

**Moderating Effect of Environmental Dynamism on the Relationship between a Firm's Entrepreneurial Orientation and Financial Performance**

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# Moderating Effect of Environmental Dynamism on the Relationship between a Firm's Entrepreneurial Orientation and Financial Performance

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## Abstract:

The relationship between entrepreneurial orientation and firm performance has been the focus of numerous empirical studies over the past decade. The conclusions and findings reported are diverse and often conflicting. One possible explanation for mixed findings is that past studies do not take into account the dynamic nature of the industry environment. Using a sample of 192 Swiss firms from several different industries, this study examines the direct effect of entrepreneurial orientation on financial firm performance along with the moderating effect of a dynamic environment on the relationship between entrepreneurial orientation and performance. Results of this study suggest that for firms competing in a highly dynamic environment, the positive effect of an entrepreneurial orientation on financial performance is enhanced.

**Keywords:** entrepreneurial orientation, dynamic environment, financial performance

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## Introduction

At a time when the global economy coupled with global competition is creating rapid changes and intense competition is shortening product life cycles, it is clear that traditional managerial techniques are inadequate to respond properly to these changes or to rapidly changing market conditions. As a result, business organizations are compelled to include entrepreneurial spirit and innovation as an integral part of an overall strategy for business success (Tajeddini, Altinay, and Ratten, 2017; Etemad 2015). In this respect, strategic management scholars have argued that entrepreneurial activities are critically important to the survival, profitability, and growth of modern business organizations (Shan, Song, and Jua 2016).

Strategic management researchers have attempted to understand and explore the causes of business performance variation among multiple-business firms (Makino, Isobe, and Chan 2004). Traditionally, these factors include the inevitable constraints in internal resources (e.g. liquidity problems, knowledge, technology, skill, experience), external forces in developing alliances (Costa, Fontes, and Heitor 2004) and networking with stakeholders (Aarikka-Stenroos and Sandberg 2012) that hinder the firm's ability to grow (Freel 2005).

Over the last past two decades, following the emergence and later development of entrepreneurial strategies and a body of entrepreneurship literature (Choi and Majumdar 2014; Etemad 2015), there has been considerable discussion among scholars to place a disproportionate concentration on the role played by strategic orientation and internal sources to improve firm performance. Strategic decisions and actions are often aimed at producing alternative forms of business success (e.g. customer loyalty, satisfaction, staff retention, market share).

An approach to strategic decision-making referred to as entrepreneurial orientation (EO) emphasizes goals. A firm with an entrepreneurial orientation engages in product market innovation, undertakes somewhat risky ventures, and is first to come up with proactive innovations (Miller and Friesen 1983). Arguably, since competitors, like chasing ghosts, always watch to respond to new products and services, new business models, and new markets (Tajeddini 2016), the ability to sustain competitive advantage in the long run depends heavily upon whether competitors can emulate or overcome this advantage and deliver value to the marketplace (Ahmed and Rafiq 1992).

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Wide-ranging empirical research has produced mixed results raising the question of whether entrepreneurial orientation is always an appropriate strategic orientation or if its relationship with firm performance is multifaceted (Li, Huang, and Tsai 2009). While the quest to explore the key determinants of firm performance has been central to the strategic management field (Saeed, Yousafzai, and Engelen 2014; Shan, Song, and Jua 2016), insufficient attention has been given to the possible moderating effect of a dynamic environment on the relationship between entrepreneurial orientation and financial performance (van Doorn, Heyden, and Volberda 2017).

Building on prior strategic management research (e.g. Doyle and Stern 2006; Lumpkin and Dess 1996; van Doorn, Heyden, and Volberda 2017), we propose that entrepreneurial orientation is key to achieving superior financial performance across a variety of industries. We also propose that a dynamic environment moderates the relationship between entrepreneurial orientation and financial performance. Using data collected from 192 Swiss firms across multiple industries, we developed and empirically tested hypotheses about the direct and interactive effects of entrepreneurial orientation and dynamic environment on a firm's financial performance.

## Background and Hypotheses Development

### Entrepreneurial Orientation and Performance

Entrepreneurial strategy-making or entrepreneurial orientation has been conceptualized as an attribute of a firm supporting entrepreneurial activities associated with the growth, performance, and organizational decision-making proclivity among others (Lumpkin and Dess 1996; Núñez-Pomar et al. 2016). Entrepreneurial orientation (EO) captures the managerial philosophies to promote innovative and learning organizational behaviors, processes, methods, and styles and to develop and implement strategic decisions which encourage such activities (Tajeddini and Mueller 2009, 2012; Li and Li 2009). In their meta-analysis, Rauch et al. (2009) conclude that entrepreneurial orientation can be observed as the strategy-making processes that key decision makers employ to enact their organizational mission, and create competitive advantages.

A number of strategic management scholars (e.g. Brettel, Chomik, and Flatten 2015; Shan, Song, and Jua 2016) have focused on refining the concept of entrepreneurial orientation and exploring its application to strategy formulating, firm performance, and competitive advantage. Research indicates that in firms where an entrepreneurial orientation governs, the strategic decision makers and the culture together create a strong momentum to innovation, take risking, and aggressively pursuing new business opportunities (Dess and Lumpkin 2005).

Strategic thinking in a firm with a strong entrepreneurial orientation is concentrated on achieving firm performance in the long run. Performance goals typically center on long-term and sustainable growth factors such as growth in revenue, assets, and market share over multi-year periods. An entrepreneurial orientation means that by foregoing profits in the short-run and pursuing risky investment opportunities, long-term performance is achieved. On the other hand, more risk-averse organizations tend to follow a slow, incremental process with a focus on short-term business performance measured by profitability and productivity. Within a strategic management paradigm, an entrepreneurial organization is characterized as a process which involves in product/service-market innovation, undertakes fairly risky projects, and is first to produce proactive new products/services, outperforming competitors (Miller and Friesen 1983). In contrast, a non-entrepreneurial organization is conceived as a firm where imitation of new products and services is more preferable to innovation, risk aversion is high, and they would rather follow the market leaders and imitate their product and services instead of leading the industry (Miller and Friesen 1983). In practice, however, it can be argued that some firms in different industries may find it difficult to take financial risks to invest on innovations, be proactive and deploy material, and human resources to new business opportunities (Ratten and Tajeddini 2018; Steinhoff and Burgess 1993).

In the last few years, the relationship between entrepreneurial orientation and business performance has been well established in different industries. For example, Martin and Javalgi (2016) found that under higher competitive intensity conditions, international new ventures with less entrepreneurial orientation and marketing capabilities are likely to view their business performance impaired as customers switch to firms with more marketing capabilities. Using a two dimensional concept of performance (i.e. effectiveness and efficiency), Tajeddini, Elg, and Truaman (2013) reported that entrepreneurial orientation plays as an antecedent of customer orientation, and has an indirect impact on efficiency for the small retail firms. Given the importance of entrepreneurship, more exploration into the entrepreneurial orientation-performance is needed to provide further theoretical insights and practice guidance. More recently, Martin and Javalgi (2016) state that prior research has paid limited attention to indirect impacts in their examination of the entrepreneurial orientation

–performance relationship. They further affirm that it is essential for scholars to examine these indirect effects in different contexts.

Strategic thinking in a company with a strong entrepreneurial orientation is focused on achieving enhanced performance and sustainable competitive advantage in the long run. Performance goals typically center on long-term and sustainable growth factors such as growth in revenue, assets, and market share over multi-year periods. An *entrepreneurial orientation* means that by foregoing profits in the short-run and pursuing risky investment opportunities, long-term performance is achieved. On the other hand, more risk-averse firms tend to follow a slow, incremental process with a focus on short-term business performance measured by profitability and productivity. The assumption is that when top managers are able to effectively scrutinize different opportunities and assess the risk associated with these opportunities in the marketplace, their decision and activities can affect firm financial return and growth. Consistent with prior research, we argue that entrepreneurial orientation has a positive effect on financial performance of SMEs operating in a variety of industries. We hypothesize,

**H<sub>1</sub>:** *Entrepreneurial orientation has a positive effect on financial firm performance.*

## The Moderating Role of Environmental Dynamism

Previous studies suggest that environment in which a firm competes, along with its structure and information processing capabilities, are important factors for growth and development (Koberg, Uhlenbruck, and Sarason 1996). As a general tenet, the contingency theory (situational approach) suggests that there is not one optimal, best, or universal strategy or structure for all firms. Contingency theory posits that firms in uncertain and tentative business environments will demonstrate different behaviors, processes, and capabilities and adjust their management styles to the varying contingencies in the environment (Burns and Stalker 1961; Collis 1994; Miller 1988; Scott 1981). This implies that contingency forces or factors dictate the formulation of the most desirable choice of strategy for firms (Ambos and Schlegelmilch 2007). According to the resource-based view, internal and external environmental factors can neutralize and/or leapfrog or dissipate the advantaged firm by a resource's comparative advantage (Atuahene-Gima, Li, and De Luca 2006).

Dynamism of the environment refers to the speed of change and the unpredictability of change in technologies, variations in customer preference, product demand (market), and product in an industry (Koberg, Uhlenbruck, and Sarason 1996; Martínez-Sánchez et al. 2011). Similarly, various factors such as a shift in an organization's technological capabilities, diffusion and technical change, and/or new competitors may lead to high dynamism in the environment (Boyd, Dess, and Rasheed 1993; Dess and Beard 1984; Mia and Clarke 1999; Simerly and Li 2002). As a result, it may create different threats and opportunities for organizations to implement their strategies (Atuahene-Gima, Li, and De Luca 2006).

A highly dynamic environment makes it difficult for organizations to adopt older or less innovative technologies to keep pace with the changing needs in industries marked by high growth (Coombs and Bierly 2006). Research shows the effect of company resources and competencies on company behavior, operations and performance is contingent upon environmental dynamism cues (Akgun, Keskin, and Byrne 2008). As competition heats up and market preferences become less predictable and change occurs at a faster pace, the environment becomes dynamic (Atuahene-Gima, Li, and De Luca 2006). In such an environment, products development and life cycles are shorter, new products introductions are more frequent, information becomes obsolete more swiftly, and the companies' search and coordination expenditures in strategic decisions are boosted (Atuahene-Gima, Li, and De Luca 2006). Consequently, it is more difficult and challenging for organizations (1) to assimilate and anticipate environmental conditions (Akgun, Keskin, and Byrne 2008), (2) to identify the potential impacts of new technological alterations on customer needs and behavior, and (3) to translate them into specific and appropriate actions (Atuahene-Gima, Li, and De Luca 2006).

A component of an entrepreneurial orientation is associated with the discovery, exploration, evaluation and exploitation of resources, as well as the creation of new niches (March 1991). Such opportunity-seeking calls for continuous and adaptive learning and is more pronounced for the firms with entrepreneurial orientation due to their responsiveness to the needs and demands of their existing customers (Atuahene-Gima, Li, and De Luca 2006).

Firms operating in dynamic environment are more likely to be successful in uncertain and changing environments where the amount of cost and the level of risks associated with novelty and newness can be regained by capturing new product-market niches (Lumpkin and Dess 2001). In dynamic and complex environments, companies need to undergo high levels of innovation and product enhancement, which requires large investments in research and development (Jennings and Lumpkin 1992; Kabadayi, Eyuboglu, and Thomas 2007; Marlin, Lamont, and Hoffman 1994; Nandakumar, Ghobadian, and O'Regan 2010).

Hult, Ketchen, and Arrfelt (2007) argue that in a highly dynamic environment, market demand preferences shift quickly and unpredictably, leaving gaps that an entrepreneurial orientation strategy attempts to fill. More recently, Rauch et al. (2009) conclude that the relationship between entrepreneurial orientation and firm performance is positive although differing in magnitude, dependent on other strategic orientations and moderated by factors such as the environment. Therefore we hypothesize,

*H<sub>2</sub>: environmental dynamism will moderate the relationship between entrepreneurial orientation and financial firm performance.*

## Methods

The sample frame was created by combining a list of 465 SMEs operating in a variety of industries in Switzerland. This list was purchased from a leading market research/databank company and merged with a list of 1000 SMEs firms obtained from the Swiss Statistical Office. After mixing the order of the items in the questionnaire, we informed respondents that there were no right and wrong answers and that they should answer questions as forthrightly and honestly as possible.

Top managers, CEOs, marketing managers, and R&D managers were the target group of our study given their knowledge of and experience with their organizations. After pretesting the scale items with five academics, we performed a pilot study with 22 CEOs or senior executives to assess the research design's quality. Based on the results, some minor alterations were made. We removed the 30 CEOs/senior executives whom we contacted for pre-testing from the master list. We then used the remaining firms (a total of 535 firms) for data collection.

The firms' CEOs were contacted from the list by email and telephone to inform them of the objective of the study. In order to mitigate common method bias, we requested that the top managers identify at least one or two more respondents from their companies, who were the most knowledgeable about the organization's operations and new product/service development, to fill out our surveys. The first respondent (identified as manager or owner) assessed firm performance and environmental dynamism. The second respondent evaluated the firm's relationship entrepreneurial orientation and environmental dynamism (both informants responding to environmental dynamism allowed for examination of consistency within the organization). To increase the motivation of informants, explicit assurance was given that no individual responses would ever be disclosed to their organizations.

Two surveys per firm were mailed to a total of 535 firms. A follow-up call was made to the organizations and new surveys were sent. Despite our efforts and after using three reminders, 20 companies responded with only one survey. Because we needed multiple responses from each company, we eliminated single-respondent surveys from our final evaluations. As a result, a total of 192 completed pairs of survey questionnaires were received yielding a response rate of 18.5% after accounting for undeliverable surveys. In order to assure key informant quality, a series of 29 phone calls were made to respondents and additional mail surveys conducted. We incorporated one informant competency dimension to the survey which assessed the respondent's knowledge to assess the firm's relationships and firm's performance. This qualification resulted in 192 firms remaining for analysis.

The questionnaires were completed by top managers who were CEOs or by those with an equivalent position (titles such as owner, marketing manager, R&D, and operation manager). Sample was drawn from 18 different industry sectors (e.g. chemical products, watch industry, household appliances, packaged products, machinery and equipment, textiles, chocolates, construction materials). Of the 192 respondents, 16.1% were in their positions less 10 years, 22.9% – 10 but less than 15 years, 29.3% – 15 but less than 20 years, 22.4% – 20 but less than 25 years, and 9.5% more than 25 years. The average number of years which respondents were with the firms was 16.6% (less than 5 years), 27.0% (five but less than 10 years), 31.7% (10 but less than 15 years), 14.0% (15 but less than 20 years), and 10.7% (more than 20 years).

In terms of size, 19.27% of the respondent firms had fewer than 50 employees, 41.14% had more than 50 but fewer than 100 employees, 25.00% had more than 100 but fewer than 150 employees, 7.82% had more than 150 but fewer than 200 employees, 6.77% had more than 200 but fewer than 250 employees and none had more than 250. The background of top managers was mainly in marketing (59%). The respondents age was skewed towards middle-aged and older, with the majority (65.4%) being above 45 years old. In order to determine any possible problems with non-response error (time trend), the study employed t-tests to early and late respondents advocated by Armstrong and Overton (1977). The corresponding t-values for the variables included in the analyses range between 0.25 and 0.88, which showed no significant differences between these two groups ( $p > 0.05$ ), leading us to conclude that the probability of a non-response bias was minimal.



## Measures

To measure *entrepreneurial orientation*, we adopted the original nine-item scale proposed by Covin and Slevin (1989) which had been previously developed by Khandwalla (1977), Miller and Friesen (1982), and Miller and Friesen (1983). This scale entails three components of strategic posture: innovation, proactiveness, and risk-taking. Previous researchers operationally defined entrepreneurial orientation as an aggregate measure of three dimensions (Covin and Slevin 1988; Miller and Friesen 1983; Naman and Slevin 1993; van Doorn, Heyden, and Volberda 2017). These multidimensional variable indeed reflects top management's behavior in taking strategic decisions and operating management philosophies (Tajeddini 2015).

The first three items of this scale (e.g. willingness to favor change by developing new and unique products, services or processes and embrace innovation in order to obtain competitive advantage) evaluates the firm's tendency toward innovation ( $\alpha = 0.744$ ); the second three items (e.g. the willingness to be proactive when competing with other firms) assess the firm's proactive orientation ( $\alpha = 0.866$ ); the third three items (e.g. the willingness to pursue risky opportunities, taking the chance to fail and taking other business related risks) assess the firm's risk-taking propensity ( $\alpha = 0.804$ ) (Covin and Slevin 1989; Ferreira and Azevedo 2008).

*Environmental dynamism* reflects the perceived frequency of any change in management team (Chandler, Honig, and Wiklund 2005), technology, customer preferences, competitive action, regulation and suppliers (Tajeddini and Trueman 2016) as well as turnover in the marketing forces of the external and task environment (Sohi 1996). Using five opposite statements adopted from Khandwalla (1977), environmental dynamism was assessed. These statements indicate the level of change in marketing practice, rate of obsolescence of products/services, predictability of competitors' action, forecasting the demand and consumer tastes, and the modes of production/service change. The Cronbach's alpha of the measure was 0.888 indicating satisfactory internal consistency (see Table 1).

**Table 1:** Unidimensionality and convergent validity tests.

Constructs	Indicator (parameter)	Factor loadings
Entrepreneurial orientation <sup>(1)</sup>	<i>Proactiveness</i>	$\alpha = 0.866$ , CR = 0.77, AVE = 0.53
	PRO1: R&D, technological, leadership, and innovations	0.73
	PRO2: New lines of products or services	0.71
	PRO3: Changes in product or service	0.74 <sup>a</sup>
	<i>Innovativeness</i>	$\alpha = 0.744$ , CR = 0.88, AVE = 0.59
	INN1: Initiates actions	0.57
	INN2: First to introduce new products/services,	0.62
	INN3: Adopt a very competitive, "undo the-competitors" posture	0.68 <sup>a</sup>
	<i>Risk-taking</i>	$\alpha = 0.804$ , CR = 0.87, AVE = 0.68
Constructs	RT1: Proclivity for high-risk projects	0.65
	RT2: Bold, wide-ranging	0.47
	RT3: Aggressive posture	0.46 <sup>a</sup>
	Indicator (parameter)	Factor loadings
Financial performance <sup>(2)</sup>	<i>Performance Financial return</i>	$\alpha = 0.939$ , CR = 0.85 AVE = 0.69
	FR1: Profitability goal achievement	0.96
	FR2: Return-on-investment goal achievement	0.88
	FR3: Return-on-sales goal achievement	0.86
	FR4: Return-on-assets	0.87 <sup>a</sup>
Constructs	Indicator (parameter)	Factor loadings
	<i>Environmental dynamism</i>	$\alpha = 0.820$ , CR = 0.89 AVE = 0.73
Environmental dynamism <sup>(3)</sup>	ED1: Our firm must rarely change its marketing practices to keep up with the market and competitors (vs. Our firm must change its marketing practices extremely frequently).	0.76
	ED2: The rate at which products/services are becoming obsolete in the industry is very slow (vs. The rate of obsolescence is very high).	0.75
	ED3: Actions of competitors are quite easy to predict (vs. Actions of competitors are unpredictable).	0.81
	ED4: Demand and consumer tastes are fairly easy to forecast (vs. Demand and tastes are almost unpredictable).	0.85
	ED5: The production/service technology is not subject to very much change and is well-established (vs. The modes of production/service change often and in major ways).	0.79 <sup>a</sup>

<sup>(1)</sup> Model summary statistics:  $\chi^2_{(71)} = 117.271$ ,  $\chi^2/df = 1.652$ ,  $p$ -value = 0.17, robust CFI = 0.977, RMSEA = 0.048, Delta2 = 0.977, RMR = 0.020; <sup>a</sup>Loading fixed to 1 for identification purposes.

<sup>(2)</sup> Model summary statistics:  $\chi^2_{(13)} = 48.78$ ,  $\chi^2/df = 3.09$ ,  $p$ -value = 0.00, robust CFI = 0.98, GFI = 0.95, RMSEA = 0.08, Delta2 = 0.98, RMR = 0.02; <sup>a</sup>Loading fixed to 1 for identification purposes.

<sup>(3)</sup> Model summary statistics:  $\chi^2_{(13)} = 28.321$ ,  $\chi^2/df = 2.179$ ,  $p$ -value = 0.008, robust CFI = 0.976, GFI = 0.963, RMSEA = 0.079, Delta2 = 0.976, RMR = 0.040, <sup>a</sup>Loading fixed to 1 for identification purposes.

CR = Composite reliabilities

AVE = average variance extracted

While objective measures of business performance are preferable to subjective measures (Dess and Robinson 1984; Kumar, Subramanian, and Yauger 1998), and despite our effort, we could not access any financial data (e.g. sales, profits, ROI etc.), possibly because of firms' unwillingness to divulge the hard statistical data and also the lack of interest of managers. Thus, financial firm performance was measured in terms of four achievements: (1) profitability, (2) return-on-investments, (3) return-on-sales, and (4) return-on-assets adopted from Kara, Spillan, and Deshields (2005). Each item was phrased so that respondents could assess these aspects of firm performance over the last 3 years relative to their business unit's primary competitors' (one-much worse than my competitors; seven-much better than my competitors). The score of Cronbach's coefficient alpha was applied to assess the reliability estimates for all multi-item constructs where a high level of reliability with a value greater than the recommended cut-off level of 0.7 (Churchill 1979).

Following an exploratory factor analysis, a confirmatory factor analysis was carried out to validate the scales ( $\chi^2 = 58.62$ ,  $df = 40$ , NFI = 0.93, TLI = 0.96, CFI = 0.98, IFI = 0.98, RMSEA = 0.05) with satisfactory validity and reliability for financial performance ( $\alpha = 0.939$ ). Composite reliabilities (CR) were computed to evaluate the degree of consistency between multiple measurements of a construct (Hair et al. 2005). Average variance extracted (AVE) was calculated to measure the convergent validity (Gerbing and Anderson 1988). The CR and AVE of financial performance (CR = 0.85 and AVE = 69%) indicate that they have exceeded their threshold levels (AVE > 0.5 and CR > 0.7) (Hair et al. 2005). In addition, as show in Table 1, all item loadings ranging from 0.85 to 0.90 are significant at the 5% significance level, showing convergent validity.

## Control Variables

We included control variables to separate the impact of other forces which underpin the level of firm formation activities and might affect a firm's performance. Seven typical control variables were utilized for this research including firm type, firm size, firm ownership, firm age, industry type and the years of experience of the respondent as well as the participant's background (see Jaworski and Kohli 1993; Tajeddini 2016). Firm age is the logarithm of the number of years since the formation of the firm. Industry type is a dummy variable (1 = high-tech industries, 0 = other industries). Firm type is a dummy variable such that manufacturing firms are coded as a dummy variable "type 1", while service and other enterprises as "type 0". Firm size is the logarithm of the total number of employees to prevent skewness. Firm ownership is included as a dummy variable to control for potential variations between foreign (coded as 1, including both joint ventures and wholly owned subsidiaries) and domestic firms (coded as 0). The years of experience of the respondent were evaluated as the logarithm of the number of years since the respondent was working with the firm and the participant's background (0: R&D/Engineering; 1: other) as controls.

## Scale Validation

We employed two sets of statistics to test unidimensionality and convergent validity: first, the significance of the factor loadings ( $z$ -values  $\geq \pm 1.96$  and  $p < 0.05$ ), that is the estimated correlation between a specific item and the latent construct it represents (Venkatraman 1989) and second, the overall satisfactory of the proposed model in terms of its fit to the collected data employing chi square ( $\chi^2$ ) test and adjunct fit indexes, to exceed the cut-off point of 0.90 (Venkatraman 1989).

The CRs of three dimensions of entrepreneurial orientation construct indicate that proactiveness (range from 0.80 to 0.88), risk-taking (range from 0.72 to 0.91) and innovativeness (range from 0.76 to 0.87) were 0.77, 0.88, and 0.87, respectively, indicating the satisfactory level (Bagozzi and Yi 1988). The value for AVE from the dimensions of proactiveness, innovativeness and risk taking as well as financial performance were 0.53, 0.59, 0.68, and 0.85 respectively, which also exceeds the recommended threshold level (0.50) (Bagozzi, Yi, and Phillips 1991). The CR and AVE of dynamic environment construct were 0.88 and 0.56 respectively which exceed the threshold levels. All item loadings ranging from 0.71 to 0.81 are significant at the 5% significance level, showing convergent validity (Bagozzi, Yi, and Phillips 1991). Moreover, all the estimated coefficients of all the indicators are significant ( $t > 2.0$ ) (Gerbing and Anderson 1988). Additionally, as Table 2 shows, the shared

variances (SHVs) between pairs of all possible scale combinations indicated that the AVEs were higher than the associated shared variance in all cases, thereby convergent validity was satisfactory.

**Table 2:** Means, standard deviations, correlations, and shared variances ( $n = 192$ )<sup>a</sup>.

	AGE	IND	OWN	SIZE	YE	BK	TYP	EO	ED	FP
Firm age (AGE) (log)	1									
Firm industry (IND)	0.087	1								
Firm ownership (OWN)	0.069	0.138	1							
Firm size (SIZE) (log)	-0.091	0.045	-0.113	1						
Year experience (YE) (log)	-0.003	-0.007	0.080	0.204**	1					
Background (BK)	-0.003	-0.056	-0.027	0.061	-0.133	1				
Firm type (TYP)	-0.141	0.001	-0.048	0.363**	0.240**	0.011	1			
Entrepreneurial orientation (EO)	-0.072	0.019	0.076	0.184*	0.081	0.014	0.033	1	0.13	0.21
Environmental dynamism (ED)	-0.117	-0.076	0.055	0.033	-0.035	-0.021	-0.046	0.356**	1	0.37
Financial performance (FP)	-0.132	-0.027	0.069	0.068	0.082	-0.013	-0.121	0.461**	0.609**	1
Mean	1.59	0.18	0.13	1.96	2.92	0.31	0.54	5.33	4.26	4.83
Standard deviation (SD)	0.21	0.38	0.33	0.42	0.56	0.46	0.49	0.79	0.91	0.82
Inter-rater agreement ( $r_{wg}$ )									0.88	

Furthermore, variance inflation factors along with condition index were computed to investigate the likelihood impact of multicollinearity in each model testing. The variance inflation factor values associated with the mean-centered predictors ranged from 1.028 to 5.076, all of which were significantly below the common cutoff threshold of 10 (Hair et al. 2010). The outcomes show that the condition indices (<21:993) are well below the critical values suggested by Hair et al. (2010), indicating that multicollinearity was not a problem in the current study and it does not influence the weights of the controls or hypothesized variables (Mason and Perreault 1991).

## Common Method Variation

Despite our best proactive attempts to minimize any potential common method variation (CMV), a common method bias might occur because the data were collected from the same respondents (Podsakoff et al. 2003). To reduce possible bias, the scale items were carefully evaluated to ensure that the items were simple, specific, and concise. In addition to using a mixed order of questions (ex ante), it was guaranteed in the cover letter that the respondents' anonymity would be preserved to reduce evaluation apprehension (Chang, Witteloostuijn, and Eden 2010; Tsai and Yang 2014).

To enhance scale purification, a Harman's ex post one-factor test was carried out to provide an additional check for common method variance (Podsakoff and Organ 1986). Our factor analysis results indicate that four factors have eigenvalues greater than 1.0, accounted for 54.58% of the total variance; and Factor 1 accounted for 19.37% of the variance. Since a single factor did not emerge and Factor 1 did not explain most of the variance, common method bias is unlikely to be a concern in our data (Liu, Luo, and Shi 2002; Podsakoff and Organ 1986; Tsai and Yang 2014).

Following the recommendation of Malhotra, Kim, and Patil (2006), we performed a CFA and tested fit indices. All the five variables were loaded on one factor to examine the fit of the CFA model. The CFA yielded  $\chi^2(198) = 734.15$ ; RMSEA = 0.113; SRMR = 0.10; CFI = 0.678; GFI = 0.645; TLI = 0.661, indicating very poor fit. The results increase our confidence that the threat due to common method bias is minimal.

## Results

Previous studies (e.g. Hernández-Perlines 2016; Hult, Ketchen, and Arrfelt 2007; Joshi, Das, and Mouri 2015) provide theoretical foundation and empirical justification to create a summated index of EO based on the three



dimensions of risk taking, innovativeness, and proactiveness, with each construct weighted at one-third. Likewise, within the regression testing, ED (Hult, Ketchen, and Arrfelt 2007) were created as a summated index. Inter-rater agreement ( $r_{wg}$ ) was computed for ED construct for examination of consistency among respondents within the organizations. The  $r_{wg}$  value associated with the aggregate measure of ED in a firm was (0.88), substantially above the common cutoff threshold of 0.60 (Hair et al., 2010), indicating a satisfactory level of inter-rater agreement.

A single hierarchical moderated regression analysis would typically be used to test for interactive effects between ED and the independent study variable in predicting growth and financial returns. We established a series of three regression models, evaluated the change in the amount of variance explained ( $\Delta R^2$ ) to test the interaction effects (Cohen et al. 2003), and conducted overall and incremental  $F$  tests of statistical significance. We entered the control variables into the regression equation in step 1 (model 1), one predictor in step 2 (model 2), and one two-way interaction in step 3, respectively (model 3). Model 1 serves as the base model for model 2 (control variables into the regression equation), which in turn is the base for model 3. Table 3 displays results of the regression analyses (models 1 to 3).

$H_1$  predicts that EO leads to higher financial performance. As model 2 of Table 3 shows, entrepreneurial orientation had a positive and significant main effect on financial performance (Unstandardized Coefficient = 0.283,  $p < 0.001$ ). This finding supports  $H_{1b}$ , confirming the findings of prior empirical studies (e. g. Anderson et al. 2015; Zahra and Covin 1995; Wiklund 1999) and validating Choi, Lévesque, and Shepherd (2008) conceptual argument that entrepreneurial orientation provides positive economic value for firms in terms of profit. Although not hypothesized, environmental dynamism is also found to have a strong positive effect (independent of entrepreneurial orientation) on financial performance (Unstandardized Coefficient = 0.452,  $p < 0.001$ ) (see model 2).  $H_2$  predicts that a strong entrepreneurial orientation will achieve higher levels of financial performance when environmental dynamism is high than when it is low. Table 3 shows that the combined interactive effect of entrepreneurial orientation and environmental dynamism leads to higher financial performance ( $H_2$ ). This hypothesis is supported by the inclusion of an interaction term (EO  $\times$  ED) which has a significant and positive effect on financial return performance (Unstandardized Coefficient = 0.103,  $p < 0.001$ ) as shown in Table 2, models 3.

**Table 3:** Hierarchical moderated regression analysis ( $n = 192$ ).

Predictor(Independent) variables	Criterion (Dependent) variable		
	Financial performance (FP)		
Step 1: Control variables	Model 1	Model 2	Model 3
Log firm age (years) (AGE)	-0.564* (0.274)	-0.265 (0.210)	-0.204 (0.195)
Firm industry (IND)	-0.069 (0.156)	0.018 (0.118)	0.048 (0.110)
Firm ownership (OWN)	0.206 (0.180)	0.035 (0.137)	0.035 (0.127)
Firm size (SIZE)	0.247 (0.151)	0.066 (0.117)	0.124 (0.109)
Log year experience (YX)	0.094 (0.110)	0.144 (0.083)	0.129 (0.077)
Background (BK)	-0.020 (0.129)	0.010 (0.098)	0.030 (0.091)
Firm type (TYPE)	-0.329* (0.130)	-0.250* (0.099)	-0.217* (0.092)
<b>Step 2: Main effects</b>			
Entrepreneurial orientation (EO)		0.283*** (0.062)	0.178** (0.060)
Environmental dynamism (ED)		0.452*** (0.053)	-0.238* (0.134)
<b>Step3: The two-way interaction</b>			
EO $\times$ ED			0.103*** (0.019)
$R^2$	0.063	0.466	0.543
$\Delta R^2$	—	0.403	0.077
Adjusted $R^2$	0.027	0.440	0.518
$F$ -value	1.754	17.670	21.531
$\Delta F$	—	15.916	3.861

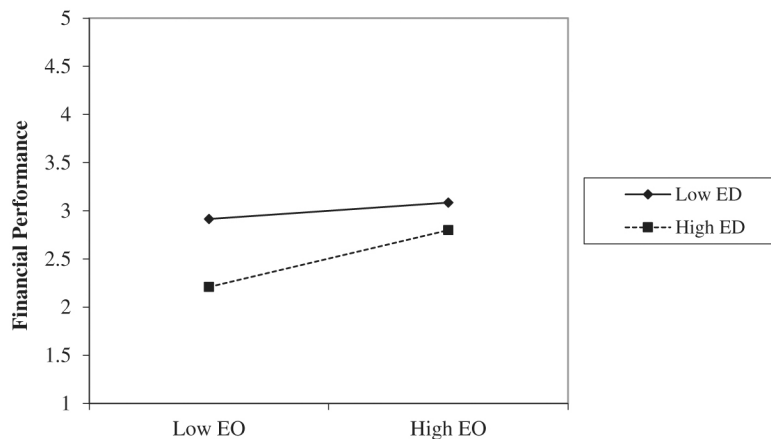
\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ ,

$\Delta R^2$  means the increase in  $R^2$  from the model to the previous model.

We also plotted the prediction for each result using simple slope analysis (using a simple regression equation) and at high and low levels of environmental dynamism (i.e. one standard deviation above and below mean) and tested whether each simple slope was significantly different from zero (two-tailed tests) (see for detail, Aiken and West 1991; Cohen et al. 2003; Curran, Bauer, and Willoughby 2004). The slope tests showed that

the effect of entrepreneurial orientation on financial performance was significant under high environmental dynamism (simple slope = + 0.29,  $t$ -value = 2.39,  $p = 0.01$ ) and insignificant under low level of environmental dynamism (simple slope = +0.08,  $t$ -value = 0.57,  $ns$ ).

Figure 1 shows that high environmental dynamism is associated with stronger financial performance and that an increase in environmental dynamism strengthens the positive relationship between entrepreneurial orientation and financial performance. This result implies that an increase in environmental dynamism actually strengthens the positive effect of entrepreneurial orientation on financial performance. This means that the strength of the relationship between entrepreneurial orientation and financial performance would be strengthened as environmental dynamism increased. Thus it is possible that companies with higher environmental dynamism are more reliant on entrepreneurial orientation as a critical avenue to increase financial performance.



**Figure 1:** The moderating role of ED on the EO – financial performance relationship.

## Discussion and Conclusions

While the management literature suggests that firms need to pursue an EO to achieve superior performance (Baker and Sinkula 2009; Tsai and Yang 2014), a key question has remained about exactly how firms achieve high financial performance in a dynamic environment. Prior research has shown that an entrepreneurial orientation (e.g. Kollmann and Stöckmann 2012) can facilitate the pursuit of new opportunities which in turn result in improvements in firm business performance. However, there is a lack of thorough knowledge and understanding as to whether the interaction of entrepreneurial orientation and dynamic environment facilitates superior financial performance.

The key objective of this research was to provide insights about the interaction of entrepreneurial orientation and dynamic environment on financial performance. The results of our study also demonstrate the direct effect of entrepreneurial orientation on financial performance along with the merits of pursuing this strategic approach under a highly dynamic environment. In the following section we explain our study's contribution to strategic management research and implications for management practice.

### Contribution to Research

Consistent with previous research (Anderson and Eshima 2013; Rauch et al. 2009; Semrau, Ambos, and Kraus 2016), our study demonstrates that an entrepreneurial orientation positively influences business financial return to create and build value for the firm and its shareholders. However, our study is novel in that we used firms from different industries to test our hypotheses by employing environmental dynamism as a moderating variable between entrepreneurial orientation and financial performance.

As predicted, our study confirms that entrepreneurial orientation is an important catalyst for financial business performance across different industries. Results are consistent with previous scholars (e.g. Hult et al. 2004) who state that entrepreneurial orientation embodies strategies and actions that the firm may undertake in order to actualize corporate orientations and goals and has significant effect on performance. More specifically, those firms with higher level of entrepreneurial orientation tend to have higher financial returns. These findings offer an initial benchmark of a firm's apparent culture and strategy attributes in conjunction with certain contingencies in a firm's operating environment.

In addition, we found that the impact of entrepreneurial orientation on financial performance is enhanced when operating in a highly dynamic environment. This result empirically supports the view that entrepreneurial firms perform well in dynamic environments (Martínez-Sánchez et al. 2011; Menguc and Auh 2006) and in yielding desired business results. Thus being proactive (a response to opportunities) is an appropriate mode for firms in dynamic environments or in growth-stage and in mature industries (Dess, Lumpkin, and Covin 1997; Lumpkin and Dess 2001). These findings reinforce the argument that if organizations depart from established practices and entertain new ideas and experimentation, beat competitors to new market opportunities, and are open to risk in exploring new products, services, and markets, they are more likely to outperform their competitors in terms of financial return (Covin and Slevin 1991; De Clercq, Dimov, and Thongpapanl 2010).

## Implications for Management Practice

Many strategic management theorists have viewed entrepreneurship activities as a key determinant of a firm's ability to compete and take risks. Using empirical evidence, we found that SMEs top managers should foster and promote an entrepreneurial spirit and culture if they intend to improve their financial returns. In this regard, managers are strongly recommended to stimulate entrepreneurial spirit, build a culture of entrepreneurship, and support innovative employees. At the same time, they should pay close attention to financial returns in order to survive and satisfy the current needs of the organization.

These findings also provide insights for managers and entrepreneurs who may be contemplating the application of novel ideas to create a new product or service. When encountered with challenging and dynamic situations, managers may undervalue the costs of operating in such tough and unpleasant circumstances, and underestimate the efforts required in implementing new methods and practices. Before implementing any of the new products, services, processes and methods, a thorough understanding and assessment of the nature of the environment is vital to the success of implementing novel products, new technologies, and business process for practitioners.

## Future Research

It is important to note that scholars and practitioners should take care when generalizing the findings of a study to different cultural contexts. Our study was empirically supported in the specific context of SMEs in Switzerland. However, the role of dynamism is relevant to many other manufacturing and service firms as well as industries across the globe. In addition, a cross-sectional approach was used in this study with subjective measures.

Future research should focus on triangulating perceptual measures with other measures such as expert opinion and secondary data as well as using a longitudinal temporal base to assess the impact of the variables examined herein across time. Although, we evaluated performance in terms of financial returns, it should be remembered that business performance is a multidimensional array. We suggest that future studies employ objective measures for organization performance to strengthen the research design.

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