

ENTREPRENEURIAL ORIENTATION AND PERFORMANCE: A COMPARATIVE STUDY OF HIGH-TECH SMES IN THE US AND GERMANY

Jann-Marie Culhane^{a*}, Mzamo P. Mangaliso^b

ABSTRACT: Research on the relationship between entrepreneurial orientation (EO) and firm performance points to the existence of moderating and mediation factors that influence the relationship. But it is only recently that the extent to which moderating factors affect the EO-performance relationship have received special attention. Using the Lumpkin and Dess (1996) model as the starting point, the purpose of our study was to investigate the extent to which the EO-performance relationship is moderated by external environmental factors and organizational factors. In terms of methodology, data for the study were collected through a survey questionnaire sent to senior executives in small and medium sized firms in the US and Germany. The data were analyzed using hierarchical multiple regression analysis. The findings of the study show that EO alone was not a significant determinant of firm performance. The results confirmed our hunch that the country's cultural context, the firm strategic processes, and factors in the external environment have a greater influence on firm performance than previously acknowledged. The novelty of the study is in its application of the snowball data collection technique using contacts in two different countries combined with the use of conventional survey questionnaires translated to fit the cultural context of each country. Specifically, it showed that national culture exerts a stronger moderating influence on the EO-performance relationship and supports the assertion that the interplay of turbulent environments and individualistic cultures increases EO-performance relationship. The takeaway and implication of this study is that the EO impact can only be maximized when its specific constituent elements are aligned with and supported by other contingencies, such as national culture.

KEYWORDS: *Entrepreneurship, Culture, Innovativeness, International Management, Performance*

JEL CLASSIFICATION: *L26, M10, M16*

DOI: 10.57585/GJEM.023.001

Received: 05 May 2023

First revision: 22 June 2023

Accepted: 08 July 2023

1. INTRODUCTION

Several studies have been conducted to explore the linkage between entrepreneurial orientation and firm performance (Dess *et al.*, 1997; Grünhagen *et al.*, 2014; Lumpkin & Dess, 1996). Some

Dr Jann-Marie Culhane^{a*}, The Culhane Group, St. Augustine, FL., USA. Dr. Mzamo P. Mangaliso^b University of Massachusetts, Amherst MA, USA.

* Corresponding author: mangaliso@isenberg.umass.edu

studies have sought to test the impact of contextual and environmental factors either as antecedents to the EO construct or as moderators of the relationship (Antoncic & Hisrich, 2000; Kantur, 2016; Rauch *et al.*, 2009; Wales *et al.*, 2013). Earlier studies by Lumpkin and Dess (1996) that investigated the dimensions of EO found that they were sometimes co-varying or varying independently, depending on the configuration of environmental influences. A study on the franchise systems in the UK demonstrated that freedom of choice of HR practices allowed to franchisees by the franchisor had a significant positive moderating effect on the EO-performance link, explaining over 20 percent of the variance in franchisee performance outcomes (Grünhagen, *et al.*, 2014). Yet to date a lack of clarity is still discernible about exactly what entrepreneurship is and about the suite of contextual variables that induce entrepreneurial behavior in companies (Anderson *et al.*, 2015; Boling *et al.*, 2016; Das & Teng, 2001; Hughes & Mustafa, 2017; Jones *et al.*, 2019). This paper reports on a study of the entrepreneurial orientation of firms in one high tech service industry, i.e., the computer systems integration industry. While the computer systems integration industry environment is characterized by turbulence, it is a relatively more established industry rather than an emerging high-tech industry (Engelen *et al.*, 2014). This research extends prior models of the EO-performance linkage by using data from firms in two countries, the USA and Germany, thereby adding to the growing research on international entrepreneurship in a country comparative context (Schwens *et al.*, 2018).

2. REVIEW OF THE LITERATURE

The EO-performance models in the entrepreneurship literature attempt to predict the consequences of entrepreneurial orientation or behavior on firm performance (Dess *et al.*, 1997; Lumpkin & Dess, 1996; Zahra 1999). Some researchers posit a simple model of main effects of EO on performance, while others take a more complex view of the interaction of organizational and environment factors with EO on firm performance (Bruining, 2000; Dess *et al.*, 1997; Engelen, *et al.*, 2015; Markin, *et al.*, 2018; Miller & Friesen, 1982; Wales *et al.*, 2013). This study investigates the impact of organizational and environmental factors on the EO-performance linkage. A conceptual framework depicting how entrepreneurial orientation, environmental factors, and organizational factors interact to influence firm performance is presented in Figure 1 below. The constructs used for entrepreneurial orientation were adopted from the works of Lumpkin and Dess (1996; 2001), and the environmental and organizational factors were taken from the works of Khandwalla (1979). These are now discussed in turn.

According to Lumpkin and Dess (1996), the EO construct consists of the five dimensions, i.e., autonomy, innovativeness, risk taking, proactiveness, and competitive aggression. Autonomy is the organizational ability and proclivity towards independence and self-direction in thought and action and the presence of a culture that encourages such behavior among individuals or teams within the organization (Burgelman, 1983). Innovativeness is the firm-level involvement in, and encouragement of, creative new technologies, products, markets, processes or strategies (Schumpeter, 1934). Risk taking is the willingness or propensity to commit firm resources irrevocably to projects or strategies that do not guarantee results (Miller, 1983). Proactiveness is a preemptive action or shaping of the environment (Miller, 1983), typically attributed to firms with visionary leadership (Collins & Porras, 1991; Hamel & Prahalad, 1994; Penrose, 1959). It involves an active scanning of the marketplace for opportunities. Competitive aggressiveness is distinguished from proactiveness in two ways: (1) it typically refers to a responsive action rather than an anticipatory one and (2) it is directly aimed at existing competitors rather than at new market or product opportunities (Lumpkin & Dess, 1996).

Other researcher include risk tolerance, adaptability, persistence, and decisiveness as characteristics of entrepreneurial orientation (Tuksatit & Rajiani, 2020).

In the management literature, the environment has long been considered to be one of the key contingencies in strategic decision making (Child, 1972; Dess & Beard, 1984; Hrebiniak & Joyce, 1985). EO is susceptible to contextual factors that exist both in the firm's external environment and internally within the firm. Among the external environmental factors for the purposes of this study we focused industry or task environment and the national environments.

At the industry or task environment, the environment consists of customers, suppliers, existing competitive rivals, potential entrants, and regulatory groups (Dill, 1958; Porter 1980). Extant research shows that the dynamics in an industry do influence the EO-performance link (Dess & Beard, 1984; Lumpkin & Dess, 2001). Contemporary environments are characterized by turbulence, described as the complex interconnectedness of environmental elements that exhibit rapid, unpredictable, and discontinuous change that makes the future hard to predict (Emery & Trist, 1965; Mangaliso, Mir, & Knipes, 1998; McCann & Selsky, 1984). The national environment level consists of several factors such as socio-cultural, economic, political-legal, technological, ecological and demographic elements. With a few exceptions, the international comparative research in EO has typically not paid much attention to some of the salient national differences or combined them with industry-level environmental factors (Kreiser *et al.*, 2010). The need for a more refined and eclectic paradigm that recognizes other epistemologies has been articulated by critical theorists in the international comparative entrepreneurship and innovation literature (Reed, 1996; Terjesen *et al.*, 2016). Focusing on corporate entrepreneurship in a comparative international context allows for the development of such a paradigm.

Two internal organizational factors are used in this study, namely, organicity and strategy process. Organicity reflects an open systems view of the firm versus a closed and mechanistic structure (Thompson, 1967). It refers to flexible, informal, and open communications and decentralized authority (Khandwalla, 1977) characterized by high levels of information processing (Burns & Stalker, 1961). Rather than a bureaucracy with a rigid hierarchy, the organic firm tends to be a flatter and more informal organization, an environment that encourages innovation (Burns & Stalker, 1961). Therefore, it represents structure and culture, and to include those items would be redundant. Strategic Process The model includes strategic process, rather than content, and is operationalized using survey questions that focus on long-term goals established and revisited systematically and frequently as well as ongoing environmental scanning and forecasting.

Performance is used in this study in full cognizance of the limitations associated with its interpretation. First, there are paradigmatic issues implicit in performance in terms of the perspective different stakeholders have of it (Baker & Salas, 1996; Venkatraman & Ramanujam, 1986). The perspective taken here is the assumption generally assumed in the strategy literature of the constructs of market share, profitability, etc., as being at the foundation of the concept of organizational effectiveness. Financial accounting measures were therefore used to measure performance. Specifically, the four measures used included market share growth, gross profit margin, return on investment, and overall performance ranking compared to the industry. The measures were based primarily on subjective, Likert-scale, questions that involved the respondent self-ranking the firm with respect to the rest of the industry. This industry positioning or self-ranking was intended to capture firm performance while avoiding the problems of (1) respondent reluctance to share actual profit figures, especially in the privately held companies and (2) consistency issues regarding currency conversions and generally accepted accounting principles. Figure 1 is a schematic representation of the conceptual framework used in the study.

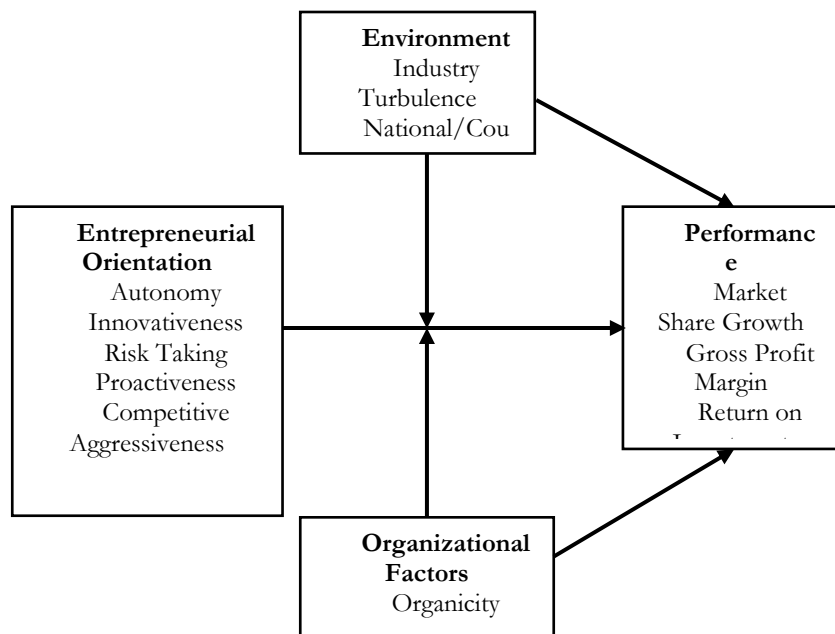


Figure 1. Conceptual Framework

2.1 Hypotheses

Exogenous to the industry environment lies the national one, much less influenced by the behavior of the individual firm (although one can contest its exogenous nature and argue that both the firm and the industry are part of, and therefore help shape, the national environment). The effect of the country environment can be described in terms of two general factors; i.e., factors of production and institutional structures or activities (Wan & Hoskisson, 2003). A comparative study of firms in one industry, but located within two countries, must address the fact that the country site is of considerable importance in influencing the activities, and ultimately the performance, of the firms contained therein. Recent evidence shows that differences in national cultures make big differences in the relationships of certain entrepreneurial elements, e.g., autonomy, and performance (Bachmann, Engelen, & Schwens, 2016; Yu, Lumpkin, Parboteeah, & Stambaugh, 2019). Hence:

H1: National environment moderates the EO-Performance linkage.

Turbulence creates uncertainties and a rate of change that require strategic agility on the part of top management of a firm. Turbulent industry environments demand a much more rigorous and analytical processing of information than more stable environments in order for the firm to maintain a competitive advantage (Hart & Banbury, 1994). Industry turbulence, creates an opportunity for a firm strong in autonomy, proactiveness and innovativeness to optimize the linkage of these three EO dimensions with performance. Therefore:

H2: Industry turbulence moderates the relationship between autonomy, innovativeness, proactiveness; and firm performance.

Research has also shown that structural responses to environmental vicissitudes have an impact on the EO-performance relationship. Researchers have posited an inverted-U moderating relationship of organicity to the EO-performance linkage. In other words, an organic structure helps to a point, but then as complexity and uncertainty increase, mechanistic organizations may prevail (Covin & Slevin, 1989). As long as the rapid change and complexity that characterize a turbulent

environment exist, the firm's structure must be sufficiently open, informal and agile to cope with such change and turn it to a sustainable competitive advantage. Therefore:

H3: In a turbulent industry environment, organic firms will outperform mechanistic firms.

The extant research agrees on the importance of fit between a firm's strategic processes and content on one hand, and environmental contingencies on the other (Child, 1972; Hrebiniak & Joyce, 1985). Empirical studies suggest that rapidly changing, turbulent environments will favor more flexible strategy processes, and that relatively placid environments are conducive to more stable strategic processes (Nadkarni & Narayanan, 2007). The strategic process dimension as presented in our model captures these notions. Within the context of a turbulent environment, if such flexibility is in place, then the association between strategy process and firm performance should be enhanced, without the need to analyze the strategy du jour; i.e., the strategic content. Hence:

H4: Industry turbulence moderates the association between strategic process and firm performance.

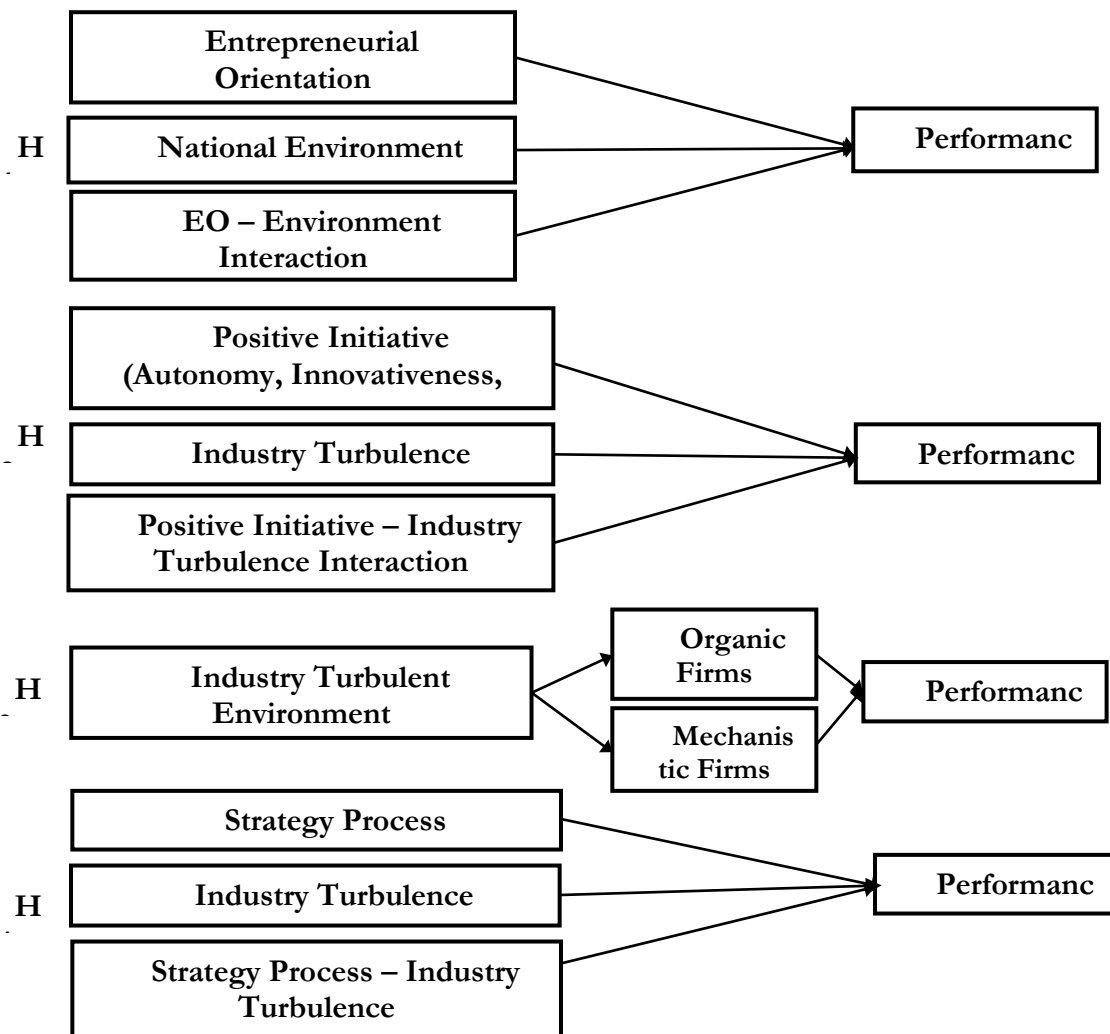


Figure 1. Hypotheses

Note:

- Diagrams adapted from Venkatraman (1989).
- H1, H2 and H4 are moderators in the conventional sense.
- H3 involves a “moderator perspective” that determines strength of relationship
- It is analyzed using subgroup means analysis (Venkatraman, 1989, p. 426).

3. RESEARCH METHODOLOGY

The respondents for this study were CEOs of US and German small and medium-size firms in the systems integration industry. Among the sources for the list of potential firms were the Dun and Bradstreet (D&B) Electronic Business Directory, and the German database, Verband der Vereine Creditreform. The high-tech industry that was chosen was computer integrated systems

design industry, represented by the four-digit Standard Industrial Classification (SIC) Code 7373. The industry was chosen because of its reputation in the high technology arena as a competitive, quickly changing, and innovative service industry requiring diligence on the part of its members to create and maintain a sustainable competitive advantage through value-added products and solutions to either a general or highly specialized customer base. The selected firms were small-medium in size, defined as having 500 or fewer employees, according to the Small Business Administration. For domesticity, at least 75 percent of the firm's revenues had to be transacted within its own country. The final list consisted of 252 US and 227 German firms.

There were some industry and cultural influences that became evident in the questionnaire survey results that necessitated a revision of the operationalization of the variables. Lumpkin and Dess (1996) directly address the issue of EO and its dimensions in three significant ways: the EO construct is multi- not uni-dimensional, as predictor variables, the dimensions may covary, but they may also vary independently, depending upon the circumstances, the linkage between EO and performance depends upon the configuration of environmental and organizational contingencies in the model. All five dimensions are not necessary at all times to establish a linkage between EO and firm performance.

Establishing the values of the variables involved an in-depth look at the raw data of the survey results. The EO construct was first calculated, as originally planned, by adding up all of the items or scores for the questions relating to the five dimensions of EO. The test for reliability of the overall construct showed an acceptable Cronbach alpha of 0.7116. However, the score was heavily influenced by autonomy, which represents 14 of the 31 questions. Limiting the EO model to the original Miller (1983) three-dimensional construct of innovativeness, proactiveness and risk taking was a method used in the pretest highly successfully, but less so here at a lower Cronbach alpha of 0.5598. To keep all five dimensions, but eliminate the excessive weight given to autonomy, due to the number of questions that it includes, EO was then derived using the average score for each dimension. This lowered overall reliability even further, at a Cronbach alpha of 0.4681, much lower than the acceptable threshold normally seen as ≥ 0.70 (Taber, 2018).

Adding up the scores of the questions that were originally assigned to each of the dimensions, the results were as follows: Autonomy (14 items) was reliable at a Cronbach alpha of 0.7708, risk taking (3 items), a surprisingly low Cronbach alpha of 0.3358, innovation (5 items) .5019, proactiveness (3 items), 0.4274, and competitive aggressiveness (4 items), only 0.1378. Lumpkin and Dess (1996) concur with the need for contextualization and suggest that future research look at which dimensions are relevant under which circumstances or environments. They also discuss the different types of questions and measurements that have been used by researchers to attempt to capture the essence of each of the dimensions. Certainly, more recent research has shown that under the correct contexts, the reliability of the EO scale is well within the acceptable limits (Covin & Wales, 2012; Hughes & Morgan, 2007). Risk taking, according to Lumpkin and Dess (1996), has been the most inconsistent of the dimensions in terms of relevance and reliability. Another issue with risk-taking measurements in a survey questionnaire arises from the fact that responses may reflect the individual's, rather than the firm's propensity toward risk. National differences (language, culture, etc.) have not been adequately considered in earlier studies. When the EO construct is tested in international research settings, there are some dimensions of cultural and national values that have been found to have an impact on the degree to which managers in some countries may be willing to display risk taking (Knight, 1997; Kreiser, Marino, Dickson, & Weaver, 2010). A list of selected survey questions included in the questionnaire is itemized below.

With respect to the EO construct, there were issues with the dimensions of risk and competitive aggressiveness that appear to be industry related. Two of the risk items apparently do not apply consistently across the industry. For example, item # 15 in the List of Survey Items, a reverse-scored item stating that the top management team has a strong emphasis on the marketing of tried-and-true products and services, was evidently interpreted as a matter of pride amongst many of the participants. The second risk factor, item 17, relates the use of growth through primarily through retained earnings as a conservative, non-risk-taking posture. However, many of the integration firms contacted, who may have established the company as a partnership or sole proprietorship, use the company's own funds because (1) it alleviates the problem of having someone else tell them what to do, and/or (2) the very success of a firm might make the owners use internal funds rather than external venture sources, not for a less risky environment, but to save the capital ownership for themselves in the event they merge or are acquired within five years.

In testing the hypotheses, it was decided after reviewing the data and questions that a revised version of these three dimensions (autonomy, innovativeness, proactiveness) should be derived, based on assumptions of interpretation of the questions, and that the added scores of those three revised dimensions would then constitute the new more narrowly defined construct of positive initiative. Autonomy was recalculated using only those items that relate to a posture within the organization that allows for the type of autonomous innovation that emerges bottom up versus top down (Burgelman, 1983). The industry under study appears, with respect to this issue, to be somewhere between analyzer and prospector (Miles & Snow, 1978); i.e., the proactive scanning for opportunities reflects the prospector, however, a structure is in place that is more stable than that suggested for the prospector. Instead, it is as if the company is structured in a somewhat formal manner but poised to attack opportunities and leverage resources in a manner that might transcend these formalities, especially in the marketing arena. Therefore, autonomy was reduced to six items deemed appropriate for a Cronbach alpha of 0.7932. Innovation was limited to two items that specifically address new products and services, for a Cronbach alpha of 0.6415. Proactiveness became a combination of a broad-brush innovation question that actually addresses both innovation and proactiveness (item 20 regarding an emphasis on technological leadership, R&D and innovation), plus two questions regarding market opportunities. The Cronbach alpha derived for this dimension was 0.5117. These three dimensions were then added up together for an overall construct with a Cronbach alpha of 0.7214 and the term "positive initiative" is applied to this three-dimensional construct for purposes of this study. Positive initiative appears a more representative construct for the systems integration industry in that it reflects the independence or championing phenomenon (autonomy) that allows for pre-emptive moves in the marketplace (proactiveness) to exploit creative solutions developed within the firm (innovativeness).

The organizational and environmental independent variables proved a bit less challenging than the EO construct and its dimensions. Organicity attained a Cronbach alpha of 0.7454 and strategy process, 0.7964. However, the industry environment factor also underwent some revision. It appears

3.1 List of Selected Survey Items

Entrepreneurial Orientation

1. Marketing strategies for a new product/service
2. Changes in the pricing structure of existing products or services
3. Changes in the strategy for existing products or services
4. Hiring and firing of personnel
5. Raising of long-term investment funds

6. Pricing of new products or services
7. The magnitude and direction of research into new products or services
8. Bargaining with personnel or their unions about wages, etc.
9. Formal policies and procedure guide most decisions in our firm
10. Lines of authority are specified in a formal organization chart
11. Plans tend to be formal and written
12. Capital expenditures are planned well in advance
13. Formal operating budgets guide day-to-day decisions
14. Formal job descriptions are maintained for each position
15. Top management strongly emphasize the marketing of tried-and-true products and services
16. The top management team has a strong tendency towards low-risk projects with normal and relatively certain rates of return
17. The firm's policy of growth is primarily through internally generated funds
18. There have been significant changes in existing product lines or services in the past five years
19. Many new products or services have been developed or introduced by the firm in the past 5 years
20. There is a very strong emphasis on R&D, technological leadership, and innovations
21. R&D expenditures are much lower than compared to the industry average
22. Product introductions are much less successful compared to industry average
23. There is an ongoing, active search for big opportunities
24. The company typically responds to, rather than pre-empt, actions that competitors initiate
25. There is a strong emphasis within the firm on marketing as a way to attack opportunities
26. The department or division in charge of marketing generates most new product/service ideas
27. The firm uses outside marketing consultants
28. Customers are a source of new ideas
29. The company typically seeks to avoid competitive clashes, preferring a 'live-and-let-live' posture

Company Philosophy

In general, the operating management philosophy in our company favors:

30. Highly structured channels of communication and highly restricted access to important financial & operating information.
31. A strong insistence on a uniform managerial style throughout the firm.
32. A strong emphasis on hierarchy, giving formal line managers the most to say in decision-making, regardless of their expertise in the matter to be decided.
33. A strong emphasis on holding fast to tried-and-true management principles despite any changes in business conditions.
34. A strong emphasis on always getting personnel to follow formally laid down procedures.
35. Tight formal control of operations by sophisticated control and information systems.
36. An emphasis on getting line/staff personnel to adhere closely to formal job descriptions.

that the industry members, so used to change, do not perceive the surrounding industry environment as a hostile factor, but rather a constantly changing one.

Expectation of change puts their interpretation of hostile, fierce, unpredictable in a different context than a manufacturing firm might. Therefore, the items for dynamism and hostility were

combined, the negatively worded items deleted, and the resulting element renamed turbulence, with a Cronbach alpha of 0.6023, which meet the acceptable standard of 0.60 (Bagozzi & Yi, 1988; Nunnally, 1978).

The data for this research were collected through a mailed survey questionnaire. The questionnaire represents a compilation of items that had already been tested for reliability and used in earlier empirical studies by other researchers in the field. A majority of the questions were based on a 5-point Likert Scale, using either "totally disagree" - "neutral" - "totally agree" labels, or semantic differentials. A self-ranking financial performance section asks the respondent to estimate his or her company's industry ranking, based on quintiles, for revenue size and three performance measures. It was also decided to include a request for actual three-year financial data in the hope that a sufficient number of respondents would complete the data to allow its use as a supplement and/or check of the self-ranking answers. The final page contained demographic information regarding both the firm and the respondent.

In the questionnaire, 31 items were designed to measure EO – 14 items on autonomy, 3 items on risk-taking, 5 on innovativeness, 3 on proactiveness, and 6 for competitive aggressiveness. The questionnaire also had 12 questions on organizational factors – 7 on organicity, and 5 on strategy process. The environment scale consisted of 7 items used for measure industry dynamism and industry hostility. National environment was represented by a dummy variable of 0 for German firms, and 1 for US firms. The control variables included firm size and firm age. The measures of performance used were based primarily on subjective perceptions of the respondents. Obtaining financial information from small to medium-sized private firms always presents a challenge. Rather than abandon financial performance, prior research has asserted that subjective data may be substituted successfully (Dess & Robinson, 1984). Each respondent was therefore asked to rank his/her company, vis-à-vis its industry competitors, on each of the performance measures consisting of revenues, market share growth rate, gross profit margin, and return on investment on a Likert-scale divided into quintiles. The scales used in the present questionnaire had been used by previous researchers.

The survey was pretested at the headquarters of a US computer solutions provider and systems integration firm in the Chicago area. The founder and Chairman of the firm completed the original survey, as did 14 of his most senior managers. At the time of the pretest, the firm had 400 employees and \$800 million in sales, the majority of the sales being transacted within the US. Therefore, the company fit the profile of the respondent firm candidates. The primary reason for the pretest was to evaluate the clarity and reliability of the survey, as well as test whether or not a senior manager response would track that of the CEO. The results confirmed that the senior management team could be expected to respond in a like manner as the CEO. The reliability for the original Miller EO model of three dimensions (innovation, risk and proactiveness) was acceptable at a Cronbach alpha of 0.7497. The other dimensions of autonomy, risk-taking and competitive aggressiveness had Cronbach alphas of 0.3937, 0.2627, and 0.2673, respectively, which are below the acceptable cut-off point of 0.6 (Bagozzi & Yi, 1988; Nunnally, 1978). This low reliability was explored and changes made as appropriate: (1) the respondents were interviewed and the wording that was unclear was changed or eliminated and (2) certain responses were attributed to a very unique history and industry position of the company, with which the researcher was familiar through personal experience and extensive interviews. A former computer leasing company, the firm broadened its offering and changed its focus to providing full-service systems solutions. This move was in response to the elimination of tax incentives favorable to lessors and the steep price-performance curve that made residual assumptions in computer leasing an extremely risky and

typically unprofitable venture. Many aggressive computer leasing firms went bankrupt in the late 1980s and early 1990s, at the time of the Chicago company's change in product emphasis. Now one of the largest Hewlett-Packard Value Added Resellers (VARs), the company's position is stable, and many of the questions relating to uncertainty did not track in the manner one would expect for the typical systems integration firm. The pretest proved most valuable, therefore, in providing evidence of similar responses throughout the management team, and input with respect to the unclear or antiquated wording of some of the questions.

The survey was edited and translated into German by a professional translator. It was then reviewed by one of the authors, who also speaks German, for any anomalies that might be found due to the limited exposure of some translators with respect to the standard use of particular business and financial accounting terms. Once edited for these anomalies, the survey was then sent to another professional translator and back-translated into English to assure consistency in language to the extent possible. Printed surveys were mailed to the 252 US and 227 German companies, in English and German, respectively, with a personalized cover letter sent to the CEO explaining the nature of the research project. The respondents were offered an executive summary of the findings if they so desired. Anonymity was promised, with the assurance that only the researcher had access to the identification numbers of each of the respondents, to be used for follow-up and also delivery of the summarized results.

Three months were required to send out and collect responses from the first mailing. From the first mailing, 20 US responses and 18 German responses were received. A second mailing was then sent out to qualified non-respondents of the first mailing. An additional 4 US and 3 German surveys were received, for a total of 24 and 21, respectively. For the third mailing web sites were visited to obtain a list of two or more additional senior managers for each of the remaining non-respondent firms. An additional 32 US responses and 28 German responses were collected, for a total of 56 US and 49 German surveys. Subsequent review of the survey questionnaires required that six US and four German questionnaires were disqualified due to size and industry restrictions. In the end, 50 completed surveys were collected from the 232 eligible US companies, and 45 responses were received from the 202 eligible German companies, for response rates of 21.6 percent and 22.8 percent, respectively. These response rates compare favorably with response rates for international research (Covin & Covin, 1990; Tootelian & Gadeake, 1987). Prior research has noted the problem of low response rate from CEO surveys indicating the median response rate of 32 percent and interquartile range from a low of 20 percent up to 46 percent as being typical (Cycyota & Harrison, 2006; Fowler, 2009). A breakdown of the responses to the survey questionnaire that was sent to the US and German executives is presented in Table 1. The descriptive statistics and demographics of the firms in the sample are presented in Tables 2 and 3.

The responses were all reviewed for non-response bias based on what demographic information was available. The sample was already controlled for size by revenues and employees and displayed a relatively wide distribution within those restrictions. Geographic location and age showed no apparent non-response bias. Once the data were collected and entered into an SPSS database, hierarchical multiple regression analysis was applied to the model to test the hypotheses. The next section presents the results of the hypothesis tests followed by a discussion of the results, the limitations of the study, the implications for practice and theory, and proposed future research directions.

3.2 Hypothesis Testing

The hypotheses presented above were tested primarily using hierarchical multiple regression analysis, entering into the model first the control variables, then the independent variables and finally any interaction variables involving those independent variables. The choice of the variables entered is rational and theory based. In the case of proposed moderators (i.e., interaction effects), the change in the amount of variance explained by the interaction effect, if significantly greater than the amount of variance explained in the main effects model, supports the hypotheses regarding the importance of that interaction effect.

Table 1. Summary of survey response rate.

Questionnaires	USA	German
Mailed	252	227
Returned undelivered	20	25
Total sent (N)	232	202
Total responses	56	49
Ineligible	6	4
Eligible responses	50	45
Response rate	21.5%	22.3%

The contingency theory perspective implies that the predictive variable is dependent on a third variable in its relationship to the criterion variable (Venkatraman, 1989). In the case of the four hypotheses, both national environment and industry turbulence have been posited as moderators in performance models. With respect to turbulence, two types of moderation are suggested. In the case of turbulence as a moderator of the linkage between the three-dimensional construct of positive initiative, the moderation signifies that performance is predicted jointly by the interaction of turbulence and positive initiative. This type of moderation reflects the form of the relationship and moderated regression analysis is appropriate for the testing of the hypotheses. Conversely, in the hypothesis positing the linkage between organicity and firm performance in a turbulent industry environment, the moderating. In this case, subgroup analysis, looking at high organic and low organic (or mechanistic) firms within a turbulent environment and comparing the means of the criterion variable, firm performance, is the appropriate vehicle of analysis (Venkatraman, 1989). The following equation was used in the hierarchical, moderated regression analysis:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_1 X_2 + \beta_5 X_1 X_3 + \beta_6 X_2 X_3 + \beta_7 X_1 X_2 X_3 + \varepsilon, \text{ where:}$$

Y = dependent variable, firm performance,
 α = the intercept,
 β_n = regression coefficient for independent variable n ,
 X_1 = Entrepreneurial Orientation (EO)
 X_2 = Industry or National Environment, depending upon the hypothesis
 X_3 = Organization – Organicity or Strategy Process, depending on the hypothesis
 $X_1 X_2, X_3 X_4$ = Interaction term, and
 ε = error term

Table 2. Descriptive statistics of survey respondents.

	PERF1	PERF2	REVUS\$SIZE	EMPLOY	COYRS
N	95	71	75	95	94
MEAN	8.337	0.599	43,165,043	239	16.27
SE MEAN	0.372	0.1380	8,851,636	46	1.73
MEDIAN	9.000	0.3928	20,000,000	70	12
MODE	9.000	0.1914	20,000,000	100	5
MIN	3.000	-1.108	500,000	1	2
MAX	15.000	9.000	900,000,000	2500	110

Abbreviations used:

EMPLOY: Size of company by number of employees.

PERF1: Performance - self-ranking, based on the sum of the self-ranking items of market-share growth, gross profit margin, and return on investment.

PERF2: Actual performance based on revenue growth rates from two preceding years

REVUS\$SIZ: Current revenue size. Revenues converted to US\$ for comparison purposes.

Table 3. Sample firm demographics compared to industry.

	Survey Respondents		Industry Sample	
	Freq.	% of Total	Freq.	% of Total
No. of Employ				
1-25	35	36.84	6695	72.13
26-50	10	10.53	973	11.21
51-100	13	13.68	557	6.42
101-500	24	25.26	363	4.18
501-1000	8	8.42	58	0.7
1001-2500	5	5.26	34	0.034
Co. Age (Yrs.)				
1-5	21	22.34	3968	47.40
6-10	23	24.47	2068	24.70
11-15	18	19.15	1162	13.88
16-20	11	11.70	828	9.89
>20	21	22.34	346	4.13

Note: The survey respondents are representative of the firms that have been classified for this study as small and medium-sized. The original survey sample concentrated on firms with annual revenues of \$18 to \$500 million and was subsequently expanded. The source for the industry sample above is Dun and Bradstreet Market Identifier, which tends to include one and two-person shops, sole proprietorships. This study, however, represents industry market players, i.e., larger and more established firms that impact the industry environment.

Each variable is represented in the actual analysis by the arithmetic average of the scores of the corresponding questions. The independent variables are the five dimensions of entrepreneurial orientation, the two dimensions of environment (industry and national), and the two dimensions of organization, i.e., organicity and strategic process. The self-ranking performance measures were added, the sum being used as a single dependent variable, performance, for each firm. Given that the correlation matrix involves multiple testing, a Bonferroni correction was made to the probability

associated with each test. After the Bonferroni correction, the only correlations that were significant were between risk and autonomy (0.362); between national competitiveness, a proxy for country environment, and performance (0.580); and the natural log of employees, a control variable, with performance (0.467) and company age in years (0.356). High correlations of 0.90 and above were not found (Hair, et al, 1995), although in some equations, only a single control variable was used due to the moderate correlation between the natural log of the number of employees (the size control variable) and the number of years the company has been in business (the age control variable). Multiple linear regression was then applied, using a hierarchical approach (H1, H2, and H4), and subgroup means comparison was also used (H3). The means, standard deviations and correlations for the key variables included in the analysis are summarized in Table 4.

Table 4. Means, standard deviations and correlation matrix.

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13
Autonomy	2.65	0.60	1.00												
Risk	2.66	0.72	0.36*	1.00											
Innovative	3.49	0.66	0.02	0.03	1.00										
Proactive	3.35	0.78	0.01	0.21	0.27	1.00									
Comp. Aggress.	2.99	0.62	0.07	-0.05	0.32	0.26	1.00								
EO	85.05	11.26	0.30	0.02	0.05	-0.03	-0.07	1.00							
Perform.	8.33	3.63	-0.24	-0.24	0.19	0.13	0.06	0.01	1.00						
Organic	23.35	4.04	0.08	0.22	0.05	0.16	0.14	0.05	0.05	1.00					
Turbulence	3.16	0.60	-0.05	-0.05	0.22	0.09	-0.06	0.14	0.06	0.18	1.00				
Strat. Pro	15.67	4.04	-0.05	0.07	0.18	0.05	0.11	-0.21	-0.02	0.05	0.17	1.00			
Natl. Comp	87.70	13.02	-0.21	-0.15	-0.02	0.22	0.05	-0.08	0.58*	0.16	.14	-0.15	1.00		
Company Age	16.27	16.77	-0.32	-0.19	-0.04	0.06	-0.17	-0.03	0.33	0.07	0.01	0.01	0.27	1.00	
Employ	4.01	1.90	-0.25	-0.20	0.21	0.01	0.15	-0.02	0.47*	0.22	0.18	0.24	0.24	0.36*	1.00

* Significant correlation after Bonferroni correction.

4. RESULTS AND DISCUSSION

The first hypothesis (H1) proposes that the country in which the firm is located moderates the relationship between EO and performance. The results of the regression did not support this hypothesis. The R-square change when the interaction effect was added (i.e., when country multiplied by EO was entered into the equation) was not significant at the $p < 0.05$ level, nor was the coefficient of the interaction term. The equation was also run with the sum of the dimensions of autonomy, proactiveness and innovativeness, which is referred to in this study as “positive initiative,” to see if this subset of EO would show significance, but it did not. Although the null

hypothesis could not be rejected in this alternative data run, a further look at country differences did show interesting results, which are discussed in the next section.

The second hypothesis posits that the independent variable of positive initiative interacts with industry turbulence in a linkage to firm performance. The German cases (N=44) did show significance. The R-square without interaction was 0.346 and the independent variables alone were not significant, but with the interaction between positive initiative and industry turbulence, the R-square increased to .410, with the change significant at the $p < 0.005$ level. Looking at the interaction model (i.e., the model that contained the interaction effects), it was significant overall at the $p < 0.01$ level, and the coefficient of the interaction term was positive, 0.416, and as well significant at the $p < 0.05$ level. Therefore, the null hypothesis could be rejected ($p < 0.05$). The data results were not significant at the $p < 0.05$ level when both countries were combined, nor when the US cases were selected separately.

Hypothesis 3 looks at the organicistic versus mechanistic characteristics of companies in turbulent industry environments and proposes that, in such environments, organic firms will outperform mechanistic firms. The results were significant at the $p < 0.05$. A more detailed discussion follows below. Organic firms had to be distinguished from mechanistic firms. The sample population score for organicity ranged from 14 to 35. Therefore, a cut-off point was set at 25, such that turbulent environment firms scoring 25 or above were considered organic (N=23) and those scoring lower than 25 were considered mechanistic (N=47). Then an independent samples test was conducted, in which the mean of the dependent variable performance was compared for these two subgroups – organic and mechanistic. The Levene's test for equality of variances was used to test whether or not the spread of the groups differs; since this test was not significant ($p = 0.279$), the null hypothesis that the two population variances are equal could not be rejected and therefore a pooled variance t test was used (i.e., equal variances were assumed). The mean performance rating of the organic firms was 9.739 and the mean performance rating of the mechanistic firms was 7.489. The t-statistic was 2.455, with 68 degrees of freedom and an associated probability of .017. Therefore, the difference between the mean performance scores of the two groups was significant at the $p < 0.05$ level, and supports the hypothesis that, in turbulent industry environments, organic firms will outperform mechanistic firms.

Hypothesis 4 suggests that turbulence moderates the strategic process–firm performance association. Again, the results for Germany showed significance, while the US and the combined countries' regression runs did not. With respect to the German firms, the R square without the interaction effect was 0.309, and no main effect of the predictor or moderator variable alone was significant. However, the R square increases to 0.411 when the interaction effect is entered into the model and that change is significant at the $p < 0.05$ level. The overall interaction model is significant at the $p < 0.05$ level, and the interaction coefficient is a positive 0.546 and significant at the $p < 0.013$ level.

Table 5 shows the results of the most significant regression analysis discussed above. For the results of the individual regression test conducted for each of the four hypotheses, H1, H2, H3, and H4, please refer to Tables 6, 7, 8, and 9, respectively. These results, therefore, show significance for H2 and H4 for Germany, and significance for all turbulent environment firms in H3. Only H1, which by definition must include all cases (since country is the moderator of interest), shows no significance and the null hypothesis cannot be rejected. However, country differences do reveal some interesting descriptive statistics that will be discussed in the next section, along with the interpretation of the three hypotheses that did show significant results.

Table 5. Significant regression results.

	Beta	SE	t	p	Old R ²	New R ²	F
H2: Industry Turbulence moderates the relationship between performance & autonomy/ innovativeness/ proactiveness:							
Germany (N=44) Interaction term auton/ innov./ proactive X industry turbulence	0.416	.204	2.041	0.048	.346	.410	4.167
H4: Industry turbulence moderates the association between strategic process and firm performance							
Germany (N=44)	.546	.211	2.588	0.013	0.309	0.411	6.697
H3: In a turbulent industry environment, organic firms will outperform mechanistic firms							
Organic (N=23)	Mean Perform	t	Signif. (2-tailed)				
	9.739	2.455	0.017				
Mechanistic (N=47)	7.489						

Table 6. National environment as moderator for the Eo-Performance Relationship

H1: National environment moderates the EO-Performance Linkage

Model	Variable	N	β	SE	t	R ²	F	P
1	CONSTANT	95	4.767	0.774	6.156	0.218	25.985	.000*
	EMPLN	95	0.889	0.174	5.098			.000*
2	EO	95	0.0196	0.025	0.783	0.453	25.089	0.436
	NATL	95	0.139	0.022	6.233			.000*
3	NATXEO	95	-0.0018	0.002	-0.86	0.457	18.947	0.392

* = Significant at p < 0.01

Table 7. Industry turbulence as moderator for the EO–Performance Relationship

H2: Industry turbulence moderates the relationship of autonomy/innovativeness/ proactiveness and firm performance.

Table 7A. Only Germany included.

Model A	Variable	N	β	SE	t	R ²	F	P	
1	CONSTANT	44	3.823	0.701	5.451	0.262	7.275	.000*	
	COYRS	44	0.0428	0.046	0.929				0.358
	EMPLN	44	0.511	0.218	2.339				.024
2	AUTINPRO	44	0.0533	0.066	0.807	0.346	5.153	0.425	
	TURBU	44	1.59	0.793	2.004				0.052
3	AIPXTUR	44	0.416	0.204	2.041	0.41	5.291	.048	

* Significant at $p < 0.01$; Significant at $p < 0.05$

N = 44: One German respondent did not provide company age in years

Table 7B. Only the USA included.

Model B	Variable	N	β	SE	t	R ²	F	P	
1	CONSTANT	50	7.12	1.313	5.424	0.125	3.345	.000*	
	COYRS	50	0.014	0.022	0.642				0.524
	EMPLN	50	0.653	0.278	2.346				.023
2	AUTINPRO	50	0.006	0.061	0.107	0.125	1.605	0.915	
	TURBU	50	0.007	0.664	0.01				0.992
3	AIPXTUR	50	-0.033	0.09	-0.37	0.128	1.286	0.713	

* Significant at $p < 0.01$; Significant at $p < 0.05$

Table 7C. Both USA and Germany included.

Mod. C	Variable	N	β	SE	t	R ²	F	P	
1	CONSTANT	94	4.611	0.772	5.976	0.249	15.081	.000*	
	COYRS	94	0.039	0.021	1.869				
	EMPLN	94	0.771	0.185	4.161				.000*
2	AUTINPRO	94	0.033	0.052	0.641	0.253	7.517	0.523	
	TURBU	94	-0.088	0.569	-0.155				0.877
3	AIPXTUR	94	0.029	0.087	0.34	0.254	5.977	0.735	

* Significant at the $p < 0.01$ level; Significant at the $p < 0.05$ level

Table 8. Industry turbulence as moderator for the Structure–Performance Relationship.

H3: In a turbulent environment, organic firms will outperform mechanistic firms.

N	PERFORMANCE	t	SIGNIFICANCE
Organic N = 23	9.739	2.455	0.017*
Mechanistic N = 47	7.489		

* Significant at the $p < 0.05$ level

Table 9. Industry turbulence as moderator for the Strategy–Performance Relationship.

H4: Industry turbulence moderates the association of strategic process and performance.

Table 9A. Only Germany included.

Model A	Variable	N	β	SE	t	R ²	F	P
1	CONSTANT	44	3.963	0.604	6.56	0.256	14.472	.000*
	EMPLN	44	0.5651	0.1495	3.804			.000*
2	STRATPRO	44	0.146	0.12	1.215	0.282	8.056	0.231
3	TURBU	44	0.954	0.758	1.259	0.309	5.976	0.215
4	STRATXTUR	44	0.546	0.2117	2.588	0.411	6.794	.013

* Significant at $p < 0.01$; Significant at $p < 0.05$; N = 44: One outlier removed.

Table 9B. Only USA included.

Mod. B	Variable	N	β	SE	t	R ²	F	P
1	CONSTANT	94	4.801	0.767	6.261	0.214	25.021	.000*
	EMPLN	94	0.866	0.173	5.002			.000*
2	STRATPRO	94	-0.116	0.083	-1.39	0.23	13.609	0.167
3	TURBU	94	-0.139	0.57	-0.245	0.231	8.999	0.807
4	STRATXTUR	94	0.164	0.139	1.176	0.243	7.124	0.243

* Significant at $p < 0.01$; Significant at $p < 0.05$

Table 9C. Both Germany and USA included.

Mod C	Variable	N	β	SE	t	R ²	F	P
1	CONSTANT	94	4.801	0.767	6.261	0.214	25.021	.000*
	EMPLN	94	0.866	0.173	5.002			.000*
2	STRATPRO	94	-0.116	0.083	-1.39	0.23	13.609	0.167
3	TURBU	94	-0.139	0.57	-0.245	0.231	8.999	0.807
4	STRATXTUR	94	0.164	0.139	1.176	0.243	7.124	0.243

* Significant at $p < 0.01$

To sum up, the statistical analysis in the tables above provide evidence that (a) the country's national environment moderates the EO-performance link (H1); (b) industry turbulence moderates the relationship of specific elements of EO (in this case - autonomy, innovativeness, and proactiveness) and firm performance (H2); (c) in turbulent environments organic firms will outperform mechanistic firms (H3); and that (d) industry turbulence moderates the association of strategic process and performance (H4). The next section further deliberates on these findings and their implications, as well as the limitations of the study.

5. CONCLUSION

Hypotheses 2, 3 and 4 all involve turbulence in the industry environment and its influence on organizational elements of the firm in the model. Hypothesis 2 involves the linkage between independent variable of positive initiative and industry turbulence, amongst the German firms, turbulence proved to be a moderator between the autonomy/innovativeness/proactiveness

construct and firm performance. The three dimensions of the predictor variable make up a subset of the EO construct. They represent the positive characteristics of the firm as opposed to risk taking and competitive aggressiveness, with their negative connotations; hence the term “positive initiative” has been applied to the three dimensions as a construct that describes an independent and autonomous firm or champion of the firm that creates and atmosphere in which innovation and pre-emptive scanning of the environment for opportunities can flourish.

In the regression results for Germany, turbulence was significant in its interaction effect with the predictor variable, positive initiative and the coefficient sign is positive. This result indicates that the linkage to firm performance is determined jointly by an interaction between autonomy, proactiveness, 5-innovativeness and industry turbulence. In a high turbulent industry environment, with rapid change and uncertainty a central characteristic, a competitive advantage that can turn into maximized firm performance is typically founded on an innovation, which, in this service/solution provider industry, tends to be an innovative service or unique integrating of systems (Mangaliso, 1995; Mangaliso, et al., 1998).

Industry turbulence is also a moderator of the strategic process-firm performance relationship for the German firms (H4) and again, impacts the form of the relationship with firm performance in its interaction effect with strategic process. Without industry turbulence, complacency may set in and formal strategic processes may continue only because they are an institutionalized part of the operations of the firm.

Organicity was the final organizational element affected by turbulence (H3). In this scenario, the type of moderation hypothesized was a matter of strength, not form and subgroup analysis of means, rather than moderated regression analysis, was appropriate (Venkatraman, 1989). First, all of the respondents who perceived their industry environment to be turbulent were chosen as a subset (N=70). Then that sample was split, using a cut-off point of the organicity score that reflected the midpoint of the organic scores for all of the respondents. Those companies above that cut-off point were classified organic; those below, mechanistic. Although a more sensitive categorization using quartiles could have been employed (i.e., taking only the top and bottom quartiles as organic and mechanistic, respectively), the loss in N would have offset any advantage. Looking at the mean performance ratings, the organic firms performed significantly better than the mechanistic firms, in this turbulent environment.

Here the environment is not characteristic of a hostile one, but rather a turbulent one. Opportunities exist and competition is not so unpredictable that it can't be addressed or even pre-empted. The uncertainties are mainly technological ones, and the small and medium-sized systems integrators do not manufacture the technological hardware they integrate. Rather they are solution providers or consultants, and therefore can adapt to either the ups or downs of the technology manufacturers. Hence, it would be consistent with this type of environment that the inverted U relationship would not be applicable and that high organic firms would outperform mechanistic firms.

In the regression analysis for the first hypothesis positing an interaction effect between EO and country environment in the performance model, the null hypothesis could not be rejected. An ANOVA was subsequently run, to compare means, looking for significant differences between the German and US in the survey results: (1) Where there were significant differences between the groups with respect to autonomy, an unexpected result was that the German companies displayed more autonomy in those questions than the US. (2) The conventional wisdom is that US companies have more access to outside capital than German companies, yet the question about use of retained earning suggests that the Germans have more access to outside sources of capital than the US. (3)

The Germans consistently ranked their companies lower than the Americans with respect to their industry in all of the performance self-ranking questions that added up to the performance measure used as a dependent variable (i.e., the sum of the rankings on market share growth, gross profit margin, and return on investment). Yet where data exists for actual performance numbers (percentage revenue growth over a three-year period, and current revenues per employee), the German companies show a higher actual firm performance.

The German firms certainly do not underperform vis-a-vis the Americans to the extent that the respective self-rankings suggest. What makes this result even more curious is that there is a potentially conservative bias in this result. This bias arises from the respondent profile. Significantly more of the German surveys were completed by the CEO or Chairman of the company, when compared to the US surveys. The bias, then, one would think, would be for CEOs to brag about their rankings, which the Germans apparently did not do. In addition, if one assumes that non-reporting of financial results may be due to a desire to hide poor performance, then again, the bias is in favor of the Germans. Nineteen of the US respondents did not report any basic revenue numbers, not even current revenues, while all of the Germans reported theirs. A caveat to this analysis is that of the 19 US respondents not reporting revenue numbers, 13 of them were not CEOs. One could assume that they might not have known the financial figures, although they were all senior managers in a position to know.

Research into the German policies, practices and organizational and national culture as represented in the GLOBE project (Brodbeck, et al., 2002) provides a deeper understanding of some of these survey differences. The German respondents of the GLOBE survey had the highest concern for performance, and it may be this high standard that is reflected in the lower self-rankings that they attributed to themselves in this study's subjective performance measures. The combination of high autonomy in the organization but a lack of consistency in competitive aggressiveness at the industry level may reflect the German paradox of organizational individuality and straightforwardness within a collaborative society. Interestingly, it is this paradox that may be a prescriptive response for increasingly turbulent environments.

Before our conclusion, it is appropriate to acknowledge the limitations of this study. First, the generalizability of the results must be approached with caution. Although the N of 95 was respectable for studies such as these, the need to divide the results by country in two of the hypotheses to obtain significance for the German results diminished that number to 44 and confined the two hypotheses tests to a one-country perspective. The results of the organicity-turbulence hypothesis, however, were significant across both countries. The lack of significance in the US data and the violation of some model assumptions underscores the generalizability problem. A larger N would hopefully smooth out some of the data and create a more robust model. Also, where one country showed significance but not the other, the comparative intent of the study was compromised.

Second, as with all cross-sectional research, the nature of the study limits the results to a single time horizon. We agree with Andersson (2011) that a common issue with all entrepreneurial orientation studies, including the present one, is that their cross-sectional nature precludes the possibility of drilling down to the evolutionary development of the firms and individual CEOs over time that a longitudinal study design would provide. The treatment of strategy as an over-arching process that is not subject to the changes of a content approach alleviates the problem of the use of time lags in judging performance as a result of a certain strategy content. Multinational or multi-cultural research methodology is problematic in and of itself. Although the focus of this study was

on a geopolitical comparative approach, such geopolitical entities do include culture(s) and a critique of multi-cultural methodologies is not unwarranted.

A way to overcome these limitations and strengthen the empirical grounding of this research is through methodological triangulation, whereby different methodologies are utilized to study the same phenomenon (Denzin, 1978; Jick, 1979). Supplementing the present study with findings based on qualitative methodology, such as the case study approach, can provide a level of granularity that is not possible in the more sterile quantitative methodology used in our study (Harrigan, 1983). The contingency approach to strategy research benefits greatly from the additional insight of interviews and case studies (Hambrick, 1980; Harrigan, 1983). In this sense, the regression analysis employed here is less rigorous, subject to interpretation without the advantage of dialogue with some of the respondents.

Within the field of corporate or firm-level entrepreneurship, entrepreneurial orientation or EO plays an important role in predictive models for firm performance. Since the publication of Miller's (1983) three dimensions of EO, researchers have used the term broadly to look at the processes, actions and behaviors that might characterize an entrepreneurial firm. The array of terminologies, typologies and models developed by these researchers, however, did not advance the theoretical foundations on which EO was first explored. When Lumpkin and Dess (1996) attempted to clarify the construct, which had now expanded to five dimensions, they did so by assuming three important axioms regarding its nature: the EO construct is multidimensional and not unidimensional, as predictor variables, the dimensions may co-vary, but they may also vary independently, depending upon the circumstances, and the linkage between EO and performance depends upon the configuration of environmental and organizational contingencies in the model.

All five dimensions are not necessary at all times to establish a linkage between EO and firm performance. This study has explored the EO construct and the linkage of EO to performance in the systems integration industry in Germany and the US. Both the entire EO model and its subset consisting of the dimensions of autonomy, innovativeness and proactiveness were explored in the context of country differences and a turbulent industry environment. Risk taking and competitive aggressiveness were not found to play a major role in the systems integration industry in these two countries. Organicity was also tested as an important organizational factor in firm performance maximization, again in the context of turbulence. Organic, open systems outperform mechanistic systems within a turbulent industry environment. The open communication and managerial style of the organic firm fosters the strategic process and the positive initiative behavior described above.

The international comparative nature of this study warrants further comment. The study explored a German culture of positive initiative, its relation to performance when interacting with the turbulent industry environment, and the paradox of the German individualist firm as an actor in a collective and collaborative society. In a turbulent environment, this interpretation of an open system may serve the German executives well, since they are open to immediately confronting issues within the firm, and to making quick decisions that do not necessarily require consensus (Brodbeck, Frese, & Javidan, 2002). High on performance orientation, their modest self-ranking of firm performance measures reported in this study also reflects their perception of what the entrepreneurial company in a turbulent industry should be. From an epistemological perspective, their ways of knowing may differ dramatically from those of the American firms and subsequently, their strategic views, processes and problem-solving approaches also differ. The prevalent discourse in international strategy and knowledge transfer focuses on transfer of skills, technologies, and operational approaches. The differences suggested here require a higher level of knowledge transfer. Therefore, if global managers recognize this challenge and the requisite fresh and innovative

perspective, they may do well to look within the “foreign” subsidiaries of their MNCs for opportunities of transfer or sharing of new and different ways of fundamentally looking at things, new ways of understanding and knowing, i.e., new epistemological frameworks and foundations on which they can build their competitive futures.

It has been argued that the linkage between EO and performance depends on the configuration of environmental and other organizational contingencies. Furthermore, it has been argued that an effective way of facilitating a firm’s EO is through strategic planning, of which the performance impact depends on national culture (Bachmann, et al., 2014). This means that managers should always be mindful of the culture of the nation in which they operate. By contextualizing the EO within national culture, our study showed that national culture exerts a stronger moderating influence on the EO-performance relationship. It supports the assertion that the interplay of turbulent environments and individualistic cultures increases EO-performance relationship (Engelen, Schmidt, & Buchsteiner, 2015). At the same time, while some components of EO have a positive impact on performance across cultures, the impact of others (e.g., proactiveness) vary across cultural contexts leading to high performance only when combined with other contingencies, such as strategic planning in high uncertainty avoidance and long-term oriented cultural contexts (Engelen, et al., 2015; Rigtering et al., 2017). The implication is that the impact of EO can only be maximized when its specific constituent elements are aligned with and supported by other contingencies such as national culture. In the turbulent high-tech environment of our study, there is no doubt that EO exerts a positive impact on organizational performance. For managers this means that they should understand the culture of the nation in which they operate in order to leverage the impact of EO.

Finally, in the decades since the Lumpkin & Dess (1996) model was introduced, several new contingencies have been uncovered that have been shown to be moderators or mediators of the EO-Performance linkage. These include effectuation (Mthanti & Urban, 2014), industry life cycle (Lumpkin & Dess, 2001), nationality (Saeed, Yousafzai, & Engelen, 2014), transformational leadership (Engelen, et al., 2015), and many others. These have opened up new avenues in which the EO-Performance linkage can be studied. Ours is but a modest contribution to this fascinating of research which will hopefully throw new light in the intersection of entrepreneurial orientation and international comparative management.

6. ACKNOWLEDGEMENTS

An acknowledgement is necessary when the realization of the paper was supported by a grant agency or other external resources. Always state the full name of the organization which provided funding for the project. A brief acknowledgement section may be included between the Conclusion and References (optional).

REFERENCES

- Anderson, B. S., Kreiser, P. M., Kuratko, D. F., Hornsby, J. S., & Eshima, Y. 2015. Reconceptualizing entrepreneurial orientation. *Strategic Management Journal*, 36(10): 1579-1596.
- Andersson, S. 2011. International entrepreneurship, born globals and the theory of effectuation. *Journal of Small Business and Enterprise Development*, 18(3): 627-643.
- Antonic, B., & Hisrich, R. D. 2000. *Impacts of corporate entrepreneurship-related contingencies on organizational wealth creation, growth, and profitability: An empirical investigation*. Academy of Management Annual Meeting, Toronto.

- Bachmann, J.-T., Engelen, A., & Schwens, C. 2016. Toward a better understanding of the association between strategic planning and entrepreneurial orientation: The moderating role of national culture. *Journal of International Management*, 22(4): 297-315.
- Bagozzi, R. P., & Yi, Y. 1988. On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1): 74-94.
- Baker, D. P., & Salas, E. 1996. Analyzing team performance: In the eye of the beholder? *Military Psychology*, 8(3): 235-245.
- Baumol, W. 2002. *The Free-Market Innovation Machine: Analyzing the Growth Miracle of Capitalism*. Princeton, NJ: Princeton University Press.
- Boling, R. J., Pierper, T. M., & Covin, J. G. 2016. CEO tenure and entrepreneurial orientation within family and nonfamily firms. *Entrepreneurship Theory and Practice*, 40(4): 891-913.
- Brodbeck, F. E., Frese, M., & Javidan, M. 2002. Leadership made in Germany: Low on compassion, high on performance. *Academy of Management Executive*, 16(1): 16-30.
- Bruining, H. 2000. *New ownership, entrepreneurial orientation and performance*. Academy of Management Conference, Toronto, Canada.
- Bums, T., & Stalker, G. M. 1961. *The Management of Innovation*. London: Tavistock.
- Burgelman, R. A. 1983. Corporate entrepreneurship and strategic management: Insights from a process study. *Management Science*, 29(12): 1349-1364.
- Child, J. 1972. Organization structure, environment and performance: The role of strategic choice. *Sociology*, 6(1): 1-22.
- Collins, J. C., & Porras, J. I. 1991. Organizational vision and visionary organizations. *California Management Review*, 34(1): 30-52.
- Covin, J. G., & Covin, T. J. 1990. Competitive aggressiveness, environmental context, and small firm performance. *Entrepreneurship Theory and Practice*, 14(4): 35-50.
- Covin, J. G., & Miles, M. P. 1999. Corporate entrepreneurship and the pursuit of competitive advantage. *Entrepreneurship theory and practice*, 23(3): 47-63.
- Covin, J. G., & Slevin, D. P. 1989. Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, 10(1): 75-87.
- Cycyota, C. S., & Harrison, D. A. 2006. What (not) to expect when surveying executives: A meta-analysis of top manager response rates and techniques over time. *Organizational Research Methods*, 9(2): 133-160.
- Das, T. K., & Teng, B.-S. 2001. Strategic risk behaviour and its temporalities: between risk propensity and decision context. *Journal of Management Studies*, 38(4): 515-534.
- Denzin, N. K. 1978. *The Research Act*. New York: McGraw Hill.
- Dess, G. G., & Beard, D. W. 1984. Dimensions of organizational task environments. *Administrative Science Quarterly*, 29(1): 52-73.
- Dess, G. G., & Robinson Jr., R. B. 1984. Measuring organizational performance in the absence of objective measures: The case of the privately-held firm and conglomerate business unit. *Strategic Management Journal*, 5(3): 265-273.
- Dess, G. G., Lumpkin, G. T., & Covin, J. G. 1997. Entrepreneurial strategy making and firm performance: Tests of contingency and configurational models. *Strategic Management Journal*, 18(9): 677-695.
- Dickson, P. H., & Weaver, K. M., 2008. The role of the institutional environment in determining firm orientations towards entrepreneurial behavior. *International Entrepreneurship and Management Journal*, 4(4): 467-483.
- Dill, W. R. 1958. Environment as an influence on managerial autonomy. *Administrative Science Quarterly*, 2(4): 409-443.
- Emery, F., & Trist, E. L. 1965. The causal texture of organizational environments. *Human Relations*, 19(1): 21-32.
- Engelen, A., Gupta, V., Strenger, L., & Brettel, M. 2015. Entrepreneurial orientation, firm performance, and the moderating role of transformational leadership behaviors. *Journal of Management*, 41(4): 1069-1097.

Engelen, A., Kube, H., Schmidt, S., & Flatten, C. T. 2014. Entrepreneurial orientation in turbulent environments: The moderating role of absorptive capacity. *Research Policy*, 43(8): 1353-1369.

Engelen, A., Schmidt, S., & Buchsteiner, M. 2015. The simultaneous influence of national culture and market turbulence on entrepreneurial orientation: A nine-country study. *Journal of International Management*, 21(1): 18-30.

Fowler, F. J. 2009. *Survey Research Methods*. Thousand Oaks, CA: Sage Publications.

Grünhagen, M., Wollan, M. L., Dada, O. L., & Watson, A. 2014. The moderating influence of HR operational autonomy on the entrepreneurial orientation–performance link in franchise systems. *International Entrepreneurship and Management Journal*, 10(4): 827-844.

Hair, J. F., Jr., Anderson, R. E., Tatham, R. I., & Black, W. C. 1995. *Multivariate Data Analysis*. Upper Saddle River, NJ: Prentice Hall.

Hambrick, D. C. 1980. Operationalizing the concept of business-level strategy in research. *Academy of Management Review*, 5(4): 567-575.

Hamel, G., & Prahalad, C. K. 1994. *Competing for the Future*. Boston, MA: Harvard Business School Press.

Harrigan, K. R. 1983. Research methodologies for contingency approaches to business strategy. *Academy of Management Review*, 8(3): 398-405.

Hart, S., & Banbury, C. 1994. How strategy-making processes can make a difference. *Strategic Management Journal*, 15(4): 251-269.

Hofstede, G. 1980. *Cultures Consequences*. Beverly Hills, CA: Sage.

Hrebiniak, L. G., & Joyce, W. F. 1985. Organizational adaptation: Strategic choice and environmental determinism. *Administrative Science Quarterly*, 30(3): 336-349.

Hughes, M., & Mustafa, M. 2017. Antecedents of corporate entrepreneurship in SMEs: Evidence from an emerging economy. *Journal of Small Business Management*, 55(SI1): 115–140.

Jick, T. D. 1979. Mixing qualitative and quantitative methods: Triangulation in action. *Administrative Science Quarterly*, 24(4): 602-611.

Jones, C. D., Jolly, P. M., Lubojacky, C. J., Martin, G. P., & Gomez-Mejia, L. R. 2019, April 9. Behavioral agency and corporate entrepreneurship: CEO equity incentives and competitive behavior. *International Entrepreneurship and Management Journal*. Retrieved May 27, 2019.

Khandwalla, P. N. 1977. *The Design of Organization*. New York: Harcourt Brace Jovanovich.

Knight, G. A. 1997. Cross-cultural reliability and validity of a scale to measure firm entrepreneurial orientation. *Journal of Business Venturing*, 12(3): 213-225.

Kreiser, P. M., Marino, L. D., Dickson, P., & Weaver, K. M. 2010. Cultural influences on entrepreneurial orientation: The impact of national culture on risk taking and proactiveness in SMEs. *Entrepreneurship Theory and Practice*, 34(5): 959-984.

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

Lumpkin, G. T., & Dess, G. G. 2001. Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle. *Journal of Business Venturing*, 16(6): 429-451.

Mangaliso, M. P. (1995). The strategic usefulness of management information as perceived by middle managers. *Journal of Management*, 21(2): 231-250.

Mangaliso, M. P., Mir, R. A., & Knipes, B. J. 1998. Towards a framework of firm responsiveness to turbulent environments. *SBL Research Review*, 2(2): 25-37.

March, J. G., & Sutton, R. I. 1997. Crossroads—organizational performance as a dependent variable. *Organization Science*, 8(6): 698-706.

Markin, E., Gupta, V. K., Pierce, C. A., & Covin, J. 2018. Entrepreneurial orientation, firm-performance, and the role of national culture. *Academy of Management Proceedings*. 2018, p. 11247. Briarcliff Manor, NY 10510: Academy of Management

McCann, J. E., & Selsky, J. 1984. Hyperturbulence and the emergence of Type-5 environments. *Academy of Management Review*, 9(3): 460-470.

Miles, R. E., & Snow, C. C. 1978. *Organizational Strategy, Structure and Process*. New York: McGraw Hill.

- Miller, D. 1983. The correlates of entrepreneurship in three types of firms. *Management Science*, 29(7): 770-791.
- Miller, D., & Friesen, P. H., 1982. Innovation in conservative and entrepreneurial firms: Two models of strategic management. *Strategic Management Journal*, 3(1): 1-25.
- Mintzberg, H. 1994. *The Rise and Fall of Strategic Planning*. New York: The Free Press.
- Mthanti, T. S., & Urban, B. 2014. Effectuation and entrepreneurial orientation in high-technology firms. *Technology Analysis & Strategic Management*, 26(2): 121-133.
- Nadkarni, S., & Narayanan, V. K. 2007. Strategic schemas, strategic flexibility, and firm performance: The moderating role of industry clockspeed. *Strategic Management Journal*, 28(3): 243-270.
- Nunnally, J. C. 1978. *Psychometric Theory (Vol. 2)*. New York, NY: The McGraw-Hill Companies.
- Penrose, E. 1959. *The Theory of the Growth of the Firm*. Oxford, U.K.: Oxford University Press.
- Porter, M. E. 1980. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York: Free Press.
- Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. 2009. Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship Theory and Practice*, 33(3): 761-787.
- Reed, M. 1996. Organizational theorizing: A historically contested terrain. In: S. R. Clegg, C. Hardy, & W. Nord (Eds.), *Handbook of Organization Studies* (pp. 31-56). London, U.K.: Sage Publications.
- Rigtering, J. C., Eggers, F., Kraus, S., & Chang, M.-L. 2017. Entrepreneurial orientation, strategic planning and firm performance: The impact of national cultures. *European Journal of International Management*, 11(3): 301-324
- Saeed, S., Yousafzai, S. Y., & Engelen, A. 2014. On cultural and macroeconomic contingencies of the entrepreneurial orientation–performance relationship. *Entrepreneurship Theory and Practice*, 38(2): 255-290.
- Schumpeter, J. A. 1934. *The theory of Economic Development*. Cambridge, MA: Harvard University Press.
- Schwens, C., Zapkau, F. B., Bierwerth, M., Isidor, R., Knight, G. K., & Kabst, R. 2018. International Entrepreneurship: A Meta–Analysis on the Internationalization and Performance Relationship. *Entrepreneurship Theory and Practice*, 42(5): 734-768.
- Terjesen, S., Hessels, J., & Li, D. 2016. Comparative international entrepreneurship: A review and research agenda. *Journal of Management*, 42(1): 299-344.
- Thompson, J. D. 1967. *Organizations in Action*. New York: McGraw-Hill.
- Tuksamit, N., & Rajiani, I. 2020. Entrepreneurial drivers of innovation success: International business perspectives. *Global Journal of Entrepreneurship and Management*, 1(1): 1-15.
- Tversky, A., & Kahneman, D. 1981. The framing of decisions and psychology of choice. *Science*, 211(4481): 453-458.
- Venkatraman, N. 1989. The concept of fit in strategy research: Toward verbal and statistical correspondence. *Academy of Management Review*, 14(3): 423-444.
- Venkatraman, N., & Ramanujam, V. 1986. Measurement of business performance in strategy research: A comparison of approaches. *Academy of Management Review*, 11(4): 801-814.
- Wales, W. J., Gupta, V. K., & Mousa, F.-T. 2013. Empirical research on entrepreneurial orientation: An assessment and suggestions for future research. *International Small Business Journal*, 31(4): 357-383.
- Wan, W. P., & Hoskisson, R. E. 2003. Home country environments, corporate diversification strategies, and firm performance. *Academy of Management Journal*, 46(1): 27-45.
- Yu, A., Lumpkin, G. T., Parboteeah, K. P., & Stambaugh, J. E. 2019. Autonomy and family business performance: The joint effect of environmental dynamism and national culture. *International Small Business Journal*, 37(2): 153-185.
- Zahra, S. A., Jennings, D. F., & Kuratko, D. F. 1999. The antecedents and consequences of firm-level entrepreneurship: The state of the field. *Entrepreneurship Theory and Practice*, 24(2): 45-65.