Enhancing the sales benefits of radical product innovativeness in internationalizing small and medium-sized enterprises

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Enhancing sales benefits of radical product innovativeness in internationalizing SMEs

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Abstract
This study draws on resource-based theory to examine the strategic orientation conditions under which radical product innovation capability is more or less beneficial. Multiple survey studies are undertaken among international small and medium-sized enterprises (SMEs) in developed and developing economies to test these relationships. The study finds that, although radical product innovativeness is positively associated with sales performance in the context of a developed economy, the relationship is non-significant in a developing market context. Moreover, across both the developed and developing economy contexts, when high levels of radical product innovativeness exist, as well as when entrepreneurial orientation increases in magnitude, there is a corresponding increase in sales performance. Similarly, this study finds that, across both contexts, high market-orientation levels strengthen the effect of radical product innovativeness on sales performance.

Keywords: radical product innovation capability, strategic orientation, sales performance, developed economy, developing economy
Enhancing sales benefits of radical product innovativeness in internationalizing SMEs

1. Introduction

Extant literature on product innovation suggests that a radical product innovation capability provides firms with the benefits of first-mover and pioneer advantage (Zhang, Xufei, & Yue, 2012), which allows them to obtain faster market penetration, premium prices, accelerated cash flows, reduced volatility and vulnerability of cash flows, greater customer loyalty, substantial cost reductions, and the capacity to extend operations to new markets, relative to more incrementally innovative firms (Tellis, Prabhu, & Chandy, 2009). However, empirical findings regarding the effect of radical product innovativeness on performance have been inconsistent (Evanschitzky, 2012; Rosenbusch, Brinckmann, & Bausch, 2011).

Additionally, although SMEs attempting to compete in foreign markets face multiple resource and legitimacy challenges, how such firms radically innovate in their international market operations remains under-recognized and under-researched (Tomlinson & Fai, 2013). To this end, this study proposes the examination of two important contingency factors: (1) the firms’ complementary resources and (2) institutional and infrastructural conditions under which internationalizing SMEs innovate. The research purpose, therefore, is to examine the moderating effects of complementary firm resources (focusing on strategic orientations) on the radical product innovativeness-performance relationship in both more and less developed institutional settings. By doing so, this study shows why these contingencies are important boundary conditions that help enrich the understanding of how radical product innovation capability is more or less beneficial for SMEs performance.

Consequently, the authors seek to make two theoretical and contextual contributions. First, by addressing calls to further research on the interface between innovation, entrepreneurship, and marketing domains (Avlonitis & Salavou, 2007; Li, Zhao, Tan, & Liu, 2008), this study extends scholarly understanding of the consequences of radical innovation
efforts, by examining the moderating effects of entrepreneurial orientation (EO) and market orientation (MO) on the radical product innovativeness-performance relationship. To this end, this study extends knowledge on how a firm’s capacity to combine resources in unique ways helps create and commercialize successful, inventive new products (Augier & Teece, 2007). Additionally, this study enriches literature on how the success of radical product innovation depends on a firm’s willingness and proclivity to generate, share, and respond to market information (Jaworski and Kohli, 1993).

Second, this study notes that variations in institutional development across nations may condition the effectiveness of firms’ business activities (van Waarden, 2001) because firms “are both constrained and enabled by the institutions in their environment” (Bruton, Ahlstrom, & Li, 2010, p. 426). Acknowledging potential variation in the levels of institutional development—in terms of resources, possibilities, and limitations—as well as their implications for the outcomes of radical product innovation activities across more developed and less developed institutional environments (van Waarden, 2001), this study investigates the role that differences in institutional development may play in shaping the nature of the radical product innovativeness-performance relationship. As a result, the study’s conceptual model, displayed in Figure 1, is tested with primary data from internationalizing SMEs operating in developed and developing market economies.

Figure 1 here.

2. Theoretical Foundation and Hypotheses

Radical innovativeness has been referred to as the degree to which a firm’s innovation activities depart from existing products and/or technologies (McDermott & O’Connor, 2002). Radically innovative products have the capacity to render existing products and technologies obsolete and transform industries and markets (Troilo, De Luca, & Atuahene-Gima, 2013).
Further, the multi-dimensionality of innovativeness is well recognized (e.g., Garcia & Calantone, 2002) and, while definitions highlight a number of dimensions, this paper focuses on past research regarding the degree of radicalness (or newness) of firms’ new products (e.g., Kyrgidou & Spyropoulou, 2012).

The literature suggests a number of reasons why radical product innovativeness, a firm’s ability to develop and commercialize original innovations, relative to the competition, is positively related to its business success (Calantone, Cavusgil, & Zhao, 2002). First, it enables firms to create dramatic product and process differentiations (Tellis et al., 2009), enabling them to alter the nature of the competition, and to compete in areas in which they have the upper hand relative to competitors (Calantone et al., 2002; Garcia & Calantone, 2002). Second, high levels of innovation novelty help firms build robust brand images and reputation assets (McDermott & O’Connor, 2002). Third, radical innovations help firms to meet sales and profitability objectives more quickly than less innovative competitors because novelty effects and high customer trials lead to greater adoption rates (Tellis et al., 2009).

However, empirical findings regarding the value of firm innovativeness in general and radical innovativeness in particular have been inconsistent: performance outcomes are positive in some studies and negative in others (see Rosenbusch et al., 2011). Indeed, some studies show that firms who are incremental in their product innovation efforts also enjoy performance benefits: their new product portfolios are more familiar to customers, have less uncertainty, and fit better within existing new product development routines and market frameworks (e.g., Calantone et al., 2002). Moreover, other studies fail to reveal a direct effect (e.g., Zhang et al., 2012). This study argues that an answer to these inconsistencies may be found in examining key firm resources and institutional contextual contingencies.

2.1 Moderating effect of strategic orientations
In line with Miller and Friesen (1982) and Lumpkin and Dess (1996) this work argues that a firm’s EO may help amplify the likelihood of radical product innovativeness enhancing performance. EO refers to a firm’s proclivity to be innovative, risk seeking, proactive, competitively aggressive, and supportive of autonomous decision-making (Lumpkin and Dess, 1996). Accordingly, Miller and Friesen (1982) argue that firms with greater EO are willing to take considerable risks to pioneer novel innovations. Moreover, firms with superior EO innovate in a more proactive and aggressive manner, enabling them to connect to new customer needs more successfully. Furthermore, firms that are receptive to autonomous decision-making tend to develop organic structures that make converting novel new product ideas to revenue generating new products easier. Thus, under high levels of EO, the effect of higher levels of radical innovativeness on performance should be amplified (Wu, Chang, & Chen, 2008). Thus, this study posits that:

_H1: Radical product innovativeness is more positively related to firm performance when levels of EO increase in magnitude._

MO relates to a firm’s willingness to generate, disseminate, and respond to market information (Jaworski & Kohli, 1993). Interestingly, although studies suggest a significant positive relationship between MO and innovation (e.g., Deshpandé, Farley, & Webster, 1993), evidence showing negative (e.g., Bennett & Cooper, 1981; Zhou, Yim & Tse, 2005) and non-significant (e.g., Baker and Sinkula, 2007) relationships abound. Based on resource-based theory (e.g., Day, 1994), this study argues that MO, as a firm-level resource, may facilitate the radical innovativeness-performance relationship through its moderating effect.

As a major source of ideas for new products and services MO enables companies to act differently in response to market conditions (Jaworski & Kohli, 1993). Indeed, in firms where MO is a predominant orientation, radical innovation activities are emphasized more
than incremental innovation (Baker & Sinkula, 2009) because such firms create conducive climates for in-depth understanding of the target market (e.g., Day 1994), making new product failures less likely. Accordingly, this study argues that:

**H2: Radical product innovativeness is more positively related to firm performance when levels of MO increase in magnitude.**

### 2.2 Differential effects across developed and developing institutional environments

The institutional environment plays a role in shaping business success (Williamson, 1985), and the extant literature suggests that variations in institutional development levels across nations may explain why some nations have greater innovation outputs than others (Beck Demirgüç-Kunt, & Maksimovic, 2008; van Waarden, 2001). Moreover, the conventional wisdom is that firms in developed economies are predominantly the ones that undertake radical innovations, primarily because of the superiority of the institutions in developed nations, when compared to those in developing countries. Therefore, this study posits that variations in levels of institutional development across both developed and less developed economies may account for the differences in the effectiveness of radical product innovation strategies across firms.

Several reasons for this claim exist. This study draws on institutional theory to argue that variations in institutional development levels may affect the economic values that accrue to firms, as a result of investments in radical innovation activities. Moreover, researchers have argued that institutions (e.g., laws and regulations) should act to reduce the risks and uncertainties linked to innovation efforts (Bruton et al., 2010). As a result, innovation success rates are expected to increase when institutions become more developed and function as expected (van Waarden, 2001). From this perspective, variations should be expected in firms’
innovation as well as strategic entrepreneurial and market-oriented activities, under differing institutional contexts (e.g., Beck et al., 2008; Manolova, Eunni, & Gyoshev, 2008).

Further, developed economies typically have long histories of strong legal and financial systems, fair competition, and well-developed institutions and infrastructure. In contrast, developing economies tend to have institutions that are less developed (Manolova et al., 2008). Thus, this study argues that:

**H3**: *H1 and H2 will be significantly different across developed and developing economies.*

3. Research Methodology

3.1 Study settings

To examine the study’s conceptual model, data is collected from exporting SMEs in developed (i.e., UK and Ireland) and developing (i.e., Ghana and Bosnia and Herzegovina (B&H)) via a structured questionnaire. To ensure consistency, all variables are conceptualized at the export level (Cadogan et al., 2003).

Because each country offers specific opportunities and limitations, the actual data collection procedures vary slightly across locations (Aulakh, Kotabe, & Teegen, 2000). Based on the work of Wiklund and Shepherd (2011), this study only focuses on firms that meet key requirements: (1) firms that are independent local entities and not part of any company group or chain, (2) firms that employ a minimum of five full-time employees, (3) manufacturers of physical products or service providers that engage in export marketing activities (excluding those involved in the export of raw materials), (4) firms with a minimum of five years of exporting experience, and (5) firms with complete contact information for the Chief Executive Officer (CEO) or someone with comparable seniority.

The FAME database is used to obtain samples in the UK and Ireland. From an initial list of 1,081 exporting UK firms, after removing ineligible firms (251), 830 firms are
contacted, yielding 198 completed questionnaires (response rate of 24.0%). For Irish firms, contact is made with 700 firms, and after discounting ineligible firms (90), 127 valid responses are obtained (response rate of 21.0%). The firms in both samples operate in multiple industries including computer, aviation, textile and garment, food and beverage, and financial services. On average, the UK firms have 256 full-time employees, US$ 749 million annual sales, and 40.7% of total annual revenue. Moreover, the Irish firms have similar characteristics: 186 full-time employees, US$ 418 million in total annual sales, and 52% of sales come from export market operations.

To study developing economies, in Ghana, the sampling frame is developed from the Ghana Export Promotion Authority (GEPA) database and Ghana business directory. The CEOs of all 750 exporting firms listed in the GEPA and Ghana business directory are contacted and 164 useable responses obtained (21.8% response rate). These firms operate in multiple industries, such as cookware, processed food and beverages, crafts, agro-processing, textiles and garments, security services, financial services, and engineering, which are representative of those of most developing economies. The firms are mainly SMEs that employ an average of 156 employees, with an average turnover of US$ 3.2 million, and foreign sales accounting for 63% of total annual sales on average.

In B&H, because the official business language is not English, in order to ensure questionnaire transferability and equivalence, a back-to-back translation procedure (by native speakers) is used to minimize the potential effects of the linguistic differences. The data is collected from companies listed in the Register of the Foreign Trade Chamber of B&H. The sampling frame contains 555 randomly selected exporting firms from a wide spread of product/industry sectors, including wholesalers, IT, textiles and garments, fast-moving consumer goods, agriculture, automotive, tobacco, and energy, and 117 usable responses are received (21.1% response rate). The firms employ an average of 251 employees, have an
average turnover of US$ 20.5 million, and have export sales accounting for 40% of total annual sales on average.

In comparing early and late respondents by applying Armstrong and Overton’s (1977) non-response test in all settings, no significant differences are found.

3.2 Measures

Sales performance is assessed by using the objective international sales revenues from the firms, which is seen as a meaningful firm performance indicator for young and small internationalizing firms (Dencker & Gruber, 2015). To account for skewness and minimize any fluctuations in sales revenues, this study uses the average sales from 2011 to 2014, after calculating their natural logs. To validate the objective sales figures, perceptual performance data is collected, which includes the finance managers’ satisfaction with their firms’ market share, sales revenue, and sales revenue growth. Each item is measured on a seven-point rating scale (1 = extremely dissatisfied and 7 = extremely satisfied). After correlating the objective and perceptual performance data, strong correlations in both developed (r = .50; p < .01) and developing (r = .48; p < .01) market samples (see Table 1) are obtained.

Table 1 here.

To operationalize the radical product innovativeness construct a seven-point scale (1 = not at all and 7 = to an extreme extent) by Tellis et al., (2009) is used. Additionally, the study draws on Jambulingam et al.’s (2005) and Boso, Story, & Cadogan’s (2013) scale to assess EO. To assess MO, Cadogan, Kuivalainen, & Sundqvist’s (2009) export MO behavior scale is used. Further, to control for possible confounds, several control variables (i.e., firm size, industry type, firm experience, and R&D expenses) are included.

To account for bias, the authors perform the correlational marker variable test for common method bias (CMB). Furthermore, the fact that the model contains multiple
interactive relationships implies high unlikeliness of respondents’ ability to predict complex relationships involved in this study, which in combination with correlational marker variable test suggest that CMB is unlikely to be an issue for this study.

4. Analyses

4.1 Measurement model assessment

For each country, a confirmatory factor analysis (CFA) of all items is undertaken using LISREL 8.5 as well as a maximum likelihood estimation procedure. In all four samples, acceptable model fits are obtained: UK: $\chi^2$ (d.f.) = 828.32 (563), RMSEA = .05, NNFI = .93, CFI = .94, and SRMR = .05; Ireland: $\chi^2$ (d.f.) = 708.23 (563); RMSEA = .05; NNFI = .91; CFI = .92; and SRMR = .06; Ghana: $\chi^2$ (d.f.) = 663.65 (563); RMSEA = .04; NNFI = .94; CFI = .95; and SRMR = .04; and B&H: $\chi^2$ (d.f.) = 735.07 (563); RMSEA = .06; NNFI = .90; CFI = .90; and SRMR = .08. Given the acceptable CFA model fit, the equivalence of measurement items across markets using the hierarchical tests approach recommended by Steenkamp and Baumgartner (1998), is used to evaluate the items. Accordingly, a multi-group CFA of all items is undertaken following the maximum likelihood estimation procedure. The findings indicate that configural, metric, scalar, factor variance, and error variance invariances exist for all constructs across all samples, and the items are equally reliable across all samples. As such, the measures can be used for hypothesis testing.

After establishing that the measures are invariant across all groups, the UK and Ireland samples are merged to create a developed market sample, and the Ghana and B&H samples are merged to create a developing market sample. Then, the authors conduct an additional CFA, with findings indicating an acceptable model fit for the developed ($\chi^2$ (d.f.) = 1103.54 (563), RMSEA = .06; NNFI = .91; CFI = .93; and SRMR = .04) and developing
market samples ($\chi^2$ (d.f.) = 840.01 (528); RMSEA = .05; NNFI = .93; CFI = .94; and SRMR = .05).

Next, the datasets are combined to create a single sample for the purposes of conducting reliability, convergent validity, and discriminant validity tests. Specifically, the scores for composite reliability and average variance extracted exceed the required benchmarks of .70 and .50, respectively, confirming reliability and convergent validity (Fornell & Larcker, 1981). Additionally, the average variance extracted for each construct is superior to its highest shared variance with any of the other constructs in the model, confirming discriminant validity. Significant standardized factor loadings are obtained for each item (ranging from .67 to .92) further supporting the constructs’ validity.

4.2 Structural model estimation and findings

To reduce model complexity (Ping, 1995), averages are taken across the items that measure each first-order factor, to generate single item scores. Subsequently, the single-item scores are used in multi-group structural equation modeling, and a series of multiplicative and quadratic terms created, which are then used to estimate the structural models. All variables involved in multiplicative interactions are orthogonalized to minimize multicollinearity problems.

Next, the authors create and test developed and developing market models. Following hierarchical procedures, three multi-group models are tested with all structural paths allowed to vary across the developed and developing market groups. Model 1 contains only the control variables, Model 2, adds the direct effect and moderating effect variables, and Model 3 includes the interaction effect variables. Furthermore, an additional model (Model 4) is constructed to determine whether constraining the structural paths and $R^2$ values in Model 3 to be equal across the two groups would lead to a reduction in model fit. The study finds that
in both groups, Model 3 has the smallest $\chi^2$ (d.f.) of all models estimated. Additionally, Model 3 has the largest $R^2$ value; thus, this study uses Model 3 to interpret the hypotheses. The summary of the findings is presented in Table 2.

Table 2 here.

This study finds that the radical product innovativeness and EO interaction term is positively related to performance among developed ($\gamma = .12; t = 1.86; p < .05$) and developing ($\gamma = .12; t = 1.99; p < .05$) market firms, providing support for $H_1$. In support of $H_2$, results show that the interaction term for MO and radical product innovativeness is positively related to performance in both developed ($\gamma = .15; t = 1.95; p < .05$) and developing ($\gamma = .12; t = 1.88; p < .10$) market firms. The test of whether the two hypotheses are variant across both groups is not supported because when the estimated structural paths are equally constrained across both groups, significant changes are observed in the model fit ($\Delta \chi^2 = 6.94; \Delta \text{d.f.} = 5; p > .05$) and $R^2$. Thus, $H_3$ is rejected in favor of the alternative argument that the relationships are invariant across both contexts. Figures 2 and 3 provide surface plots of the interaction terms across both settings.

Figures 2 and 3 here.

5. Theoretical and Managerial Implications

This research aims to explain the strategic orientation and institutional conditions under which the variations in radical product innovativeness are more or less beneficial for internationalizing SMEs. First, the study departs from previous studies by arguing that the effect of radical product innovativeness on SME performance is more positive when EO and MO activities are higher. The study finds that a key reason for the inconsistencies in the literature regarding the benefit of radical innovation is due to a lack of understanding of the roles of firms’ strategic orientations, suggesting that high radical product innovativeness is
most beneficial for SMEs when they are also increasingly entrepreneurial and market-oriented in their business operations.

Second, the study demonstrates that the value of radical product innovativeness and moderating effects of firms’ strategic orientations vary across developed and developing market contexts. This finding is a direct contradiction to conventional wisdom that suggests that firms in industrialized nations benefit more from radical innovation activities than do those from less developed markets. While contradicting this normative assumption, this finding is in line with the argument that firms often have a propensity to adapt to the institutional environment within which they operate. For example, Arnold and Quelch (1998) argue that although little or no market data exists, distribution systems, communication channels, regulatory discipline, and affluence consumption in developing countries to support the commercial viability of radical product innovations, local firms have often developed the capacity to operate successfully within such market challenges. Thus, with the results at hand, the authors argue that the existing radical product innovation frameworks, formulated and applied with a developed economy mindset, may be extended to developing market settings.

Therefore, the study concludes that with the right levels of EO and MO, radical product innovativeness may benefit developed market SMEs on the basis of the assumption that adopters and users of radical products in industrialized economies possess the full knowledge and skills required to use radical product innovations, and that institutional disciplines to protect such innovations from anti-market erosion exist. Similarly, with the right levels of EO and MO, radical product innovativeness may benefit developing market SMEs, if such firms develop the capacity to understand and adapt to the idiosyncrasies of their developing market system.

6. Limitations and Direction for Further Research

This study has some limitations. First, this study uses internationalizing SMEs with operations in two developed and two developing market economies; hence, caution should be
exercised in generalizing from the findings. One could argue that the behavior of internationally focused SMEs may be distinct from those that are more domestic-focused. Thus, future research that uses firms with a stronger domestic-market focus, as well as those adopting various methods of operating in overseas markets, would be useful additions to the extant literature. Second, the cross-sectional nature of this study limits the ability to make causal inferences. Accordingly, future research could use a longitudinal research design to further investigate the radical product innovativeness-performance relationship, as the value of radical innovations may take time to materialize. Additionally, if one is to accept the notion that radical innovativeness is a major determinant of firm success, then managers must be informed of what they can do to increase radical innovation activities. To this end, studies examining the antecedents to radical product innovativeness would be useful. Furthermore, certain EO and MO activities may hold greater value for firms than do others. For instance, autonomous activities that provide firms the capacity to create decentralized and organic structures may lead to greater radical innovation outcomes than would a more conservative and mechanistic approach. Likewise, a greater propensity to take risks, as well as the willingness to learn about future market needs, may be a catalyst for greater radical innovativeness. Thus, additional research on EO and MO activities, as well as their specific roles in supporting radical innovation, would be useful in extending the literature on radical product innovation.
References


Figure 1: Conceptual model and hypotheses

**Complementary firm resources:**
- Entrepreneurial orientation
- Market orientation

Radical product innovation capability → Sales performance
**Figure 2:** Interactive effect of entrepreneurial orientation

RI = Radical Innovativeness; EO = Entrepreneurial Orientation
Figure 3: Interactive effect of market orientation

A = Developing Markets

B = Developed Markets
Table 1: Descriptive statistics and inter-construct correlations for samples

<table>
<thead>
<tr>
<th></th>
<th>Developed markets</th>
<th>Developing markets</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<td></td>
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<td>1</td>
<td>.00</td>
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<td>.08</td>
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<td>.74</td>
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<td>.58</td>
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<td>.021</td>
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<td>.01</td>
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<td>1.92</td>
<td>2.67</td>
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<td>-.43**</td>
<td>1</td>
<td>.28**</td>
<td>.03</td>
<td>.24**</td>
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<td>4. Business experience</td>
<td>49.27</td>
<td>34.39</td>
<td>10.85</td>
<td>11.93</td>
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<td>-.12**</td>
<td>.14**</td>
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<td>.09</td>
<td>.60**</td>
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<td>5. Entrepreneurial orientation</td>
<td>4.44</td>
<td>.85</td>
<td>4.20</td>
<td>.82</td>
<td>.02</td>
<td>.17**</td>
<td>-.30**</td>
<td>.07</td>
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<td>.25**</td>
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<td>6. Market orientation</td>
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<td>5.01</td>
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<td>7. Radical product</td>
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<td>4.58</td>
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<td>8. Sales performance</td>
<td>4.65</td>
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<td>4.39</td>
<td>.927</td>
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<td>.22**</td>
<td>-.29**</td>
<td>.07</td>
<td>.14</td>
<td>.20**</td>
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Note: SD = standard deviation. Above the diagonal are correlations for the DM sample (n = 319). Below the diagonal are correlations for the EM sample (n = 277). * = Correlations are significant at p < .05 (two-tailed), and ** = Correlations are significant at p < .01 (two-tailed).

Note: Details of the measures used, as well as their respective sources, are available from the authors upon request.
Table 2: Findings on hypotheses testing

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Dependent variable: sales performance (standardized estimates)</th>
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<tbody>
<tr>
<td></td>
<td>Model 1</td>
</tr>
<tr>
<td></td>
<td>Developed Markets</td>
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<tr>
<td><strong>Control paths</strong></td>
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<td>Entrepreneurial</td>
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<td>orientation (EO)</td>
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<td>Market orientation</td>
<td>.13 (2.20)</td>
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<td><strong>Hypothesized paths</strong></td>
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<td>H1: RI x EO</td>
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<td>H2: RI x MO</td>
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<td><strong>Goodness of fit indicators:</strong></td>
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<td>p-value</td>
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<tr>
<td>$\Delta \chi^2$ (Ad.f.)</td>
<td>-</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.07</td>
</tr>
<tr>
<td>NNFI</td>
<td>.91</td>
</tr>
<tr>
<td>CFI</td>
<td>.97</td>
</tr>
<tr>
<td>SRMR</td>
<td>.06</td>
</tr>
<tr>
<td>$R^2$</td>
<td>1.6</td>
</tr>
<tr>
<td>$\Delta R^2$</td>
<td>-</td>
</tr>
</tbody>
</table>

*** = p < .01, ** = p<.05, and * = p < .10. Critical t-values for hypothesized paths = 1.645 (5%, one-tail tests) and t-values are reported in parentheses.