have the ability to generate and to use market information (Sinkula et al., 1997). The ability to act upon this information ahead of competitors characterizes entrepreneurially oriented firms (Dess & Lumpkin, 2005).

The interrelationships between strategic orientations in general and EO, MO, and LO in particular emphasize that specific configurations of strategic orientations influence firm performance. EO, MO, and LO are complementary capabilities jointly facilitating competitive advantages enhancing high-technology firms' growth-based performance. In sum, these considerations lead to Hypothesis 1a:

Hypothesis 1a. Different configurations of EO, MO, and LO explain the growth-based firm performance of high-technology firms.

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We expect in particular a configuration with high levels of EO, MO, and LO to positively influence the growth-based performance of high-technology firms. Firms need specific and complementary capabilities to close the gap between market demands and firm's capacity to meet those demands while the complexity of markets is accelerating (Day, 2011). This particularly entails capabilities enabling vigilant market learning (through MO), an explorative learning approach (through LO), as well as experimental marketplace adaptation (through EO) (Day, 2011; Gnizy et al., 2014). Having such capabilities is particularly pertinent for high-technology firms coping with technological complexities in dynamic markets (Ruokonen & Saarenketo, 2009). For such firms it is imperative to simultaneously generate market information, execute rapid learning processes, and adapt to customer needs in order to grow (Ruokonen & Saarenketo, 2009).

On a more operational level, a configuration with high levels of EO, MO, and LO benefits the growth-based performance of high-technology firms. That is, the identification and exploitation of arising opportunities ahead of competitors (Hult et al., 2004), a strong emphasis on organizational learning (Gnizy et al., 2014) supporting the development of innovative products creating superior customer value (Mu & Di Benedetto, 2011; Rhee et al., 2010), and coping with different market conditions (Laukkanen et al., 2013).

EO forces high-technology firms to exploit market opportunities and to launch new products and services ahead of competitors (Lumpkin & Dess, 1996) embodying a bold action-oriented stance (Hult et al., 2004). However, EO does not incorporate thorough market analysis or extensive learning endeavors (Hurley & Hult, 1998). Thus, EO needs to be guided by MO and LO to avoid launching unsuccessful products not tailored to customers' current and future needs (Baker & Sinkula, 2009; Ruokonen & Saarenketo, 2009).

The mutually supportive interplay of EO, MO, and LO allows high-technology-firms to achieve a strong emphasis on organizational learning (Gnizy et al., 2014; Real, Roldán, & Leal, 2014). High-technology firms with a strong MO explicitly focus on customers and markets. However, market oriented firms are at risk of only learning within boundaries (Zhou et al., 2005) contrary to learning oriented firms employing a broader scope beyond the market (Celuch, Kasouf, & Peruvemba, 2002). A high level of LO encourages firms to absorb and assimilate novel ideas (Baker & Sinkula, 1999; Slater & Narver, 1995). LO strengthens market-oriented actions of intelligence generation and dissemination (Baker & Sinkula, 1999). In addition, EO encourages proactive environmental scanning (beneficial for MO) (Daft & Weick, 1984) as well as experimental and explorative learning (beneficial for LO) (Slater & Narver, 1995; Wang, 2008).

Comprehensive learning allows high-technology firms to offer innovative products addressing customers' present as well as future needs and, hence, to achieve superior growth. Market-oriented firms center their activities around their present customers (Slater & Narver, 1995). Such firms generate, disseminate and rely on market information when developing their marketing strategy (Kohli & Jaworski, 1990). By closely anticipating their current customers' needs, firms with high-levels of MO are able to achieve high customer satisfaction and loyalty (Kirca et al., 2005). However, adaptive behaviors guided by a strong MO alone may not be sufficient to generate sustainable competitive advantages (Baker & Sinkula, 1999). The interplay with LO integrates also knowledge-questioning as well as knowledge-enhancing behaviors in firms' strategies facilitating higher-order learning processes that result in breakthrough products or the exploration of new markets (Slater & Narver, 1995). In combination with the proactive and risky strategies fostered by EO, firms lead the market with the introduction of innovative products instead of being market-led (Baker & Sinkula, 1999; Wang, 2008).

Finally, high-technology firms with high levels of EO, MO, and LO are particularly able to cope with the challenges arising from different market conditions. High levels of MO are particularly useful in markets with low market turbulence and high competitive intensity (Ellis, 2006). In contrast, a strong emphasis on organizational learning is particularly useful in dynamic and turbulent market conditions (Hanvanich, Sivakumar, & Hult, 2006). Firms maintaining a high level of LO question prevailing business models and practices and are, hence, better suited to find novel ways to serve their customers (Sinkula et al., 1997). Additionally, a turbulent environment with a rapidly changing composition of customers and their preferences makes the ongoing introduction of new products-through a strong EO-inevitable in order to achieve firm growth (Hult et al., 2004; Lumpkin & Dess, 1996). In sum, these considerations lead to Hypothesis 1b:

Hypothesis 1b. The growth-based firm performance is highest among high-technology firms with high levels of EO, MO, and LO.

4. Method

4.1. Data

The empirical analysis draws on a dataset of German high-technology firms from different technology sectors: nanotechnology, biotechnology, microsystems, renewable energies, and multimedia technology. The choice of these technology sectors is consistent with prior research (Baum, Schwens, & Kabst, 2013) and these technology sectors have been recently identified as areas for future-oriented growth technologies by the German Ministry of Education and Research. High-technology firms from these technology sectors are rather interdisciplinary spanning their activities over a wide range of industries (Baum et al., 2013). Sampling was accomplished in cooperation with the Association of German Engineers (VDI/VDE-IT) and German Energy Agency (DENA). Prior to data collection, the respective branch associations provided address lists of relevant firms. In 2009, 1703 standardized questionnaires and follow-up emails were sent to the founders and/or CEOs, as these persons have the most profound knowledge of the firm's strategic orientations (Calantone, Cavusgil, & Zhao, 2002). In all, 148 filled out questionnaires were returned corresponding to a total response rate of 8.7%. Due to missing data, the final sample consists of 91 firms. Hence, the usable response rate amounts to 5.3%. Even though the response is roughly consistent with comparable studies (e.g., Hambrick, Geletkanycz, and Fredrickson (1993) for surveys involving CEOs), a higher response rate may be absent due to the rather demanding questionnaire (Hollenstein, 2005), CEOs' generally low proclivity to respond to self-administered questionnaires (Baruch, 1999), and the lower response rate to (follow-up) e-mails compared to paper-based reminders (Tse, 1998).

A descriptive analysis reveals that the high-technology firms in the sample are on average 19.1 years old and have 154.6 employees. Regarding the firms' industry affiliation, 42.9% of the firms are active in more than one technology sector emphasizing the interdisciplinary nature of high-technology firms. Additionally, 57.6% of the firms use at least one patent in the production process underscoring the high technological intensity of the sampled firms.

To control for non-response bias, the study follows Armstrong and Overton (1977) and examines differences between early and late respondents assuming that late responding firms are similar to firms not responding at all. A *t*-test among key firm characteristics such as firm age, firm size, or firm performance suggests no significant differences between early and late respondents indicating that the data is not subject to such bias.

4.2. Measures

All measures stem from established scales in the entrepreneurship and management literature. Drawing on established measurement scales is necessary as improper measurement may result in questionable findings and potentially unwarranted conclusions (Short, Ketchen, Combs, & Ireland, 2010). Statement-style items were measured on five point Likert-scales (1 = strongly disagree to 5 = strongly agree for items measuring strategic orientations and 1 = much poorer to 5 = much better for items capturing growth-based firm performance).

4.2.1. Firm performance

The study employs a growth-based measure of firm performance as high-technology firms are usually prospectors pursuing growth-oriented strategies (Miles & Snow, 1978). To measure growth-based firm performance respondents were asked to indicate how successful their firm operated with regard to profit growth, sales growth, market share growth, and employee growth relative to their strongest competitor in the last fiscal year. Applying a multi-facetted measure of firm growth is consistent with recommendations from prior literature urging researchers not to focus on too narrow defined constructs (Lumpkin & Dess, 1996), as measuring growth with multiple indicators increases the robustness of the resulting conclusions (Wales, Patel, et al., 2013). Following common practice in this research area, the study uses a subjective performance measure for three reasons: first, given that most firms in the sample are privately held, respondents may be reluctant to disclose confidential objective financial data (Dess & Robinson, 1984). Second, as profit levels differ across industries, subjective performance measures are more appropriate in cross-industry studies. Third, objective performance measures may not adequately indicate the financial condition of high-technology firms. For example, objective performance levels vary due to the amount of R&D investments, which may have long-term performance effects (Lumpkin & Dess, 1996).

4.2.2. Entrepreneurial orientation

To measure EO, the study uses Covin and Slevin's (1989) scale, which is based on Miller's (1983) operationalization of EO consisting of three dimensions (i.e., innovativeness, proactiveness, and risk-taking). For example, respondents were asked about the frequency of introduction/change of products and services, about their firm's proactiveness in dealing with competitors, and about the risk-taking proclivity of top managers. Focusing on EO's three key dimensions-innovativeness, proactiveness, and risk-taking-is consistent with the vast majority of prior research (a review article by Wales, Gupta, et al. (2013) finds that 98 of 123 empirical EO studies use this operationalization).

4.2.3. Market orientation

The study measures MO based on the MARKOR scale developed by Kohli, Jaworski, and Kumar (1993), which consists of three dimensions (i.e., market intelligence generation, dissemination, and responsiveness). Respondents were asked to indicate the extent to which their firm engages in behaviors related to the organization-wide generation and dissemination of market intelligence as well as to firm's responsiveness towards customers and competitors. From a theoretical stance, the MARKOR scale taps market orientation in terms of organizational behavior (Carrillat, Jaramillo, & Locander, 2004), which is consistent with the present study's research focus. From an empirical stance, prior meta-analyses find that the MARKOR scale positively relates to firm performance (Cano et al., 2004; Ellis, 2006).

4.2.4. Learning orientation

The measurement of LO is based on the scale developed by Sinkula et al. (1997) and refined by Baker and Sinkula (1999). The scale consists of three dimensions pertaining to LO (i.e., commitment to learning, shared vision, and open-mindedness). LO in this sense is an organizational behavior reflecting firm's proclivity to value organizational learning, to constantly question long-held assumptions, and the extent to which organization members share a common understanding (Grinstein, 2008; Laukkanen et al., 2013). This measurement of LO has been predominantly applied by prior research in general (Hakala, 2011) as well as by several related researches (e.g., Hult et al., 2004; Kropp et al., 2006). To this end, respondents were asked to indicate the extent to which the firm values organizational learning, critically reflects existing assumptions on customers/markets, and shares a common vision promoting a unified direction supporting organization-wide learning.

4.2.5. Control variables

The study includes four control variables in the analyses. First, *firm age* measured as 2009 (year of data collection) minus year of firm's inception. Second, *firm size* measured as number of firm's full-time employees. Both controls reflect that the implementation of strategic orientations is resource-dependent. Third, we controlled for sector-specific differences by including a dummy variable *renewable energies* tapping whether a firm had the majority of its business activities in this sector. Renewable energies firms take different strategic actions compared to other high-technology firms, as the competition in this sector is strongly influenced through legal regulations, subsidies, and support programs (Schwens, Steinmetz, & Kabst, 2010). Fourth, the study adapts Khandwalla's (1977) established measure for environmental dynamism in order to control for firms' environmental conditions, which is particularly pertinent in the context of high-technology firms. Respondents were asked whether their firms' external environment is very stable/dynamic and very predictable/unpredictable.

4.3. Assessing common method variance

As the data were raised from a single source (the firm's CEO or founder) using a single methodology (questionnaire), common method bias (CMB) may be problematic (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff & Organ, 1986). To control whether the data is subjected to CMB, we applied two procedures recommended by Podsakoff et al. (2003).

First, we applied Harman's one-factor test in order to examine the magnitude of CMB. Conducting a principal component factor analysis with all variables yielded three factors with eigenvalues greater than 1 accounting for 60.6% of the total variance (factor 1: 24.7%, factor 2: 20.7%, factor 3: 15.2%). The existence of more than one factor and the fact that none of the extracted factors accounts for the majority of the variance indicate that the data do not suffer from CMB (Podsakoff & Organ, 1986).

Second, we applied confirmatory factor analysis (CFA) testing three different models: (1) loading all of the items onto one common method factor ($\chi^2 = 787.02$, df = 209, p = .000, χ^2/df = 3.77, IFI = .37, CFI = .34, RMSEA = .18, AIC = 919.02), (2) loading all items onto their theoretically assigned and correlated variables ($\chi^2 = 246.81$, df = 164, p = .000, χ^2/df = 1.51, IFI = .91, CFI = .91, RMSEA = .08, AIC = 468.81), and (3) loading the items onto their latent correlated variables as well as onto an additional method factor ($\chi^2 = 186.29$, df = 142, p = .007, χ^2/df = 1.31, IFI = .96, CFI = .95, RMSEA = .06, AIC = 452.29). As adding a common method factor in models 1 and 3 does not significantly improve model fit compared to model 2, no severe threat of CMB exists. Prior research emphasizes to treat the significance of the chi-square value with caution. The test will lead to a rejection of even good models when the sample size is rather small ($n < 100$), as such samples may not be distributed as chi-square populations (Shook, Ketchen, Hult, & Kacmar, 2004).

Lastly, the empirical analysis contains several interaction terms, which is likely to reduce CMB as such complex relations are unlikely to be part of the respondents' theory-in-use (Chang, van Witteloostuijn, & Eden, 2010).

4.4. Measurement validation

The study conducts several procedures to assess the unidimensionality, validity, and reliability of the measures. First, we conducted an exploratory factor analysis (EFA) with all items measuring the latent constructs EO, MO, and LO (or, more precisely, measuring the respective dimensions of each strategic orientation construct) to assess the underlying factor structure of the items. Consistent with prior research (e.g., Bhuian et al., 2005), scales were purified by eliminating all items, which displayed low factor loadings on their theoretically assigned dimensions (i.e., EO: innovativeness, proactiveness, risk-taking; MO: intelligence generation, intelligence dissemination, responsiveness; LO: commitment to learning, shared vision, open mindedness) and/or high cross-loadings on other dimensions of the focal construct or of other constructs. Because of sample size restrictions, only the two items with the highest factor loadings on their respective dimension were retained in order to yield meaningful results from the following CFAs (Bentler & Chou, 1987; Boso, Story, & Cadogan, 2013).

The study uses these purified scales to conduct an EFA. All remaining items display loadings above .6 on their primary factor (i.e., the corresponding strategic orientation's dimension), which is well above the recommended minimum (Hair, Anderson, Tatham, & Black, 1998), and do not show substantial cross-loadings on other factors. Table 2 displays the results of this EFA. Consistent with prior research (e.g., Bhuian et al., 2005; Hult et al., 2004), the scale purification process shortens the original measurement scales for EO, MO, and LO in order to ensure the unidimensionality, validity, and reliability of the employed scales. Moderator analyses are very sensitive to the internal consistency of the interacted variables. If the internal consistency of the interacted variables is low, the chance to observe moderator effects diminishes, as the interaction effect is systematically underestimated (Aguinis & Gottfredson, 2010). This effect is even more accentuated in the presence of higher-order interactions (e.g., three-way interactions). Hence, the scale purification process improves the internal consistency of the interacted variables in order to reduce potential concerns of underestimating the interaction effects. However, by retaining a set of items pertaining to each of the strategic orientations' dimensions, the approach ensures that the remaining items still represent the (multi-dimensional) strategic orientation constructs as theoretically emphasized.

To check the robustness of the measurement approach employing purified scales, the multivariate analyses (as outlined in Section 5.2) were rerun using the full measurement instrument (i.e., EO: 9 items, MO: 20 items, LO: 22 items). The results are identical in terms of sign and significance of the variables (including the EO × MO × LO three-way interaction) compared to the results obtained with the purified measurement approach.

Second, the study estimates four separate first order CFAs with the items measuring the respective dimensions of the three strategic orientations as well as the items measuring firm performance to assess convergent and discriminant validity. Following prior research (e.g., Baker & Sinkula, 1999; Bhuian et al., 2005), latent constructs were split into sets of theoretically related variables to test for construct convergence between related variables. All first order CFAs display good model fit and all standardized factor loadings are large and highly significant ($p \leq .001$). The reliability of each scale measuring a dimension of a respective strategic orientation is assessed by calculating the composite reliability (CR). As the CR exceeds the threshold of .6 for each scale (Bagozzi & Yi, 1988), all measures display high internal consistency. Table 3 displays the detailed results.

Third, following Menguc and Auh (2006), the study conducts a second order CFA with the three latent constructs (i.e., EO, MO, and LO). To this end, the average scores of each dimension were used as indicators of its respective strategic orientations. The CFA provides support for the convergent validity of the measurement scales, as all standardized factor loadings are significant ($p \leq .01$) and above .51 exceeding the recommended minimum of .4 (Ford, MacCallum, & Tait, 1986). Discriminant validity was assessed consistent with the criterion by Fornell and Larcker (1981). Accordingly, discriminant validity is achieved whenever the average variance extracted (AVE) for each construct (AVE values: EO: .54, MO: .63, LO: .64) is above .5 and higher than the squared correlation between the constructs. Hence, we analyzed each pair of latent constructs and found them all to demonstrate sufficient discriminant validity. To further assess the reliability of the second order constructs, Cronbach's alpha (EO: .618, MO: .732, LO: .760) as well as the CR (Fornell & Larcker, 1981) (EO: .767, MO: .835, LO: .843) were calculated yielding overall satisfactory results. The fit of the measurement model was assessed by drawing on the Chi-square/df ratio, the incremental fit index (IFI), the comparative fit index (CFI), and the Root Mean Square Error of Approximation (RMSEA). The Chi-square/df ratio (1.58) is below the critical threshold of 3.0 (Kline, 1998), whereas IFI (.91) and CFI (.90) exceed or match the recommended threshold of .9 (Bagozzi & Yi, 1988). The RMSEA (.08) slightly exceeds the cutoff point of .06 (Hu & Bentler, 1999). However, the RMSEA tends to overreject models because of small sample sizes (Hu & Bentler, 1999). As the sample size for the second order CFA is only $n = 91$, the study follows Hu and Bentler's (1999) recommendation to draw on a combination of IFI and CFI to assess the model fit (which display satisfactory results as outlined above).

Table 2
Results of exploratory factor analysis (EFA).

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
EO2	**0.88**	0.09	0.00	0.12	0.22	−0.03	0.12	0.01	0.05
EO3	**0.87**	0.18	0.15	0.01	−0.08	0.03	−0.08	0.05	0.04
EO4	0.09	**0.75**	0.37	0.00	0.16	0.21	−0.13	0.17	0.16
EO5	0.26	**0.82**	0.21	0.11	0.05	−0.02	0.01	0.02	0.18
EO7	0.04	0.16	**0.91**	−0.04	0.09	0.02	0.03	−0.04	0.11
EO8	0.11	0.22	**0.83**	0.15	0.10	0.03	0.17	0.12	−0.12
MA1	0.24	−0.07	0.23	**0.75**	0.32	0.22	−0.05	0.08	0.12
MA4	−0.02	0.13	−0.06	**0.90**	0.23	0.12	0.16	−0.04	0.00
MA7	0.03	0.08	0.03	0.25	**0.88**	0.10	0.13	−0.05	−0.06
MA8	0.13	0.09	0.19	0.21	**0.83**	0.15	0.02	−0.01	0.11
MA14	0.02	0.15	0.02	0.19	0.10	**0.89**	0.23	−0.07	0.01
MA15	−0.05	−0.12	0.07	0.15	0.38	**0.66**	0.04	0.34	0.22
LO2	0.01	0.03	0.05	0.05	0.04	0.09	**0.89**	0.26	0.20
LO4	0.02	−0.11	0.12	0.10	0.10	0.18	**0.87**	0.28	0.13
LO8	0.04	−0.10	0.11	0.02	0.04	0.18	0.25	**0.84**	0.20
LO10	0.02	0.20	−0.04	−0.05	−0.08	−0.12	0.27	**0.89**	0.11
LO20	0.11	0.12	0.03	0.22	−0.05	0.12	0.26	0.51	**0.61**
LO22	0.05	0.23	0.02	0.00	0.06	0.06	0.26	0.21	**0.85**

Note: Factor loadings from exploratory factor analysis with varimax rotation. Bold data indicate significant at loadings on their theoretically assigned factor.

Please cite this article as: Deutscher, F., et al., Strategic orientations and performance: A configurational perspective, *Journal of Business Research* (2015), http://dx.doi.org/10.1016/j.jbusres.2015.07.005

Table 3
Results of first-order confirmatory factor analysis (CFA).

Dimension	Item		Standardized factor loading	Reliability
Firm performance				
	P2	*How successful was your firm-compared to your strongest competitor-in the last fiscal year with regard to …* Profit growth	.645***	CR = .821
	P4	… Sales growth	.938***	
	P6	… Market share growth	.766***	
	P7	… Employee growth	.541***	
Entrepreneurial orientation (Model fit: $\chi^2 = 7.53$, df = 6, $\chi^2/df = 1.26$, IFI = .99, CFI = .99, RMSEA = .05)				
Dimension	Item		Standardized factor loading	Reliability
Innovativeness	EO2	*How many new lines of products or services has your firm marketed in the past 5 years?* …No new lines of products or services./Very many new lines of products or services	.727***	CR = .735
	EO3	…Changes in product or service lines have been mostly of a minor nature./…Changes in product or service lines have usually been quite dramatic.	.796***	
Proactiveness	EO4	*In dealing with its competitors, my firm…*typically responds to actions which competitors initiate./…typically initiates actions which competitors then respond to	.770***	CR = .725
	EO5	…is very seldom the first business to introduce new products/services, administrative techniques, operating technologies, etc./…is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc.	.738***	
Risk-taking	EO7	*In general, the top managers of my firm have* …a strong proclivity for low-risk projects (with normal and certain rates of return)./…a strong proclivity for high-risk projects (with chances of very high returns).	.841***	CR = .823
	EO8	*In general, the top managers of my firm believe that…* owing to the nature of the environment it is best to explore it gradually via timid, incremental behavior./…owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives.	.831***	
Market orientation (Model fit: $\chi^2 = 6.54$, df = 6, $\chi^2/df = 1.09$, IFI = 1.00, CFI = 1.00, RMSEA = .03)				
Dimension	Item		Standardized factor loading	Reliability
Intelligence generation	MA1	In this business unit, we meet with customers at least once a year to find out what products or services they will need in the future.	.840***	CR = .779
	MA4	We poll end users at least once a year to assess the quality of our products and services.	.756***	
Intelligence dissemination	MA7	We have interdepartmental meetings at least once a quarter to discuss market trends and developments.	.821***	CR = .823
	MA8	Marketing personnel in our business unit spend time discussing customers' future needs with other functional departments.	.852***	
Responsiveness	MA14	We periodically review our product development efforts to ensure that they are in line with what customers want.	.651***	CR = .696
	MA15	Several departments get together periodically to plan a response to changes taking place in our business environment.	.806***	
Learning orientation (Model fit: $\chi^2 = 7.63$, df = 6, $\chi^2/df = 1.27$, IFI = 1.00, CFI = .99, RMSEA = .06)				
Dimension	Item		Standardized factor loading	Reliability
Commitment to learning	LO2	The basic values of this business unit include learning as key to improvement.	.935***	CR = .915
	LO4	Learning in my organization is seen as key to commodity necessary to guarantee organizational survival.	.901***	
Shared vision	LO8	There is total agreement on our organizational vision across all levels, functions, and divisions.	.881***	CR = .848
	LO10	Employees view themselves as partners in charting the direction of the organization.	.834***	
Open mindedness	LO20	Managers encourage employees to "think outside of the box".	.893***	CR = .771
	LO22	Original ideas are highly valued in this organization.	.682***	

Notes: CR = composite reliability; χ^2 = Chi-square; df = degrees of freedom; IFI = incremental fit index; CFI = comparative fit index; RMSEA = Root Mean Square Error of Approximation. Significance level: *** = $p < .001$.

Lastly, the dimensions for each strategic orientation were aggregated into a single scale. To this end, we averaged the item scores for each dimension pertaining to a particular strategic orientation and subsequently calculated the average over all (averaged) dimensions for each strategic orientation to measure the overall strategic orientation construct.

4.5. Analytical procedures

To test the hypotheses, the study employs two consecutive qualitative and quantitative methodological approaches: first, the study employs fuzzy-set Qualitative Comparative Analysis (fsQCA) (Ragin, 2000, 2006) and examines the different configurations of firms' strategic orientations leading to superior growth-based performance. The fsQCA approach uses Boolean logic to analyze the relationships between cases (viewed as multiple combinations of different causal conditions) and the outcome (Longest & Vaisey, 2008). Hence, fsQCA is particularly well suited for identifying distinct configurations leading to superior performance, as the method identifies how membership of cases in causal conditions (i.e., different configurations of strategic orientations) is linked to membership in the outcome variable (i.e., different levels of growth-based performance). However, prior to performing fsQCA, the original scales need to be calibrated into set membership values (indicating the degree of membership in a set) ranging from 0 to 1. To arrive at continuous set membership values (in the range between 0 and 1), the log odds method described by Ragin (2008) is applied. Consistent with recommendations in the literature (Ragin, 2008; Woodside, 2013), three anchor points were used to perform this calibration: the

5%-percentile, the median, and the 95%-percentile of a variable. The extreme points define full non-membership/full membership in a set, whereas the median is the crossover point indicating that a case is neither in nor out of a set. Subsequently, the Stata add-on-fuzzy (Longest & Vaisey, 2008)-was employed to perform the fsQCA.

Second, the study conducts a hierarchical linear regression analysis including moderator analysis. Consistent with prior configurational approaches (e.g., Wiklund & Shepherd, 2005), the study reports four different models (i.e., control variables, universal model, contingency model, and configuration model). The study follows established recommendations (Aiken & West, 1991; Wiklund & Shepherd, 2005) for testing differences in explanatory power between different models. To this end, calculating different models allows comparing alternative models' explanatory power by showing changes in the coefficient of determination (R^2) compared to each previous model. A correct interpretation of the higher-order interaction requires that all lower-order interactions as well as all main effects are considered in a joint model (Brambor, Clark, & Golder, 2006). Prior to calculating the interaction terms, the respective variables were mean-centered to avoid multicollinearity (Aiken & West, 1991).

5. Results

5.1. Fuzzy-set analysis

The study applies fsQCA (Ragin, 2000, 2006) to preliminarily examine the different configurations between EO, MO, and LO in a first step. Using the calibrated values (indicating degree of set membership) for EO, MO, LO as well as for growth-based firm performance as outlined above, we estimate the consistency of all configurations of the three strategic orientations with a membership in the high performance set. Consistency "assesses the degree to which the cases sharing a (…) combination of conditions (…) agree in displaying the outcome in question" (Ragin, 2006, p. 292). Table 4 displays each configuration's consistency as well as the resulting test against the consistency threshold of .74 (Woodside, 2013). Five distinct configurations of strategic orientations have a significant consistency with high performance ($p \leq .05$). This finding lends preliminary support to Hypothesis 1a.

However, configurations with a high consistency may only have a sufficient but not a necessary relation to the focal outcome (Woodside, 2013). Hence, Table 4 also displays for each configuration with significant consistency the solution's coverage. Coverage "assesses the degree to which a (…) causal combination accounts for instances of an outcome" (Ragin, 2006, p. 292). In other words, coverage indicates the empirical relevance of different pathways to the same outcome and, hence, is rather conceptionally analog to the coefficient of determination (R^2) in a regression analysis (Ragin, 2006; Woodside, 2013). As five different configurations are sufficient for high growth-based performance, coverage can be partitioned into a configuration's raw coverage (i.e., proportion of outcome cases covered by a given configuration) and its unique coverage (i.e., proportion of outcome cases *exclusively* covered by a given configuration) (Rihoux & De Meur, 2009). Hence, Table 4 allows to quantify the contribution each sufficient configuration uniquely provides to firms' membership in the high performance set. Results suggest that a configuration with high levels of EO, MO, and LO (i.e., configuration #8) is most influential for high performance levels in terms of growth of high-technology firms (unique coverage = .129). This result gives preliminary support for Hypothesis 1b. However, other configurations of strategic orientations are also able to provide unique (albeit smaller) contributions to high performance as well.

To additionally assess the significance of these findings, the mean firm performance for firms pertaining to configuration 8 (highest unique coverage) were compared to the mean firm performance of firms pertaining to configuration 6 (second highest unique coverage). Results of a two-sample test of group means (*t*-test) suggest that firms pertaining to configuration 8 indeed have a significantly higher growth-based performance than firms pertaining to configuration 6 ($p \leq .05$).

5.2. Multiple regression analysis

The second step included multiple regression analysis to further examine different configurations between EO, MO, and LO and to supplement findings from fsQCA by multivariate statistical analyses. Table 5 presents arithmetic means, standard deviations, and bivariate correlations between the dependent, the independent, and the control variables. As all correlations stay below .7, a risk of multicollinearity is absent (Anderson, Sweeney, & Williams, 1996). Furthermore, variance inflation factors (VIF) were calculated in order to control for multicollinearity. As the highest VIF value (1.77) is well below the threshold of 2.5 (Allison, 1999), no serious problem of multicollinearity exists.

Table 6 displays the results of the linear regression analyses. Following Aiken and West (1991), the variables were entered hierarchically. Model 1 contains only the control variables, whereas Model 2-the universal model-additionally includes the direct effects of EO, MO, and LO on growth-based performance. Model 3-the contingency model-additionally includes the two-way interactions among the strategic orientations. Finally, Model 4-the configuration model-additionally includes the three-way interaction between EO, MO, and LO.

Looking at the control variables in Model 1, neither firm age, nor firm size, nor firm's belonging to the renewable energies sector significantly influence growth-based performance. In contrast, environmental turbulence has a significantly negative effect on growth-based performance ($-.210$; $p \leq .1$).

Model 2 includes the direct effect of EO, MO, and LO on growth-based firm performance. This universal model leads to a significant increase in exploratory power compared to Model 1 ($\Delta R^2 = .266^{***}$). Results indicate that both EO (.261; $p \leq .01$) and MO (.343; $p \leq .001$) have a significantly positive influence on the performance of high-technology firms. In contrast, LO has no significant direct influence on firm performance (.078; $p > .1$).

Table 4
Results of fuzzy-set Qualitative Comparative Analysis (fsQCA).

No.	EO	MO	LO	Consistency	F-value	p	Raw coverage	Unique coverage	Number of cases
1	Low	Low	Low	.773	0.31	.579			12
2	Low	Low	High	.792	1.26	.264			9
3	Low	High	Low	.866	11.42	.001	.327	.041	8
4	Low	High	High	.853	5.97	.017	.339	.024	6
5	High	Low	Low	.816	2.76	.100			9
6	High	Low	High	.845	4.67	.033	.309	.042	4
7	High	High	Low	.888	15.04	.000	.377	.039	15
8	High	High	High	.909	37.77	.000	.509	.129	16

Note: Number of cases does not add up to n = 91 as 12 cases have a set membership value in at least one strategic orientation of .5, indicating that they are neither in the "low" nor in the "high" set.

Please cite this article as: Deutscher, F., et al., Strategic orientations and performance: A configurational perspective, *Journal of Business Research* (2015), http://dx.doi.org/10.1016/j.jbusres.2015.07.005

Table 5
Descriptive statistics and bivariate correlations between the dependent, the independent, and control variables.

Variable	M	SD	1	2	3	4	5	6	7	8
1 Firm performance	3.17	0.77	–							
2 Firm age	19.10	22.33	−0.051	–						
3 Firm size	154.56	941.54	0.057	0.617*	–					
4 Renewable energies	0.11	0.31	0.026	−0.079	−0.032	–				
5 Environmental dynamism	3.54	0.93	−0.181	−0.132	0.007	0.100	–			
6 EO	3.55	0.66	0.377*	−0.102	0.083	−0.028	0.135	0.538		
7 MO	3.71	0.88	0.434*	0.056	0.084	−0.038	0.067	0.347*	0.628	
8 LO	4.07	0.68	0.214*	−0.083	0.099	0.164	0.142	0.220*	0.266*	0.643

Note: Pearson correlation (listwise deletion); M = arithmetic mean; SD = standard deviation; AVE values for focal latent constructs displayed in diagonal. Significance levels: *: $p < .05$, $n = 91$.

The contingency model (Model 3) additionally includes all three two-way interactions among strategic orientations. However, none of the two-way interactions has a significant effect on growth-based firm performance ($p > .1$). Consequently, this model adds only a marginal and insignificant increase in explanatory power compared to Model 2 ($\Delta R^2 = .003$).

The configuration model (Model 4) additionally includes the three-way interaction between EO, MO, and LO. The three-way interaction has a significant positive effect on growth-based firm performance (.313; $p \leq .01$). The addition of the three-way interaction between EO, MO, and LO in Model 4 adds a significant amount of exploratory power compared to the contingency model ($\Delta R^2 = .056^{**}$). The significant three-way interaction provides support for Hypothesis 1a.

Interaction effects cannot simply be interpreted by looking at the sign, extent, or statistical significance of the regression coefficient of the interaction term (Jaccard & Turrisi, 2003). Hence, the study follows established recommendations (Brambor et al., 2006; Dawson & Richter, 2006) and includes a plot of the three-way interaction at different meaningful values of the moderators. We selected a low (i.e., a standard deviation below the moderator's mean) and high score (i.e., a standard deviation above the moderator's mean) of the moderator variables to illustrate the curves (Aiken & West, 1991; Jaccard & Turrisi, 2003). The analysis includes simple slope tests (Aiken & West, 1991) as well as slope difference tests (Dawson & Richter, 2006) in order to test whether each slope is significantly different from zero and whether the difference between a pair of slopes is significantly different from zero.

Fig. 1 illustrates the triple interaction between EO, MO, and LO with EO depicted on the x-axis and performance on the y-axis. Results from simple slope testing suggest that two of the four slopes are significantly different from zero in predicting growth-based performance. First, slope 1 depicting a configuration with high levels of MO and LO ($b = .559$, $p \leq .01$). Second, slope 4 illustrating a configuration with low levels of MO and LO ($b = .358$; $p \leq .05$). In contrast, slopes 2 and 3 are not significantly different from zero ($p > .1$). Results from slope difference testing indicate that three of the six pairs of slope are significantly different form each other ($p \leq .05$). That is, slopes 1 and 2, slopes 1 and 3, as well as slopes 2 and 4. In contrast, the differences between slopes 1 and 4, 2 and 3, as well as 3 and 4 are not significantly different from zero ($p > .1$). In sum, slope 1 depicting a configuration with high levels of MO and LO is significantly different from 0. This slope is significantly different from two of the three other slopes. Hence, Hypothesis 1b receives partial support.

The study excludes several cases in the dataset from the regression analysis as they contain missing values. While list wise deletion of cases with incomplete data is common statistical practice, this approach may lead to lower statistical power (Aguinis & Stone-Romero, 1997) or are biased parameter estimates (Graham, 2009). Hence, an additional regression analysis using imputed data was conducted. The study

Table 6
Results of moderated linear regression analysis.

Variables	Model 1	Model 2 Universal model	Model 3 Contingency model	Model 4 Configurational model
Control variables				
Constant	3.872 ***	4.015 ***	4.011 ***	3.907 ***
Firm age	−0.182	−0.114	−0.121	−0.199
Firm size	0.172	0.073	0.079	0.128
Renewable energies	0.038	0.054	0.054	0.055
Environmental dynamism	−0.210 †	−0.271 **	−0.266 **	−0.230 *
Direct effects				
EO		0.261 **	0.273 *	0.180
MO		0.343 ***	0.350 ***	0.344 ***
LO		0.078	0.053	0.016
Two-way interactions				
EO × MO			0.015	−0.030
EO × LO			−0.005	0.127
MO × LO			−0.055	0.026
Three-way interaction				
EO × MO × LO				0.313 **
R^2	0.058	0.324	0.327	0.383
Adjusted R^2	0.014	0.267	0.243	0.297
ΔR^2	0.058	0.266 ***	0.003	0.056 **
F	1.329	5.694 ***	3.891 ***	4.458 ***

Dependent variable: firm performance.
$n = 91$.
Significance levels: ***: $p < .001$; **: $p < .01$; *: $p < .05$; and †: $p < .1$.

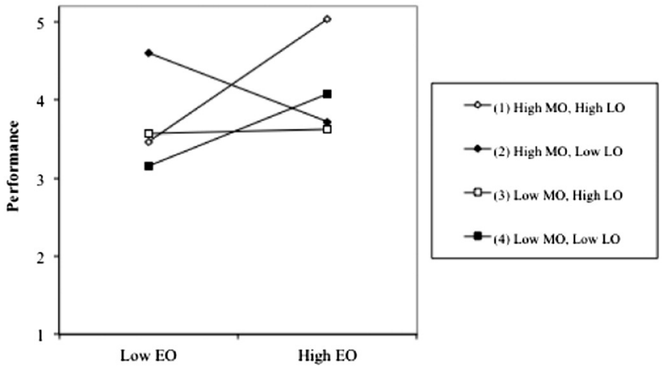

Fig. 1. Plot of the three-way interaction.

applies the established multivariate imputation using chained equations (MICE) procedure (Raghunathan, Lepkowski, Van Hoewyk, & Solenberger, 2001). First, Stata's mi impute chained procedure was employed to impute missing data. We selected an appropriate imputation method for each variable and generated 20 fully imputed datasets (Van Buuren, Brand, Groothuis-Oudshoorn, & Rubin, 2006). Second, these 20 datasets were then analyzed (i.e., using the hierarchical multivariate linear regression model) and combined into a single regression using Stata's mibeta command. The sample size increases from n = 91 (dataset with list wise deletion) to n = 137 (imputed dataset). Notably, all significant influences are also statistically significant and have the same direction in the regression model based on imputed data compared to the reported model.

6. Discussion

The study aims at providing a more detailed understanding of how strategic orientations jointly affect the performance (i.e., firm growth) of high-technology firms. First, the findings suggest that the growth-based performance of high-technology firms is indeed dependent on different configurations of strategic orientations. Second, the results suggest that high-technology firms with high levels of EO, MO, and LO outperform firms with other configurations. Third, the findings indicate that besides a configuration with high levels of EO, MO, and LO four other configurations of strategic orientations also increase growth-based firm performance, albeit to a smaller extent.

The effect on growth-based performance is highest among high-technology firms in a configuration with high levels of EO, MO, and LO. These strategic orientations seem to be complementary, collectively lead to a competitive advantage, and mutually support each other. This finding is consistent with but also extends prior research (e.g., Hult et al., 2004; Liu et al., 2003), because the configuration with high levels of EO, MO, and LO constitutes a unique combination of resources that is valuable, rare, and hard to imitate and generates synergies enabling firms to achieve an advantageous position in competitive high-technology markets. Entrepreneurially oriented firms acting with risky, proactive and innovative actions on the market are most successful if those actions are guided by both MO and LO considerations. The findings in this regard expand previous research focusing on the isolated or even moderated effect of EO on new product performance (Atuahene-Gima & Ko, 2001) or on sales/profitability (Boso et al., 2013), as firms with high levels of EO are most successful if EO is combined with MO as well as LO. To this end, firms may aim at appreciating their present customers, understanding their needs and creating specific customer benefits (guided by high levels of MO) as well as learning about future competitors, customers, and markets and regularly question long-held assumptions (guided by high levels of LO) (Baker & Sinkula, 1999).

Contrary to prior research focusing on the isolated effects of EO on different dimensions of firm performance (for comprehensive overviews see Rauch et al., 2009; Wales, Gupta, et al., 2013), the findings suggest that firms with high levels of EO are unable to achieve higher performance levels if both MO and LO are low. Hence, the risky, proactive, and innovative firm behavior implied by EO does not lead to higher firm performance if it is not guided by high levels of MO or LO. Exclusive application of EO is not sufficient to achieve success and, rather, harbors risks, because innovations might be developed past present and future customers (Hult et al., 2004). This is consistent with prior research finding high levels of EO not sufficient or even contra productive to achieve superior overall performance (Alegre & Chiva, 2013; Bhuian et al., 2005). This finding can also partially explain the (partly) inconclusive findings regarding EO and performance as displayed in the meta-analysis by Rauch et al. (2009) and in a literature review on the EO–performance link (Wales, Gupta, et al., 2013). To this end, we suggest investigating configurations of different orientations and to include other orientations as controls in multivariate regression analyses when seeking to identify a specific orientation's influence on performance or other normative outcomes.

With respect to other distinct configurations of strategic orientations leading to higher growth-based performance of high-technology firms, the results stress the important role of MO. Firms with high levels of MO achieve a positive influence on growth-based performance even in a configuration with both low levels of EO and LO. Obviously, MO is an important determinant of firm performance, as market oriented firms are closer to the customer's needs and are able to translate the gained information into products and services that create specific customer benefits (Grinstein, 2008; Kirca et al., 2005). Firms may benefit from specialized market-oriented knowledge (Merlo & Auh, 2009), as this knowledge about customers and markets helps to compensate lacking innovative actions (otherwise guided by LO). These findings expand prior research by Frishammar and Hörte (2007) who stress the importance of MO and request firms to become more market-oriented in order to achieve new product success. The present study's findings additionally suggest that these claims are valid even in the case of low levels of EO and LO. In contrast, the obtained results challenge some researches suggesting that solely focusing on customer satisfaction (through MO not guided by EO) may lead to the omission of promising opportunities (Baker & Sinkula, 2009). Instead, the findings are consistent with studies finding MO to positively influence firm's sales and profitability in the short and in the long run as well as to facilitate competitive advantages (Kumar, Jones, Venkatesan, & Leone, 2011). Besides the positive influence of configurations with high MO and high EO (combined with high as well as low levels of LO), high levels of MO also positively influence growth-based performance in combination with high levels of LO even when EO is low. This finding extends prior researches (e.g., Grinstein, 2008) by suggesting that LO enhances the quality of MO (Baker & Sinkula, 1999) and facilitates a better understanding of present customers' latent needs (Slater & Narver, 1995) even when combined with low levels of EO.

Lastly, the role of LO deserves further attention in configurations with both other strategic orientations under examination. While high levels of LO guide high levels of EO and also support high levels of MO to achieve superior performance, high levels of LO alone are not sufficient for higher firm performance. Even though several studies point out that learning is crucial for gaining a sustainable competitive advantage (Farrell, 1999) and represents an important determinant of firm performance, the present study's results suggest that high levels of LO rather have a supporting long-term effect. Obviously, organizational values of learning such as a commitment to learning, open-mindedness, and a shared vision do not have a performance effect in isolation but rather their translation into behaviors facilitated by high levels of MO or EO influences firm performance positively.

This study makes important contributions in terms of practical relevance with regard to how different strategic orientations affect the growth of high-technology firms. Characterized as prospectors (Miles & Snow, 1978), the vital competitive advantage of high-technology firms rests upon the firms' ability to develop new and innovative products and to exploit these products on competitive and highly dynamic markets (Engelen et al., 2014) and in narrowly defined niches (Qian & Li, 2003). Firms with a configuration of high levels of EO, MO, and LO are most successful. Hence, knowledge about the current as well as future customers' (latent) needs as well as about current and future markets and competitors is crucial for high-technology firms. Combining high levels of EO, LO, and MO enables these firms to successfully exploit arising opportunities through the development of innovative technologies and, in turn, the development of new products and services ahead of competitors to ultimately achieve superior firm growth.

However, high-technology firms might be restricted in their available resources and in their ability to use these resources (Cadogan, 2012). Thus, it might be necessary for managers to concentrate on building certain configurations of strategic orientations according to their influence on firm growth. Referred to the obtained findings, managers of high-technology firms might first decide to concentrate on MO, as MO is the only strategic orientation that facilitates higher growth-based firm performance in the presence of low levels of the other two strategic orientations. Hence, it might be reasonable to concentrate on the generation of market knowledge first. Knowledge about customers' needs and preferences, and markets helps high-technology firms to fulfill needs and offer benefits (Zhou et al., 2005). As innovative products and services are the core element for the success of high-technology firms, managers should constantly generate new knowledge by investing in market research, analyzing the market development, and closely keeping up with customers to understand what they think about the firms' products and services. Managers should foster the communication of this knowledge within the organization in order to raise awareness of customers' needs among employees. Hereafter the additional concentration on the exploitation of the newly generated market knowledge might be reasonable (by increasing EO). High-technology firms with high levels of EO additionally put an emphasis on the satisfaction of expressed as well latent customer needs, market expansion, and capitalization of emerging opportunities in a proactive and risk-taking manner (Grinstein, 2008). Increasing EO at this point is reasonable as configuration with high levels of MO and EO has a more positive effect on growth than a combination of high levels of MO with high levels of LO. Hence, this configuration facilitates the generation of additional resources. Lastly, the more long-term oriented LO needs increasing to finally achieve the most successful configuration with high levels of each orientation. Ultimately, managers need to respond to new market knowledge. This implication is corresponding with the work of Aggarwal and Singh (2004) who state that every department and every employee generates information and knowledge for the firm and all departments have to discuss the generated knowledge in order to quickly spread the knowledge through the whole firm. Furthermore, thinking outside the box and unlearning established ways of doing things fosters a firm's capability to reconfigure skills and to act flexibly on the market in order to lead the market with innovative products instead of being market-led (Baker & Sinkula, 1999; Wang, 2008).

7. Limitations and implications for future research

This study is subject to some limitations. First, strategic orientations are not stable but rather evolve over time (Atuahene-Gima & Ko, 2001). Thus, a cross-sectional design does not depict completely the dynamics of changes in strategic orientations as well as their potentially lagged influence on growth-based performance (Dawes, 2000; Wiklund & Shepherd, 2005). However, at least three reasons mitigate concerns about the study's cross-sectional design. First, prior empirical evidence suggest that longitudinal as well as cross-sectional models analyzing the effect of strategic orientations on performance display rather similar model fits and come to almost equal results (Dawes, 2000). Second, the study employs a growth-based performance measure. The effect of strategic orientations on firm growth is more immediate than on profit-based performance measures (Wiklund, 1999) alleviating potential problems of lagged effects. Third, including firm age as control variable at least partly accounts for the fact that the effect of strategic orientations on performance is long-term rather than short-term (Wiklund, 1999). However, a longitudinal research design would certainly yield further insights into the effects of evolving strategic orientations and their influence on firm performance over time. Hence, we encourage future research to employ longitudinal designs to clarify the causal relation between strategic orientations and firm performance and to control for survivorship bias in such studies (Rauch et al., 2009).

Second, comparing subjective with objective data would have further validated the measurements. Unfortunately, the completely anonymous data collection process prohibited such an analysis. The high-technology firms in the sample are rather interdisciplinary (42.9% of the firms are active in more than one technology sector) and smaller firms frequently develop market niches difficult to assess with objective industry-wide variables (Wiklund, Patzelt, & Shepherd, 2009). Even within a respective technology sector (e.g., microsystems) two different firms may stem from two different industries (e.g., the same technology is used in two (or more) different industries). Hence, such a correlation analysis was not feasible on the industry-level as well. However, three reasons alleviate concerns regarding the subjective, self-reported, nature of the measurements. First, prior research indicates that subjective measures are highly correlated with objective measures (Dawes, 1999). Second, recent studies suggest a strong convergent validity between self-reported measures and objective measures (Wall et al., 2004). Third, prior research suggests that subjective measures are particularly accurate when obtained from the firms' founders (Chandler & Hanks, 1993). In the present study, 74.4% of the respondents were indeed the focal firm's founder. However, future studies may also include objective performance measures in order to further validate the findings.

Third, as the sample includes only high-technology firms, results may not be generalizable to other industries. High-technology firms operate in highly dynamic environments and are confronted with rapid change. Replicating the analyses in other (more traditional) industries may form a fruitful avenue for future research.

Fourth, even though roughly similar to related studies (Dess et al., 1997; Rodríguez Gutiérrez et al., 2014), the overall sample size is rather low. This may lead to lack of statistical power causing actually statistically significant relations to remain undetected (Aguinis & Stone-Romero, 1997). Hence, we encourage future research to repeat and extend the analyses with larger samples of high-technology firms.

Even though strategic orientations have attracted vast research attention over the past decades, the field is far from settled. In fact, several interesting avenues for future research—beyond the scope of the present study—still exist. A central finding of this study is that specific configurations of EO, MO, and LO positively influence growth-based performance. However, all three strategic orientations are multidimensional concepts with several dimensions. It might be interesting to be aware of the different sub-dimensions and to investigate the effects of the particular dimensions on firm performance as well as their interplay. Besides EO, MO, and LO, several other strategic orientations exist, which may also jointly affect performance. Future research with broader samples in terms of sampled firms' technological intensity may particularly analyze the interplay of technology/innovation orientation (Gatignon & Xuereb, 1997) with other strategic orientations, environmental variables, or firm characteristics (e.g., firm age, firm size). In this regard, the interplay between technology/innovation orientation and EO might be of particular interest, as the technological intensity of products or services a firm chooses in order to pursue arising opportunities may be performance relevant (Hakala, 2011).

Please cite this article as: Deutscher, F., et al., Strategic orientations and performance: A configurational perspective, *Journal of Business Research* (2015), http://dx.doi.org/10.1016/j.jbusres.2015.07.005

References

Aggarwal, N., & Singh, R. (2004). Market orientation in Indian organizations: An empirical study. *Marketing Intelligence & Planning*, *22*(7), 700–715.

Aguinis, H., & Gottfredson, R. K. (2010). Best-practice recommendations for estimating interaction effects using moderated multiple regression. *Journal of Organizational Behavior*, *31*(6), 776–786.

Aguinis, H., & Stone-Romero, E. F. (1997). Methodological artifacts in moderated multiple regression and their effects on statistical power. *Journal of Applied Psychology*, *82*(1), 192.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park: Sage Publications.

Alegre, J., & Chiva, R. (2013). Linking entrepreneurial orientation and firm performance: The role of organizational learning capability and innovation performance. *Journal of Small Business Management*, *51*(4), 491–507.

Allison, P. D. (1999). *Multiple regression: A primer*. Thousand Oaks: Pine Forge Press.

Anderson, D. R., Sweeney, D. J., & Williams, T. A. (1996). *Statistics for business and economics* (6th ed.). St. Paul: West Publishing Company.

Appiah-Adu, K., & Ranchhod, A. (1998). Market orientation and performance in the biotechnology industry: An exploratory empirical analysis. *Technology Analysis & Strategic Management*, *10*(2), 197–210.

Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research*, *14*(3), 396–402.

Atuahene-Gima, K., & Ko, A. (2001). An empirical investigation of the effect of market orientation and entrepreneurship orientation alignment on product innovation. *Organization Science*, *12*(1), 54–74.

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, *16*(1), 74–94.

Baker, W. E., & Sinkula, J. M. (1999). The synergistic effect of market orientation and learning orientation on organizational performance. *Journal of the Academy of Marketing Science*, *27*(4), 411–427.

Baker, W. E., & Sinkula, J. M. (2009). The complementary effects of market orientation and entrepreneurial orientation on profitability in small businesses. *Journal of Small Business Management*, *47*(4), 443–464.

Baruch, Y. (1999). Response rate in academic studies—A comparative analysis. *Human Relations*, *52*(4), 421–438.

Baum, M., Schwens, C., & Kabst, R. (2013). International as opposed to domestic new venturing: The moderating role of perceived barriers to internationalization. *International Small Business Journal*, *31*(5), 536–562.

Bentler, P. M., & Chou, C. -P. (1987). Practical issues in structural modeling. *Sociological Methods & Research*, *16*(1), 78–117.

Bhuian, S. N., Menguc, B., & Bell, S. J. (2005). Just entrepreneurial enough: The moderating effect of entrepreneurship on the relationship between market orientation and performance. *Journal of Business Research*, *58*(1), 9–17.

Boso, N., Story, V. M., & Cadogan, J. W. (2013). Entrepreneurial orientation, market orientation, network ties, and performance: Study of entrepreneurial firms in a developing economy. *Journal of Business Venturing*, *28*(6), 708–727.

Brambor, T., Clark, W. R., & Golder, M. (2006). Understanding interaction models: Improving empirical analyses. *Political Analysis*, *14*(1), 63–82.

Cadogan, J. W. (2012). International marketing, strategic orientations and business success: Reflections on the path ahead. *International Marketing Review*, *29*(4), 340–348.

Calantone, R. J., Cavusgil, S. T., & Zhao, Y. (2002). Learning orientation, firm innovation capability, and firm performance. *Industrial Marketing Management*, *31*(6), 515–524.

Cano, C. R., Carrillat, F. A., & Jaramillo, F. (2004). A meta-analysis of the relationship between market orientation and business performance: Evidence from five continents. *International Journal of Research in Marketing*, *21*(2), 179–200.

Carrillat, F. A., Jaramillo, F., & Locander, W. B. (2004). Market-driving organizations: A framework. *Academy of Marketing Science Review*, *5*(1), 1–14.

Celuch, K. G., Kasouf, C. J., & Peruvemba, V. (2002). The effects of perceived market and learning orientation on assessed organizational capabilities. *Industrial Marketing Management*, *31*(6), 545–554.

Chandler, G. N., & Hanks, S. H. (1993). Measuring the performance of emerging businesses — A validation-study. *Journal of Business Venturing*, *8*(5), 391–408.

Chang, S. -J., van Witteloostuijn, A., & Eden, L. (2010). From the editors: Common method variance in international business research. *Journal of International Business Studies*, *41*(2), 178–184.

Covin, J. G., & Slevin, D. P. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, *10*(1), 75–87.

Daft, R. L., & Weick, K. E. (1984). Toward a model of organizations as interpretation systems. *Academy of Management Review*, *9*(2), 284–295.

Dawes, J. (1999). The relationship between subjective and objective company performance measures in market orientation research: Further empirical evidence. *Marketing Bulletin*, *10*, 65–75.

Dawes, J. (2000). Market orientation and company profitability: Further evidence incorporating longitudinal data. *Australian Journal of Management*, *25*(2), 173–199.

Dawson, J. F., & Richter, A. W. (2006). Probing three-way interactions in moderated multiple regression: Development and application of a slope difference test. *Journal of Applied Psychology*, *91*(4), 917–926.

Day, G. S. (1994). The capabilities of market-driven organizations. *The Journal of Marketing*, *58*(4), 37–52.

Day, G. S. (2011). Closing the marketing capabilities gap. *Journal of Marketing*, *75*(4), 183–195.

Dess, G. G., & Lumpkin, G. T. (2005). The role of entrepreneurial orientation in stimulating effective corporate entrepreneurship. *Academy of Management Executive*, *19*(1), 147–156.

Dess, G. G., Lumpkin, G. T., & Covin, J. G. (1997). Entrepreneurial strategy making and firm performance: Tests of contingency and configurational models. *Strategic Management Journal*, *18*(9), 677–695.

Dess, G. G., & Robinson, R. B. (1984). Measuring organizational performance in the absence of objective measures — The case of the privately-held firm and conglomerate bussiness unit. *Strategic Management Journal*, *5*(3), 265–273.

Eisenhardt, K. M., & Schoonhoven, C. B. (1990). Organizational growth: Linking founding team, strategy, environment, and growth among U.S. semiconductor ventures, 1978–1988. *Administrative Science Quarterly*, *35*(3), 504–529.

Ellis, P. D. (2006). Market orientation and performance: A meta-analysis and cross-national comparisons. *Journal of Management Studies*, *43*(5), 1089–1107.

Engelen, A., Neumann, C., & Schwens, C. (2014). "Of course i can": The effect of CEO overconfidence on entrepreneurially oriented firms. *Entrepreneurship: Theory and Practice*. http://dx.doi.org/10.1111/etap.12099.

Farrell, M. A. (1999). Antecedents and consequences of a learning orientation. *Marketing Bulletin*, *10*, 38–51.

Fiss, P. C. (2007). A set-theoretic approach to organizational configurations. *Academy of Management Review*, *32*(4), 1180–1198.

Ford, J. K., MacCallum, R. C., & Tait, M. (1986). The application of exploratory factor analysis in applied psychology: A critical review and analysis. *Personnel Psychology*, *39*(2), 291–314.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39–50.

Frishammar, J., & Hörte, S. A. (2007). The role of market orientation and entrepreneurial orientation for new product development performance in manufacturing firms. *Technology Analysis & Strategic Management*, *19*(6), 765–788.

Gatignon, H., & Xuereb, J. -M. (1997). Strategic orientation of the firm and new product performance. *Journal of Marketing Research*, 77–90.

Gnizy, I., Baker, W. E., & Grinstein, A. (2014). Proactive learning culture: A dynamic capability and key success factor for SMEs entering foreign markets. *International Marketing Review*, *31*(5), 477–505.

Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual Review of Psychology*, *60*, 549–576.

Grinstein, A. (2008). The relationships between market orientation and alternative strategic orientations: A meta-analysis. *European Journal of Marketing*, *42*(1/2), 115–134.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate data analysis*. Upper Saddle River: Prentice Hall.

Hakala, H. (2011). Strategic orientations in management literature: Three approaches to understanding the interaction between market, technology, entrepreneurial, and learning orientations. *International Journal of Management Reviews*, *13*(2), 199–217.

Hambrick, D. C., Geletkanycz, M. A., & Fredrickson, J. W. (1993). Top executive commitment to the status quo: Some tests of its determinants. *Strategic Management Journal*, *14*(6), 401–418.

Hamilton, O., Shapiro, D., & Vining, A. (2002). The growth patterns of Canadian high-tech firms. *International Journal of Technology Management*, *24*(4), 458–472.

Hanvanich, S., Sivakumar, K., & Hult, G. T. M. (2006). The relationship of learning and memory with organizational performance: The moderating role of turbulence. *Journal of the Academy of Marketing Science*, *34*(4), 600–612.

Harms, R., Kraus, S., & Reschke, C. H. (2007). Configurations of new ventures in entrepreneurship research: Contributions and research gaps. *Management Research News*, *30*(9), 661–673.

Hollenstein, H. (2005). Determinants of international activities: Are SMEs different? *Small Business Economics*, *24*(5), 431–450.

Hu, L. -T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55.

Hult, G. T. M., Hurley, R. F., & Knight, G. A. (2004). Innovativeness: Its antecedents and impact on business performance. *Industrial Marketing Management*, *33*(5), 429–438.

Hult, G. T. M., & Ketchen, D. J. (2001). Does market orientation matter? A test of the relationship between positional advantage and performance. *Strategic Management Journal*, *22*(9), 899–906.

Hurley, R. F., & Hult, G. T. M. (1998). Innovation, market orientation, and organizational learning: An integration and empirical examination. *The Journal of Marketing*, *62*(3), 42–54.

Jaccard, J. J., & Turrisi, R. (2003). *Interaction effects in multiple regression*. Thousand Oaks: Sage.

Jaworski, B. J., & Kohli, A. K. (1993). Market orientation: Antecedents and consequences. *Journal of Marketing*, *57*(3), 53–70.

Ketchen, D. J., Combs, J. G., Russell, C. J., Shook, C., Dean, M. A., Runge, J., et al. (1997). Organizational configurations and performance: A meta-analysis. *Academy of Management Journal*, *40*(1), 223–240.

Khandwalla, P. N. (1977). *The design of organizations*. New York: Harcourt Brace Jovanovich.

Kirca, A. H., Jayachandran, S., & Bearden, W. O. (2005). Market orientation: A meta-analytic review and assessment and impact on performance. *Journal of Marketing*, *69*(2), 24–41.

Kline, R. B. (1998). *Principles and practice of structural equation modeling*. New York: Guilford.

Kohli, A. K., & Jaworski, B. J. (1990). Market orientation: The construct, research propositions, and managerial implications. *The Journal of Marketing*, *54*(2), 1–18.

Kohli, A. K., Jaworski, B. J., & Kumar, A. (1993). MARKOR: A measure of market orientation. *Journal of Marketing Research*, *30*(4), 467–477.

Kropp, F., Lindsay, N. J., & Shoham, A. (2006). Entrepreneurial, market, and learning orientations and international entrepreneurial — Business venture performance in South African firms. *International Marketing Review*, *23*(5), 504–523.

Kumar, V., Jones, E., Venkatesan, R., & Leone, R. P. (2011). Is market orientation a source of sustainable competitive advantage or simply the cost of competing? *Journal of Marketing*, *75*(1), 16–30.

Lau, C. M., & Bruton, G. D. (2011). Strategic orientations and strategies of high technology ventures in two transition economies. *Journal of World Business*, *46*(3), 371–380.

Laukkanen, T., Nagy, G., Hirvonen, S., Reijonen, H., & Pasanen, M. (2013). The effect of strategic orientations on business performance in SMEs: A multigroup analysis comparing Hungary and Finland. *International Marketing Review*, *30*(6), 510–535.

Liu, S. S., Luo, X., & Shi, Y. -Z. (2002). Integrating customer orientation, corporate entrepreneurship, and learning orientation in organizations-in-transition: An empirical study. *International Journal of Research in Marketing*, *19*(4), 367–382.

Liu, S. S., Luo, X., & Shi, Y. -Z. (2003). Market-oriented organizations in an emerging economy: A study of missing links. *Journal of Business Research*, *56*(6), 481–491.

Longest, K. C., & Vaisey, S. (2008). fuzzy: A program for performing qualitative comparative analyses (QCA) in Stata. *Stata Journal*, *8*(1), 79–104.

Lonial, S. C., & Carter, R. E. (2015). The impact of organizational orientations on medium and small firm performance: A resource-based perspective. *Journal of Small Business Management*, *53*(1), 94–113.

Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, *21*(1), 135–172.

Menguc, B., & Auh, S. (2006). Creating a firm-level dynamic capability through capitalizing on market orientation and innovativeness. *Journal of the Academy of Marketing Science*, *34*(1), 63–73.

Merlo, O., & Auh, S. (2009). The effects of entrepreneurial orientation, market orientation, and marketing subunit influence on firm performance. *Marketing Letters*, *20*(3), 295–311.

Meyer, A. D., Tsui, A. S., & Hinings, C. R. (1993). Configurational approaches to organizational analysis. *Academy of Management Journal*, *36*(6), 1175–1195.

Miles, R. E., & Snow, C. C. (1978). *Organizational strategy, structure and process*. New York: McGraw-Hill.

Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management Science*, *29*(7), 770–791.

Miller, D. (1996). Configurations revisited. *Strategic Management Journal*, *17*(7), 505–512.

Mu, J., & Di Benedetto, C. A. (2011). Strategic orientations and new product commercialization: Mediator, moderator, and interplay. *R&D Management*, *41*(4), 337–359.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. -Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903.

Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, *12*(4), 531–544.

Qian, G., & Li, L. (2003). Profitability of small- and medium-sized enterprises in high-tech industries: The case of the biotechnology industry. *Strategic Management Journal*, *24*(9), 881–887.

Raghunathan, T. E., Lepkowski, J. M., Van Hoewyk, J., & Solenberger, P. (2001). A multivariate technique for multiply imputing missing values using a sequence of regression models. *Survey Methodology*, *27*(1), 85–96.

Ragin, C. C. (2000). *Fuzzy-set social science*. Chicago: University of Chicago Press.

Ragin, C. C. (2006). Set relations in social research: Evaluating their consistency and coverage. *Political Analysis*, *14*(3), 291–310.

Ragin, C. C. (2008). Measurement versus calibration: A set-theoretic approach. In J. M. Box-Steffensmeier, H. E. Brady, & D. Collier (Eds.), *The Oxford handbook of political methodology* (pp. 174–198). Oxford: Oxford University Press.

Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship: Theory and Practice*, *33*(3), 761–787.

Real, J. C., Roldán, J. L., & Leal, A. (2014). From entrepreneurial orientation and learning orientation to business performance: Analysing the mediating role of organizational learning and the moderating effects of organizational size. *British Journal of Management*, *25*(2), 186–208.

Rhee, J., Park, T., & Lee, D. H. (2010). Drivers of innovativeness and performance for innovative SMEs in South Korea: Mediation of learning orientation. *Technovation*, *30*(1), 65–75.

Rihoux, B., & De Meur, G. l. (2009). Crisp-set Qualitative Comparative Analysis (csQCA). In B. Rihoux, & C. C. Ragin (Eds.), *Configurational comparative methods: Qualitative Comparative Analysis (QCA) and related techniques* (pp. 33–68). Sage.

Rodríguez Gutiérrez, P., Fuentes Fuentes, M. D. M., & Rodríguez Ariza, L. (2014). Strategic capabilities and performance in women-owned businesses in Mexico. *Journal of Small Business Management*, *52*(3), 541–554.

Ruokonen, M., & Saarenketo, S. (2009). The strategic orientations of rapidly internationalizing software companies. *European Business Review*, *21*(1), 17–41.

Schwens, C., Steinmetz, H., & Kabst, R. (2010). Growth and internationalization: Renewable energy and new technology-based firms. In A. Gerybadze, U. Hommel, H. W. Reiners, & D. Thomaschewski (Eds.), *Innovation and international corporate growth* (pp. 113–123). Heidelberg: Springer.

Shan, W. (1990). An empirical analysis of organizational strategies by entrepreneurial high-technology firms. *Strategic Management Journal*, *11*(2), 129–139.

Shook, C. L., Ketchen, D. J., Hult, G. T. M., & Kacmar, K. M. (2004). An assessment of the use of structural equation modeling in strategic management research. *Strategic Management Journal*, *25*(4), 397–404.

Short, J. C., Ketchen, D. J., Combs, J. G., & Ireland, R. D. (2010). Research methods in entrepreneurship: Opportunities and challenges. *Organizational Research Methods*, *13*(1), 6–15.

Sinkula, J. M., Baker, W. E., & Noordewier, T. (1997). A framework for market-based organizational learning: Linking values, knowledge, and behavior. *Journal of the Academy of Marketing Science*, *25*(4), 305–318.

Slater, S. F., & Narver, J. C. (1995). Market orientation and the learning organization. *Journal of Marketing*, *59*(3), 63–74.

Tanriverdi, H., & Venkatraman, N. (2005). Knowledge relatedness and the performance of multibusiness firms. *Strategic Management Journal*, *26*(2), 97–119.

Tse, A. C. B. (1998). Comparing the response rate, response speed and response quality of two methods of sending questionnaires: E-mail vs. mail. *Journal of the Market Research Society*, *40*(4), 353–361.

Van Buuren, S., Brand, J. P. L., Groothuis-Oudshoorn, C. G. M., & Rubin, D. B. (2006). Fully conditional specification in multivariate imputation. *Journal of Statistical Computation and Simulation*, *76*(12), 1049–1064.

Wales, W. J., Gupta, V. K., & Mousa, F. -T. (2013a). Empirical research on entrepreneurial orientation: An assessment and suggestions for future research. *International Small Business Journal*, *31*(4), 357–383.

Wales, W. J., Patel, P. C., Parida, V., & Kreiser, P. M. (2013b). Nonlinear effects of entrepreneurial orientation on small firm performance: The moderating role of resource orchestration capabilities. *Strategic Entrepreneurship Journal*, *7*(2), 93–121.

Wall, T. D., Michie, J., Patterson, M., Wood, S. J., Sheehan, M., Clegg, C. W., et al. (2004). On the validity of subjective measures of company performance. *Personnel Psychology*, *57*(1), 95–118.

Wang, C. L. (2008). Entrepreneurial orientation, learning orientation, and firm performance. *Entrepreneurship: Theory and Practice*, *32*(4), 635–657.

Wiklund, J. (1999). The sustainability of the entrepreneurial orientation–performance relationship. *Entrepreneurship: Theory and Practice*, *24*(1), 39–50.

Wiklund, J., Patzelt, H., & Shepherd, D. A. (2009). Building an integrative model of small business growth. *Small Business Economics*, *32*(4), 351–374.

Wiklund, J., & Shepherd, D. (2005). Entrepreneurial orientation and small business performance: A configurational approach. *Journal of Business Venturing*, *20*(1), 71–91.

Woodside, A. G. (2013). Moving beyond multiple regression analysis to algorithms: Calling for adoption of a paradigm shift from symmetric to asymmetric thinking in data analysis and crafting theory. *Journal of Business Research*, *66*(4), 463–472.

Zahra, S. A. (2008). Being entrepreneurial and market driven: Implications for company performance. *Journal of Strategy and Management*, *1*(2), 125–142.

Zhou, K. Z., Yim, C. K., & Tse, D. K. (2005). The effects of strategic orientations on technology- and market-based breakthrough innovations. *Journal of Marketing*, *69*(2), 42–60.

Please cite this article as: Deutscher, F., et al., Strategic orientations and performance: A configurational perspective, *Journal of Business Research* (2015), http://dx.doi.org/10.1016/j.jbusres.2015.07.005