The nonlinear relationship between entrepreneurial orientation and sales growth : The moderating effects of slack resources and absorptive capacity

THE NONLINEAR RELATIONSHIP BETWEEN ENTREPRENEURIAL ORIENTATION AND SALES GROWTH: THE MODERATING EFFECTS OF SLACK RESOURCES AND ABSORPTIVE CAPACITY

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ABSTRACT

The present study aims to advance the understanding of the complex and context-dependent relationship between entrepreneurial orientation (EO) and firm sales growth by investigating the linearity assumption and assessing the moderating role of financial slack resources and absorptive capacity in the mature industry context. Departing from some recent EO studies, the analysis based on a dataset of 86 companies operating in the food manufacturing industry suggests that EO has a nonlinear relationship with sales growth. Moreover, the results suggest that in companies with high levels of slack resources, an increase in EO from low to moderate levels accelerates sales growth; however, to capitalize on the sales growth potential of high EO, a high absorptive capacity is also required. Thus, the present study demonstrates a nonlinear effect of EO on sales growth, and particularly from moderate to high levels of EO, the positive moderating effects of absorptive capacity and slack resources.

Keywords: Entrepreneurial orientation (EO), absorptive capacity (ACAP), sales growth, organizational agility, strategic learning, nonlinear model

INTRODUCTION

Sales growth in manufacturing firms requires the reconfiguration of resources to enable firm growth. We argue that such a reconfiguration of resources requires dynamic capabilities (Zahra, Sapienza, & Davidsson, 2006), such as an entrepreneurial orientation (EO) and absorptive capacity (ACAP) together with slack resources. Compared to the knowledge-based service industries (Wiklund & Shepherd, 2003, 2005) and high-tech industries that have previously been studied in EO literature (Wales, Patel, Parida, & Kreiser, 2013), achieving growth in mature and investment-intensive industries requires different context considerations. With rapid emergence of new environmental trends, such as sustainability and digitalization, companies in traditional and stable industries, such as the food industry, should implement radical changes that require heavy investments rather than only focusing on path-dependent incremental developments. In these conditions, while EO can serve as a facilitator for driving large investments that in turn drive firm growth, such a strategic orientation should also be complemented with ACAP as it can play a significant role in risk management by enabling knowledge acquisition, assimilation, exploitation and transformation. In addition, access to slack resources interact with ACAP development providing unique combination for knowledge processing and flexibility in making necessary investments for growth (Bradley, Wiklund, & Shepherd, 2011). This represents a complex view that builds on the dynamic capabilities perspective towards understanding how firms can achieve growth in the context of a mature industry, where growth often requires significant investments and reconfiguration of substantive resources and capabilities.

The previous research on EO is extensive and predominantly suggests a positive direct linear performance effect or a positive but nonlinear effect (Wales, 2016). There seems to be agreement that the EO-performance relationship is positive, but open questions remain regarding

the linearity of the relationship, as well as its mediators and moderators, in different industries and organizational contexts (Wales, 2016). The EO–performance relationship has proven to be affected by external environmental conditions, which suggests the need for increased contextual awareness when interpreting findings on EO (Saeed, Yousafzai, & Engelen, 2014). EO is thought to affect firm success mainly through its impact on innovation performance (Sirén *et al.,* 2017; Alegre & Chiva, 2013; Baker & Sinkula, 2009; Kollmann & Stöckmann, 2014). In addition, EO is not universally advantageous; rather, it may increase experimentation within a company and variety in innovation outcomes, thereby creating a higher probability not only of high returns but also of drastic failures (Patel *et al.*, 2015; Wiklund & Shepherd, 2011). Recent studies acknowledge the potential nonlinearity of the EO-performance relationship and the full complexity of this phenomenon (Dai, Maksimov, Gilbert, & Fernhaber, 2014; Wales, Patel, et al., 2013). Some suggest that financial resources (Wiklund & Shepherd, 2005), transformational leadership behaviors (Engelen et al., 2015), intangible resources (Anderson & Eshima, 2013; Kearney, Soleimanof, & Wales, 2018; Wales, Beliaeva, Shirokova, Stettler, & Gupta, 2018), capabilities such as resource orchestration capability (Wales, Patel, et al., 2013), and learning capabilities such as ACAP (Engelen et al., 2015; Patel et al., 2015; Teece, 2010), strategic learning (Sirén, Hakala, Wincent, & Grichnik, 2017), organizational learning (Altinay, Madanoglu, Vita, & Arasli, 2016), or learning orientation with other strategic orientations (Deutscher, Zapkau, Schwens, Baum, & Kabst, 2016), can facilitate the EO–performance relationship. Given the existing evidence on the EO–performance relationship and its potential moderators, Rauch *et al.* (2009: 781) note that a 'detailed examination of the conditions under which EO is particularly beneficial (or detrimental) to performance is an area where substantial theoretical and empirical contributions can be made in future research'. Thus, the EO literature

would benefit from studies on the EO–performance relationship that test possible nonlinearities and potential moderators in well-specified contextual settings, because it is likely that capability combinations vary depending on the context.

To address the complex relationship between EO and growth performance and to extend the current literature, the present study intends to answer the following research question: To what extent is the relationship between EO and sales growth nonlinear, and how do EO, ACAP and slack resources interact to improve sales growth? First, to contribute to the existing literature on the relationship between EO and sales growth, we address the nonlinearity assumption in the context of well-established traditional industries and mature markets (Lee, Lee, & Pennings, 2001). As a second contribution, this study analyzes a two-way moderation effect wherein ACAP and slack resources moderate the nonlinear relationship between EO and sales growth. The present study provides these contributions in the particular context of small food manufacturing companies, extending previous studies focusing on the linearity assumption of EO-sales growth. We address the interplay between ACAP and slack and provide further evidence on the positive role of slack in interaction with ACAP in the relationship between EO and sales growth (Bradley et al., 2011). These results can guide organizations to consider the optimal level of EO and required resources and capabilities when searching for a suitable growth strategy.

THEORY AND HYPOTHESES

The direct nonlinear effect of entrepreneurial orientation on sales growth

Generally, in the previous literature, EO has been defined as the strategy-making practices, posture and behaviors that are entrepreneurial (Anderson, Covin, & Slevin, 2009: 220). Thus, EO

represents an organizational orientation, a posture towards renewal involving dimensions such as innovativeness, risk taking, and proactiveness (Miller, 1983). According to the vast amount of prior research, EO positively affects firm sales growth. Although the correlation between EO and sales growth has been credibly demonstrated, some studies have presented doubts regarding the linearity of this relationship (Wales, Patel, et al., 2013). In particular, several seminal reviews and a meta-analysis have found a variety of shortcomings in existing empirical research (Rauch *et al.*, 2009; Wiklund & Shepherd, 2011) and suggest that the nature of the relationship may be affected by the contextual setting (Cui, Fan, Guo, & Fan, 2018; Saeed et al., 2014). Researchers have begun to identify problems with the linearity assumption and have started to test for nonlinear effects (Dai et al., 2014; Wales, Patel, et al., 2013). Context may influence the linearity of the effect and thus should be carefully considered (Gonzalez & de Melo, 2018).

The existing literature defines EO as an entrepreneurial strategic posture strongly characterized by a willingness to proactively observe and capture new market opportunities (Wales, Patel, et al., 2013). Proactive firms benefit from being early to market; active with regards to product, service, and process development; and effective in searching for new opportunities in other industries (Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005). From low to moderate levels of EO, proactiveness may be almost nonexistent, and firms lack the necessary posture to actively engage in new market opportunities. From moderate to high levels of proactiveness, SMEs may enjoy a posture that enables them to capture new and varying opportunities by creating new services and products when markets are actually growing to increase sales (Dai *et al.*, 2014).

The effect of EO on sales growth is inherently based on a firm's willingness to innovate, experiment, renew its organizational practices, and deploy unordinary ideas to create novel

product and service offerings (Lumpkin & Dess, 1996). From low to moderate levels of EO and innovativeness, firms are limited in terms of their ability to expand the scope of their products and services and instead focus on incrementally improving their offerings (i.e. exploitation strategy), which generates slower growth than more innovative new market introductions (Troilo, De Luca, & Atuahene-Gima, 2014). Without the capacity for reconfiguring resources to create innovative products or services, firms with low to moderate levels of innovativeness are limited to incremental improvements (Ali & Park, 2016; Zhao, Li, Lee, & Chen, 2011). From moderate to high levels of innovativeness, firm possess capacity to create new, innovative products and services and have the capacity for more radical innovations. Explorative innovations may not only expand existing revenue generation but also originate new revenue streams, such as product and service diversification or new market entry, leading to high growth.

Considering that the costs of innovation are created ex-ante to market entry and financial returns, risk taking is needed to capture the sales growth potential of new product and market opportunities. Risk-averse firms that focus on the exploitation of their existing product and service portfolio may enjoy high performance for short periods of time but may be unable to capture highly innovative, more exploratory business opportunities that could drive higher growth. This proposed relationship maybe even more evident in the context of a mature industry. Thus, some studies seem to coin this as an exploitation trap (Sirén, Kohtamäki, & Kuckertz, 2012). In contrast, the capture of sales growth effects from EO requires moderate to high levels of risk taking to make the required investments to capture product and market opportunities. Thus, firms that enjoy higher risk taking capacity are likelier to engage with opportunities, whereas firms with a low to moderate risk taking propensity may be required to overlook some business opportunities because of the business risk (Neck & Manz, 1996). A high capacity to

take risks may be a required propensity in mature industries, where capturing opportunities requires investments and hence risk taking.

Finally, to summarize, firms with a moderate to high level of EO may have a greater tendency to diversify their businesses (Sapienza, De Clercq, & Sandberg, 2005). A high level of EO is likely to be associated with highly explorative strategies (Kollmann & Stöckmann, 2014), where the capacity to diversify business leads to new attractive sales growth opportunities for firms operating in mature markets. Thus, firms with a moderate to high level of EO are likely to benefit from broadening their product scope to accelerate sales growth (Jiang, Liu, Fey, & Jiang, 2018). Consistent with the dynamic capability literature and the emphasis on resource reconfiguration (Teece, 2007), the effective implementation of EO may requires an emphasis on EO as a strategic posture to implement EO throughout an organization's culture and structures and affect investment decisions (Wooldridge & Floyd, 1990). Therefore, a higher level of EO is required to transform an entrepreneurial mindset into strategic initiatives and investments to facilitate growth. The nonlinear effect of EO becomes understandable in the context of a mature industry, wherein significant growth effects may be more difficult to achieve than in knowledge-based firms (Wiklund & Shepherd, 2003, 2005), where growth may not require such physical investments as in manufacturing facilities. To achieve significant sales growth in mature markets, firms need moderate to high levels of EO.

Hypothesis 1: A firm's EO exhibits a nonlinear and J-shaped relationship with sales growth in mature industry.

The moderating role of absorptive capacity and slack resources

Prior research has found that entrepreneurial firms benefit from a broad scope of resources and capabilities (Rauch et al., 2009; Wales, 2016). Here, we studied the effect of slack resources and ACAP in the nonlinear relationship between EO and sales growth. By slack resources, we mean financial slack, representing 'potentially utilizable resources that can be diverted or redeployed for the achievement of organizational goals' (George, 2005: 661), which may be created by initial capital or prior profits (George, 2005; Kim, Kim, & Lee, 2008) to enable a firm to utilize complementary external resources from the market (Baker, Miner, & Eesley, 2003; Garud & Karnøe, 2003; Sciascia, D'Oria, Bruni, & Larrañeta, 2014) to engage in new growth opportunities. By ACAP, we refer to processes and routines facilitating knowledge acquisition, assimilation, transformation and exploitation (Jansen, Van den Bosch, & Volberda, 2005; Patel et al., 2015; Rakthin, Calantone, & Wang, 2016; Zahra & George, 2002). Building on hypothesis one, we argue that ACAP and slack resources can facilitate the nonlinear effect of EO on sales growth.

It has been argued that the effect of EO on sales growth may be nonlinear. Here, we suggest that the interplay among EO, ACAP and slack resources leads to a U-shaped curve in which the effect of low to moderate levels of EO with high ACAP and slack slightly decreases sales growth. By contrast, in the presence of low to moderate levels of EO with low ACAP and high slack, slight increases in EO have a positive effect on sales growth. Beginning from the former case, some firms may benefit from a combination of low to moderate EO, high ACAP and high slack to achieve reasonable sales growth. These types of small firms that have a high stance regarding learning are capable of generating increasing sales just by using slack resources and ACAP to serve their existing customer base better and hence, with relatively little

proactiveness, innovativeness and risk taking, increase sales (Keh, Nguyen, & Ng, 2007). These types of firms, with low EO and high ACAP and slack resources, are likely to utilize an exploitation strategy and incremental learning (Raisch, Birkinshaw, Probst, & Tushman, 2009) and may possess the necessary capabilities to improve sales growth through low-risk activities (Zahra & George, 2002) by adjusting operations with respect to existing customers. In fact, in such cases of low EO and high ACAP, small increases in EO could lead to harmful results, as slight increases in EO could lead to a search for new customers or product markets distracts the firm by initiating learning processes while transferring attention away from the current customer base to new markets without providing a significant level of EO to really capture the sales benefits. Hence, in these firms with high ACAP and high slack, slight increases from low to moderate levels of EO would cause a distraction and decrease sales to current customers instead of producing positive sales outcomes. The universal benefits of EO (Patel et al., 2015; Wiklund & Shepherd, 2011) and ACAP (Sirén & Kohtamäki, 2016; Wales, Parida, & Patel, 2013) have been challenged in previous studies.

Instead, cases with low to moderate EO and low ACAP represent firms with very low entrepreneurial and learning capabilities but high existing slack resources. These firms generate decreasing sales returns while taking a very passive stance regarding learning and innovation. In these firms, even a slight increase in EO from low to moderate levels improves firm sales growth by increasing entrepreneurial activity, without steering attention away from the current customer base due to low learning capacity (low ACAP). Hence, these types of passive firms with low learning capacity would benefit from slight increases in EO, as an increasing entrepreneurial posture could improve the sales activity of such a firm leading to positive sales outcomes.

To summarize, in firms with high ACAP and slack, slight increases in EO from a low to moderate level may distract the front-end sales organization and hence cause negative sales outcomes, while in low-ACAP firms, increases in EO may increase sales growth by improving sales activity without losing focus.

Hypothesis 2a: Firms with high ACAP and high slack resources exhibit a decrease in sales growth when employing low to moderate levels of EO. Firms with low ACAP and high slack resources exhibit an increase in sales growth when employing low to moderate levels of EO.

From moderate to high levels of EO, the relationship between EO and sales growth becomes positive, in an interaction with ACAP and slack resources. Benefiting from entrepreneurial activities in mature industries requires moderate to high level of EO. In these instances, the interplay between slack resources and ACAP may facilitate the effect of a moderate to high level of EO on sales growth based on the three primary arguments presented below.

First, slack resources are often considered an important enabler of firm growth in firms that suffer from the liability of smallness (Fernhaber & Patel, 2012). In these firms, together with a high knowledge processing capacity (ACAP), slack resources enable flexibility, which is important for experimentation, innovation, diversification, and growth facilitated by ACAP (Azadegan, Patel, & Parida, 2013; Cadogan, Boso, Story, & Adeola, 2016; Larrañeta, Zahra, González, Luis, & González, 2012; Wiklund & Shepherd, 2005). Previous studies have acknowledged that slack resources alone are an insufficient enabler of growth (Sirmon, Hitt, & Ireland, 2007; Vanacker, Collewaert, & Paeleman, 2013), and that capturing the benefits from

slack requires an entrepreneurial mindset (EO) (Simsek, Veiga, & Lubatkin, 2007) and effective knowledge creation and exploitation processes (ACAP) (Long & Vickers-Koch, 1995; Nohria & Gulati, 1996; Parida & Örtqvist, 2015; Wales et al., 2018).

Second, lack of learning resources has been argued to potentially inhibit the proactive capitalization of new market opportunities (Grimpe & Sofka, 2009). Proactive ventures would benefit from trial-and-error practices (Covin, Green, & Slevin, 2006; McGrath, 1995) and from the capacity to adapt and adjust (Sirén et al., 2012) flexible slack resources (Bradley et al., 2011). Moreover, the information-processing approach suggests that ACAP, together with flexible resources, can provide a means to decrease the time to market, thereby facilitating renewal and growth (Sinkula, 1994; Song, Van Der Bij, & Weggeman, 2005). Hence, firms with a moderate to high level of proactiveness would benefit from the interaction with slack resources and ACAP.

Third, highly innovative experimentation processes tend to fail every now and then, and, from moderate to high levels of innovativeness, sometimes rather drastically (Patel et al., 2015). On these occasions, flexible slack resources, together with effective knowledge processing, may facilitate improved recovery by capturing customer reactions. When new innovative market entries (e.g., new product features) do not satisfy customer preferences, flexible, adaptive and entrepreneurial firms can then convert these observations into prompt corrective actions (Liao, Welsch, & Stoica, 2003; Sirén & Kohtamäki, 2016). Failure to respond appropriately to market reactions - especially in projects characterized by the high failure costs, such as those in investment intensive mature industries - may lead to negative performance outcomes (Patel et al., 2015). Thus, firms without the necessary dynamic capability for resource reconfiguration (Danneels, 2010; Teece, 2007), such as ACAP and flexible resources, would not be able to fully leverage prior experiences and existing knowledge to take advantage of potential market

opportunities identified through entrepreneurial proactivity (Anderson & Eshima, 2013; Solís-Molina, Hernández-Espallardo, & Rodríguez-Orejuela, 2018). Therefore, especially for smaller firms where failure in selected ventures could drain limited slack resources, ACAP may be even more important.

Finally, the pursuit of high-risk opportunities can benefit from flexible resources and high ACAP. Slack resources and ACAP may also enable higher risk taking by adding market knowledge to the entrepreneurial opportunity recognition. Further, slack resources together with ACAP may enable improved control of risk taking by enabling improved knowledge acquisition and processing for improved decision making rationale. Finally, flexible resources together with ACAP may facilitate the implementation of risky investment decisions. Slack resources together with ACAP can facilitate improved management of the implementation (Sirén & Kohtamäki, 2016) and decrease resistance to change (Engelen et al., 2015), also enabling improved utilization of network partners (Lane, Salk, & Lyles, 2001; Rothaermel & Alexandre, 2009).

Thus, EO, together with slack resources and ACAP, can facilitate efforts to overcome the constraints of an entrepreneurial strategic posture (Covin & Slevin, 1991; Hornsby, Naffziger, Kuratko, & Montagno, 1993) and improve the quality of opportunity recognition and exploitation to drive sales growth (Patel et al., 2015) (figure 1). In summary, SMEs that operate in mature industries and search for high growth benefit from the moderate to high levels of EO, slack resources and ACAP, as proactive and innovative risk taking is accompanied by flexible resources and improved knowledge utilization process - a strong entrepreneurial posture in combination with flexible resources and high capacity for learning.

Hypothesis 2b: An increase in EO from a moderate to a high level requires interaction with both high levels of slack resources and ACAP to achieve sales growth.

PLEASE ADD FIGURE 1 HERE

METHODS

Data collection, response pattern, and respondents

The study deploys two sources of data – primary survey data and secondary financial data – from Finnish food manufacturing companies. The food manufacturing industry was selected for this study because we wanted to investigate the phenomena of interest in a traditional product industry that is relatively stable but characterized by the emergence of new products and in which companies must continuously absorb new knowledge. Because EO and ACAP have typically been studied in high-tech sectors, we considered that the food industry might be an interesting alternative sector to study these phenomena, recognizing that financial slack should play a particularly important role in stable industries (Bradley et al., 2011). Moreover, the focus on a single industry enabled the researchers to avoid the potential noise that would emerge from multiple industries (Parida & Örtqvist, 2015; Patel et al., 2015). The sample was selected by gathering financial data from the ORBIS database of companies that report their primary industry class to be NACE10 (Food Manufacturing) and employ more than five people. Then, we called all 343 companies, 293 of which we spoke with. Thereafter, the CEOs and managers from 255 companies agreed to provide their email for a survey questionnaire. After two email reminders, we received 118 answers, 108 of which had been fully completed and had names on them, enabling us to identify the company and link it to the financial data. Overall, 97

respondents reported holding a CEO or executive position, whereas 11 reported holding a managerial position. Of these companies, 87 had all of the required financial information available to measure sales growth, size, age, and slack resources between 2009 and 2012. Finally, we removed one outlier, representing an average annual sales growth of 325 %, which was the highest value in the data, leaving us with a data set of 86 observations in total.

Analysis method and measurements

The constructs and questions were adapted from prior studies (Appendix a). To ensure translation equivalence, items were translated into Finnish and then back-translated into English by another researcher (Brislin, 1970). For the independent variables, controls, and moderators, a retrospective measurement approach was applied, as suggested by prior studies (Kumar, Petersen, & Leone, 2013; Miller, Cardinal, & Glick, 1997).This means that the survey data were collected in 2013, and the respondents were asked to consider years 2010, 2011, and 2012 when answering the questions.

Sales growth. We operationalized the sales growth percentage by calculating the average annual change in turnover between 2009 and 2012 (Walter, Auer, & Ritter, 2006). Company turnover information was obtained from the ORBIS database.

Entrepreneurial orientation. Our study defined EO as a strategic posture towards growth and renewal through innovativeness, proactiveness, and risk taking. To measure these three dimensions, we employed a 9-item measure used in a recent study by Patel *et al.* (2015) and originally drawn from Covin and Slevin (1989). Each dimension was measured based on

respondents' agreement or disagreement with three statements ('To what extent do the following statements represent your organization? 1 = fully disagree, 7 = fully agree'). The structural model for the three-dimensional construct demonstrated a good model fit: $\chi 2 = 36.97$, degrees of freedom (d.f.) = 23, $p = 0.033$, $\chi 2/d.f. = 1.61$, RMSEA = 0.075, and CFI = 0.973 (Bollen, 1989; Hu & Bentler, 1999). We released two error variance relationships within the main factors. The loadings for both the first- and second-order factors ranged from 0.611 to 0.998. Values for Cronbach's alpha, composite reliability and average variance extracted for both the first-order (α = .87, .79, .79; CR = .95, .90, .86; AVE = .86, .75, .67) and second-order factors (α = .89, CR = .94, AVE = .84) were acceptable compared to the suggested threshold values ($\alpha > .60$, CR > .70, AVE > .50).

Absorptive capacity. ACAP was defined 'as a set of organizational routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to produce a dynamic organizational capability' (Zahra & George, 2002: 186). To measure ACAP, we used a well-established, 22-item, 7-point scale from Zahra and George (2002) that was further developed by Jansen *et al.* (2005). Four items were dropped due to low loadings (<0.225) on their main factors. The rest of the 18 items, representing the four factors of knowledge acquisition, assimilation, transformation, and exploitation, indicated a good model fit: $\chi 2 = 184.74$, d.f. = 126, $p = 0.001$, $\chi 2/d.f. = 1.47$, RMSEA = 0.066, and CFI = 0.914 (Bollen, 1989; Hu & Bentler, 1999). We released six error variance relationships within the main factors. The loadings for both first- and second-order factors ranged from 0.429 to 0.993, with the exception of two items that loaded 0.332 and 0.360 on their first-order factors. Similarly, the factor representing the first dimension of the construct loaded 0.232 on the second-order factor. As all of the loadings represented

statistically significant values ($p < 0.05$), we decided not to remove any additional items to maintain the content validity of the construct. The Cronbach's alpha, composite reliability and average variance extracted for both the first-order (α = .86, .64, .74, .78; CR = .96, .89, .91, .92; AVE = .87, .75, .63, .67) and second-order factors (α = .86, CR = .92, AVE = .77) were considered acceptable. To ensure the robustness of our 18-item construct, we ran the same regression models with a 16-item construct with loadings for the first-order factors between 0.434 and 0.868 and loadings for the second-order factors of 0.337, 0.700, 0.880 and 0.942, with no impact on the results. In addition, complete removal of the first dimension did not significantly change the results.

Slack resources. As Bradley *et al.* (2011: 544) state, 'financial slack… is highly discretionary and can be rapidly absorbed into new uses'. The current ratio was utilized to indicate a firm's redundant reconfigurable financial slack resources that could be used for the achievement of organizational goals (George, 2005). The current ratio was calculated as an annual average of years 2010, 2011, and 2012. Current ratio information was accessed through the ORBIS database.

Control variables. The effects of firm age, firm size and competitive intensity on the dependent variable were controlled. Firm age represents the number of years from the firm's establishment until the year 2012. Firm size indicates the average number of employees in years 2010, 2011, and 2012. Both firm age and size were calculated directly from values in the ORBIS database. For competitive intensity, we deployed a 5-item, 5-point scale borrowed from Jaworski and Kohli (1993). CFA indicated a good model fit: $\chi 2 = 1.99$, d.f. = 4, $p = 0.74$, $\chi 2/\text{d.f.} = 0.49$,

RMSEA = 0.000, and CFI = 1.000 (Bollen, 1989; Hu & Bentler, 1999). The loadings for the single-factor solution ranged from 0.476 to 0.870, with the exception of one result (0.340). We released one error variance relationship inside a single factor. One item had a slightly low loading, but we decided to keep it in order to use the original scale because removing the item did not influence the results. In addition, the Cronbach's alpha, composite reliability and average extracted variance values (α = .76, CR = .96, AVE = .83) were deemed acceptable.

RESULTS

In this section, we present the results in two tables and two plotted graphs. First, we describe the observations in a correlation matrix of dependent, independent, and control variables (table 1). Then, we interpret the regression models (table 2) and plotted results (figures 1 and 2). The plotted results represent the data range of the actual observations to ensure the correct interpretation of the findings (Haans, Pieters, & He, 2016; Lind & Mehlum, 2010).

The correlations between the mean-centered variables presented in table 1 indicate that EO is the only variable with a statistically significant correlation with the dependent variable sales growth (0.33; <0.05). Although there are no major correlations between independent variables, we decided to test the data for multicollinearity. Test scores between all constructs were present under a threshold value of 10 in a variation inflation factor (VIF) test (Arya, 2007). Given that the statistically significant correlation between EO and ACAP has a VIF value of 2.09, the test suggests that our model is free from multicollinearity.

PLEASE ADD TABLE 1 HERE

Due to the limitations of testing nonlinear relationships with structural equation modeling (Gefen, Straub, & Boudreau, 2000), we used STATA 13.1 software to test our hypothesis with mean-centered constructs through an ordinary least squares regression (Aiken & West, 1991; Gefen et al., 2000). In table 2, we present the six models studied in this paper. The first model tests the effects of control variables, and the second model adds the independent variables. The third model tests the first hypothesis of a nonlinear relationship between EO and sales growth. The fourth model examines the moderation effect of ACAP, whereas the fifth model does the same for slack resources. Finally, the sixth model tests the second hypothesis by investigating the interaction effects of ACAP and slack resources on the EO and sales growth relationship. To confirm the relative importance of individual effects, we tested the changes in effect sizes with Cohen's effect size (f 2) test upon the removal of direct EO, EO squared, and EO squared moderated by ACAP and slack resources. All changes in effect size were statistically significant, suggesting that individually, direct EO ($f^2 = 0.11$) and EO squared ($f^2 = 0.10$) effects make weak ($0.02 < f^2 < 0.15$) contributions to explaining the variance of an endogenous variable (sales growth), whereas when taken together ($f^2 = 0.22$), they collectively make a medium ($0.35 < f^2 = < 0.15$) contribution. The individual size effect of EO squared moderated with ACAP and slack resources ($f^2 = 0.41$) shows a large ($f^2 > = 0.35$) contribution (Wales, Patel, et al., 2013).

PLEASE ADD TABLE 2 HERE

In the first model, we test the effects of control variables on sales growth. None of the control variables – firm age ($\beta = -0.20$; n.s.), firm size ($\beta = -0.19$; n.s.) and competitive intensity

($\beta = -0.12$; n.s.) – produce a statistically significant effect. Model 1 explains only 6 % of the adjusted variation in sales growth.

Model 2 presents the effects of independent variables, EO, ACAP, and slack resources on sales growth. An analysis demonstrates the statistically significant impact of EO on sales growth ($\beta = 0.32$; $p \leq 0.01$). The effects of ACAP ($\beta = -0.09$; n.s.) and slack resources ($\beta = -0.02$; n.s.) on sales growth were not statistically significant. Model 2 predicts 15 % of sales growth and is statistically significantly different from the baseline model (Δ Adjusted R2 = 0.09, F = 3.40, d.f. = 6, 79, $p<0.05$).

Model 3 tests the nonlinearity of EO and shows the statistically significant nonlinear effect of EO on sales growth ($\beta = 0.29$; $p \leq 0.01$). Figure 2 show the plotted results, which indicate that the nonlinear relationship is not statistically significant from low to early moderate levels but is statistically significant from early moderate to high levels. The plotted results suggest that the relationship is J-shaped. Model 3 explains 21 % of adjusted variation in sales growth and shows a statistically significantly improved prediction for sales growth compared to model 2 (Δ Adjusted R2 = 0.06, F = 4.24, d.f. = 7, 78, $p<0.01$). The possible nonlinearity of ACAP and slack resources and EO's cubic term were also tested, but no statistically significant effects were found. This analysis supports our first hypothesis.

PLEASE ADD FIGURE 2 HERE

Model 4 tests the interaction effect of ACAP and squared EO on sales growth. An analysis indicates that the interaction effect is not statistically significant ($\beta = 0.22$; n.s.). Although model 4 shows a marginally higher shared adjusted variance in sales growth compared

with model 3, the improvement is not statistically significant (Δ Adjusted R2 = 0.01, F = 3.59, d.f. = 9, 76, n.s.).

Model 5 examines the possible interaction effect of slack resources and squared EO on sales growth. No statistically significant moderation effect is found (β = 0.25; n.s.). Compared to the best model so far (model 3), model 5 presents no statistically significant enhancement in explaining the adjusted variance in sales growth (Δ Adjusted R2 = 0.00, F = 3.51, d.f. = 9, 76, n.s.).

Model 6 adds the simultaneous interaction effects of ACAP, slack resources, and squared EO on sales growth. An analysis shows that a statistically significant simultaneous interaction effect exists (β = 0.66; $p \leq .001$). Model 6 explains 38 % of the adjusted variance in sales growth and represents statistically significant and highly improved predictors compared with model 3 (Δ Adjusted R2 = 0.17, F = 4.78, d.f. = 14, 71, $p<0.001$). To explicate and interpret the nature of the interaction effects, the results were plotted with 95% confidence intervals. The plotted results indicated that when slack resources are low, the interaction among squared EO, ACAP, and slack resources does not statistically significantly deviate from the sales growth mean. In contrast, when slack resources are high, squared EO, ACAP, and slack resources interact to influence sales growth (figure 3). The interaction between squared EO, high slack resources, and low ACAP presents a statistically significant converted U-shaped effect on sales growth, whereas the interaction between squared EO, high slack resources, and high ACAP presents a U-shaped effect on sales growth (figure 3).

PLEASE ADD FIGURE 3 HERE

Whereas the regression analysis (model 6) confirms the statistically significant interaction between squared EO, ACAP and slack resources for predicting sales growth, the plotted results suggest that a high level of slack resources is required to exhibit above- or below-average sales growth. In addition, an increase of EO in firms possessing slack resources but a low level of ACAP can enhance sales growth performance up to a certain point. However, whether a firm reaches its full sales growth potential when employing very high EO appears to be dependent on a high level of ACAP. The plotted results indicate that high EO and high slack resources together with a high ACAP have a positive interaction effect on sales growth, whereas with a low level of ACAP, the interaction is negative. Moreover, the results suggest that if a firm possesses a high level of ACAP and slack resources, a high level of EO is not required to attain high sales growth performance. Indeed, an increase in EO from low to moderate levels, when ACAP and slack are high, appears to hinder sales growth performance. In summary, the results support hypothesis 1, indicating a nonlinear relationship between EO and sales growth. Furthermore, the findings support hypothesis 2a by showing that the simultaneous existence of high ACAP and slack resources is necessary to fully capture the sales growth potential of high EO. In addition, the results support hypothesis 2b, which posits that high EO is not required to achieve high sales growth when a company simultaneously possesses high ACAP and slack resources; in fact, modest increases in EO decrease sales growth.

Robustness checks

To ensure discriminant validity, we ran a correlation matrix between all dimensions of EO and ACAP and found that all correlations were below the 0.70 threshold value, suggesting that the dimensions measure different constructs. We also tested the models of our study with other

growth measures similar to those of Wales et al. (2012), namely, profit (EBIT) growth and ROA growth, finding no statistically significant relationships.

In addition, to control for the effects of past sales growth performance, we ran the study models with an additional control variable: the change in turnover between 2008 and 2009. The results indicated that the main findings of this study are robust to past performance. In fact, the direct linear effect of EO on sales growth (model 2) lost its statistical significance, whereas the results of model 3 (EO squared) retained their significance and provided a better fit compared to models 1 and 2 (F test). This strengthens the finding of EO's nonlinear relationship with sales growth. Furthermore, running model 6 demonstrated that whereas past sales growth predicts forthcoming sales growth ($\beta = 0.28$; $p \leq 0.01$), the interaction between EO squared, ACAP and slack provides an even better predictor ($\beta = 0.65$; $p \leq 0.01$). These results are aligned with the findings reported in the paper.

DISCUSSION AND IMPLICATIONS

Theoretical contribution

The present study was conducted to extend the existing research on the EO–firm growth relationship by investigating the potential direct nonlinear effect of EO on sales growth in the context of mature markets and assessing the assumed positive moderating effects of financial slack resources and ACAP. Thus, this study makes two main contributions to address the shortcomings of prior empirical research (Rauch *et al.*, 2009; Wiklund & Shepherd, 2011). As the first contribution, the study challenges the linearity of the EO–performance relationship (Dai et al., 2014; Wales, Patel, et al., 2013). Finding the J-shaped relationship between EO and sales growth is an important contribution because it increases the understanding of the nature of EO in

an industry-wide homogeneous sample of smaller firms operating in a mature market. Whereas prior studies have mainly argued that the EO–performance relationship is linear (Rauch *et al.*, 2009; Wiklund & Shepherd, 2011) and less often suggested an inverted U-shaped relationship (Dai et al., 2014; Wales, Patel, et al., 2013), our results show that the nature of the relationship may vary based on the contextual setting (Saeed *et al.*, 2014). Based on our empirical analysis of small firms operating in mature markets, the findings suggest that at lower levels of EO, EO does not explain the increase in sales growth. Instead, it seems that with moderate to high levels of EO, the effect of EO becomes positive and statistically significant with increasing strength. Given that EO indicates a tendency towards entrepreneurial behavior (Kollmann & Stöckmann, 2014) and that the chosen strategy requires a commitment and visibility to enable efficient execution of entrepreneurial endeavors (Wooldridge & Floyd, 1990), higher levels of EO are more likely to generate the required emphasis on growth efforts based on innovative new product and service entries. With low to moderate levels of EO, organizations are in danger of missing the capacity to implement strategic initiatives and investments to enable sales growth. To achieve fast growth, firms operating in mature industries are likely to be forced to be highly proactive and innovative in seeking unconventional opportunities, suggesting the need for high levels of EO. Thus, because an increase in EO tends to involve increasingly costly and risky investment decisions and the resources of small firms are likely to be scarce, the choice of EO as a strategic posture requires dedication and commitment to capture the sales growth potential of those few carefully selected opportunities.

As the second main contribution, the study demonstrates the moderating impact of financial slack resources and ACAP on the nonlinear EO–sales growth relationship. From low to moderate levels of EO, together with slack resources, high ACAP seem to produce good sales

growth, which EO fails to facilitate. In these instances, slight increases in EO may distract the front-end sales organization away from a firm's existing customer base to search for new customer markets, which the firm is unable to effectively capitalize for sales growth. By contrast, in the absence of ACAP, even slight increases in EO seem to increase sales growth. Finally, with a moderate to high level of EO, interaction with slack resources and ACAP increases sales growth. With moderate to high levels of EO, ACAP becomes increasingly important, as these firms become more active in exploring new business opportunities involving highly innovative and increasingly risky endeavors for which advanced knowledge processing is required.

Hence, as a conclusion, we can highlight the important role of the interaction among moderate to high levels of EO, slack resources and ACAP. Based on the present study conducted in the context of a mature industry, EO, slack resources and ACAP seem to provide important dynamic capabilities that enable firm sales growth, but this effect requires that EO exceeds the threshold level becoming moderate to high. These results are context–specific, emerging from the mature and investment-intensive context, which requires a high level of EO, slack resources and ACAP, to facilitate sales growth. These findings answer calls for the investigation of possible moderators in specific circumstances in which EO is especially beneficial or detrimental (Rauch *et al.*, 2009).

Managerial contribution

The present study provides some interesting managerial implications. The relationship between EO and sales growth was found to be nonlinear, and above-average industry sales growth performance appears to be realized only with moderate to high levels of EO. Thus, the results suggest that if firms operating in mature industries want to gain the benefits of EO in the form of sales growth, they should aim to develop a strong entrepreneurial mindset. This may take a long

time and require a vast amount of effort, considering how difficult it is to develop an organizational culture and structures in which EO is embedded. However, building growth efforts on new product and service opportunities, especially in mature industries, requires visibility and commitment to a chosen entrepreneurial strategy to facilitate strategy implementation and capture full sales growth potential.

Regarding the second main contribution, the positive moderating effect of ACAP and financial slack resources on the EO–sales growth relationship suggests that these complementary resources and capabilities benefit firms that are striving to achieve the maximum sales growth effect of EO. These results suggest that firms with aggressive entrepreneurial growth strategies should pay particular attention to the development of learning capabilities as well as ensure the availability of necessary financial resources, as these resources and capabilities, together with moderate to high levels of EO, facilitate sales growth. Specific learning capabilities may provide the necessary support to control the risks emerging from high EO. Complementary resources and capabilities may be especially important to smaller firms that are able to engage in a limited number of opportunities, and failure in entrepreneurial endeavors may directly lead to outcomes of negative firm performance. In addition, our findings suggest that for growth efforts that exploit existing product and service portfolios, in which EO is not necessarily required to achieve growth, slack resources and learning capabilities appear to be beneficial.

Limitations and suggestions for further research

Despite its solid execution, the present study is not without limitations. First, the results emerge from the context of the food industry and Finnish national culture, which may be unique to an extent. This well-specified contextual setting enables the first main contribution of the study,

which is showing that the nature of the EO-performance relationship may vary based on context. Moreover, these results open avenues for future studies in other industries and cultural contexts. Whereas many prior studies concentrate on the effects of EO in dynamic industries, the novel results of this study suggest that the effects of EO may vary between stable and dynamic industries. Second, this study analyzes the nonlinear relationship between EO and sales growth with the application of ACAP and slack resources as moderating variables. Future studies should continue to test the nonlinearity of the effects of EO on innovation, internationalization, profit, profit growth, and firm market value. The effect on different types of performance variables is likely to vary between different types of performance dimensions. Moreover, the impact of the moderating variables on the nonlinear effects of EO requires further research (Patel et al., 2015). Fuzzy-set analysis might shed some light on these complex relationships (Lisboa, Skarmeas, & Saridakis, 2016). We suggest adding other moderating variables, such as internationalization capabilities, market orientation, network capability, and learning orientations, among other potential moderators. Finally, future research should use qualitative process methodologies to unfold the interaction effect between EO and ACAP. A call exist for in-depth insight into practices and mechanisms underlying the interaction between EO and other phenomena.

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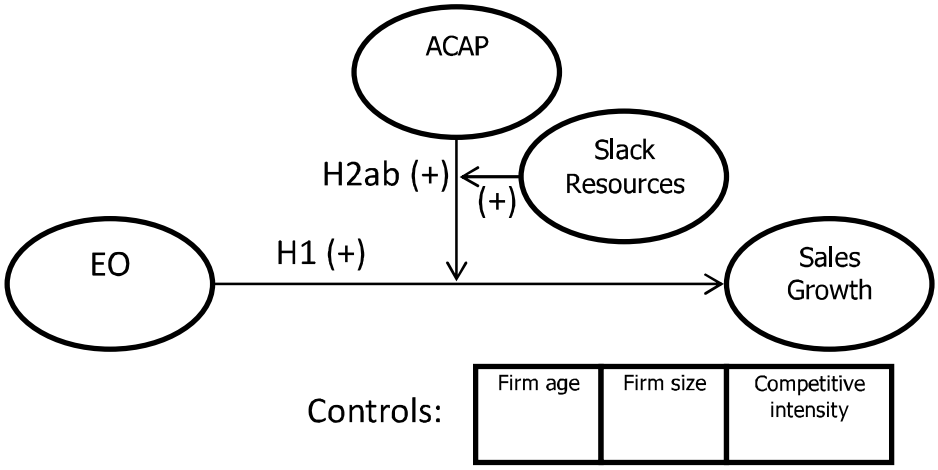

Figure 1. Research model.

Table 1. Mean values, standard deviations and correlations among the constructs and control variables.

		Mean	SD	1.	2.	3.	4.	5.	6.
1.	Sales growth	12.28	19.89	1.00					
2.	Entrepreneurial orientation (EO)	4.41	1.09	0.33*	1.00				
3.	Absorptive capacity (ACAP)	4.83	0.70	0.14	0.29*	1.00			
4.	Slack resources (SR)	1.65	1.56	0.06	0.13	0.06	1.00		
5.	Firm age	27.94	22.93	−0.21	−0.25*	−0.01	0.00	1.00	
6.	Firm size (Number of employees)	37.90	45.99	−0.19	0.05	−0.10	−0.09	0.00	1.00
7.	Competitive intensity	3.88	0.66	−0.13	0.16	0.31*	−0.05	0.06	−0.06

Notes: * indicates that $p < 0.05$ (in two-tailed tests);
SD stands for standard deviation
Mean-centered constructs are deployed to report correlations

Table 2. Results of the hierarchical regression analyses.

Dependent variable: Sales Growth	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Controlled effects:						
Firm age	–0.20	–0.11	–0.15	–0.17	–0.14	–0.20*
Firm size (Number of employees)	–0.19	–0.20*	–0.17	–0.19	–0.17	–0.18
Competitive intensity	–0.12	–0.21	–0.15	–0.13	–0.15	–0.18
Main effects:						
Entrepreneurial orientation (EO)		0.32**	0.40***	0.34**	0.38***	0.15
Absorptive capacity (ACAP)		0.09	0.04	–0.09	0.05	–0.13
Slack resources (SR)		–0.02	–0.03	–0.03	–0.27	0.13
EO squared			0.29**	0.27*	0.33**	0.18
Moderation effects:						
EO * ACAP				–0.01	–	0.03
EO * SR				–	0.05	–0.32
EO * ACAP * SR				–	–	0.17
ACAP * SR				–	–	–0.35*
EO squared * ACAP				0.22	–	0.44**
EO squared * SR					0.25	–0.10
EO squared * ACAP * SR						0.66***
ΔR2 adj.		0.09*,a	0.06**,b	0.01,c	0.00,c	0.17***,c
R^2	0.09	0.21	0.28	0.30	0.29	0.49
Adjusted R^2	0.06	0.15	0.21	0.22	0.21	0.38
F	2.77*	3.40**	4.24***	3.59***	3.51**	4.78***

Notes: Standardized coefficients are reported. [a] Compared to Model 1. [b] Compared to Model 2. [c] Compared to Model 3. *p < 0.05. **p < 0.01. ***p < 0.001.

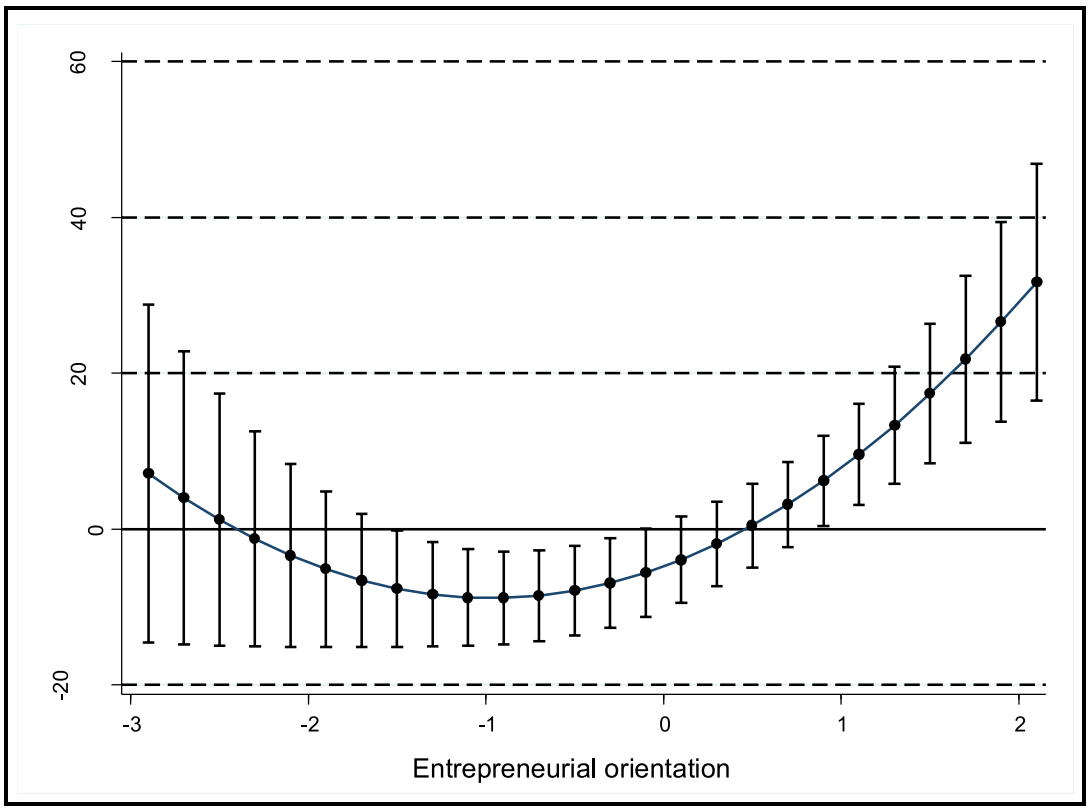

Figure 2. Nonlinear effect of entrepreneurial orientation on sales growth (95 % confidence intervals).

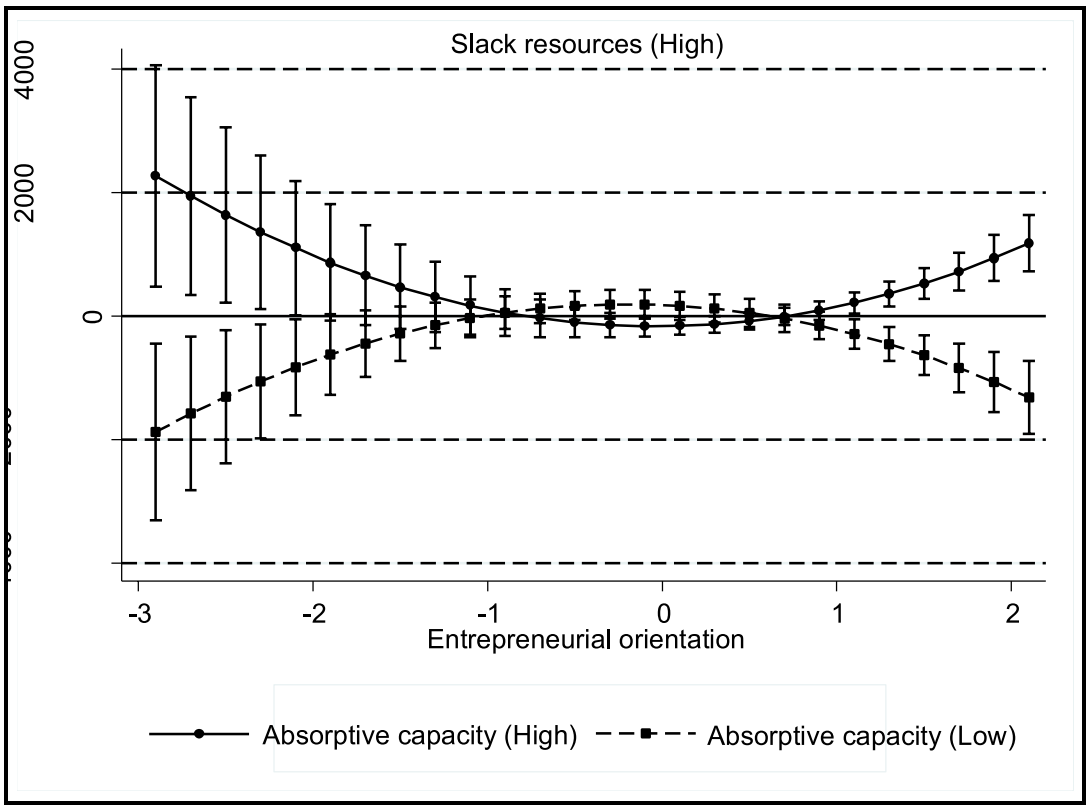

Figure 3. Nonlinear interaction of entrepreneurial orientation, absorptive capacity, and slack resources on sales growth when slack resources are high (95 % confidence intervals).

APPENDIX

Appendix a. Factor loadings for the constructs.

Entrepreneurial orientation		Loading
Proactiveness		
1	...we tend to be ahead of competitors regarding the introduction of products and ideas	.879
2	...we typically initiate actions, which competitors then respond to	.782
3	...we are often the first to introduce new products and services, new ways to produce these or new administrative methods	.866
Innovativeness		
4	...we have a strong emphasis on R&D, technological leadership, and innovation	.900
5	...changes in product or service lines have usually been quite dramatic to achieve competitive advantage	.764
6	...one of our primary goals is to launch many new lines of products/services in the next 3 years	.703
Risk taking		
7	...we see that bold, wide-ranging acts are necessary to achieve the firm's objectives	.611
8	...we have a strong aptitude for high-risk projects (with chances of high returns)	.786
9	...my firm typically adopts a bold posture when confronted with decisions involving uncertainty to maximize the exploitation of opportunities	.707
Absorptive capacity		
Acquisition		
1	Functional areas in the firm have frequent interactions with external firms to acquire new knowledge…	removed
2	Employees from one functional area regularly visit other functional areas…	.793
3	We collect industry information through informal means (e.g., lunch with industry friends, talks with trade partners)…	removed
4	Other functional areas of our company are hardly visited (reverse-coded)	.902
5	The functional areas of the firm rarely interact (reverse-coded)…	.789
6	We periodically organize special meetings with customers or third parties to acquire new knowledge…	removed
7	Employees regularly approach third parties such as accountants, consultants, or tax consultants	removed
Assimilation		
8	We are slow to recognize shifts in our market (e.g. competition, regulation, demography)	.360
9	New opportunities to serve our clients are quickly understood	.859
10	We quickly analyze and interpret changing market demands	.785
Transformation		
11	Our unit regularly considers the consequences of changing market demands in terms of new products and services	.670
12	Employees record and store newly acquired knowledge for future reference	.533
13	Our unit quickly recognizes the usefulness of new external knowledge to existing knowledge	.707

14	Employees hardly share practical experiences	.429
15	We laboriously grasp the opportunities for our unit from new external knowledge	.332
16	Our unit periodically meets to discuss consequences of market trends and new product development	.608
Exploitation		
17	It is clearly known how activities within our unit should be performed	.650
18	Client complaints fall on deaf ears in our unit	.539
19	Our unit has a clear division of roles and responsibilities	.540
20	We constantly consider how to better exploit knowledge	.762
21	Our unit has difficulty implementing new products and services	.546
22	Employees have a common language regarding our products and services	.519
Competitive intensity		
1.	Competition in our industry is cutthroat	.870
2.	There are many promotion wars in our industry	.340
3.	Anything that one competitor offers, others can match easily	.476
4.	Price competition is a hallmark of our industry	.819
5.	One hears of a new competitive move almost every day	.613