Título artículo / Títol article:	Linking Entrepreneurial Orientation and Firm Performance: The Role of Organizational Learning Capability and Innovation Performance
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Revista:	Journal of Small Business Management
Versión / Versió:	Pre-print
Cita bibliográfica / Cita bibliogràfica (ISO 690):	ALEGRE, Joaquín; CHIVA, Ricardo. Linking entrepreneurial orientation and firm performance: the role of organizational learning capability and innovation performance. Journal of Small Business Management, 2013, vol. 51, no 4, p. 491-507
url Repositori UJI:	http://hdl.handle.net/10234/95624

Revealing the Links between Entrepreneurial Orientation and Firm Performance: The Role of Organizational Learning Capability and Innovation Performance

Introduction

Entrepreneurship is a young field of research that is attracting the interest of a growing number of scholars (Ireland, Reutzel, and Webb 2005; Runyan, Dröge, and Swinney 2008). Sharma and Chrisman (1999: 17) maintain that entrepreneurship encompasses acts of organizational creation and renewal occurring within or outside an existing organization. However, management research has mainly focused on the entrepreneurial orientation (Ireland and Webb 2007) that explains how entrepreneurship is put into practice. Entrepreneurial orientation (EO) can be considered as a managerial attitude oriented towards the strategy-making processes that provide organizations with a basis for entrepreneurial decisions and actions (Lumpkin and Dess 1996; Richard, Barnett, Dwyer, and Chadwick 2004).

Although EO is theoretically beneficial for firms (Ireland and Webb, 2007) and a positive relationship with performance could be expected (Runyan et al. 2008; Rauch, Wiklund, Lumpkin, and Frese 2009), some results have not been fully conclusive. For example, Dimitratos, Lioukas, and Carter (2004) found recently a non significant relationship between EO and firms' international performance in a sample of Greek firms. Similarly, George, Wood and Khan (2001) found no significant correlation between EO and ROA (Return On Assets) nor ROE (Return On Equity) in the banking industry in the USA. This might be due

mainly to the concept of firm performance which can be influenced by many variables both internal and external to the organization (Thoumrungroje and Tansuhaj 2005) and to the long time the benefits of EO come to fruition (Zahra and Covin 1995; Madsen 2007). In this line of thinking, Zahra et al. (1999) suggested that research should focus on identifying the underlying steps that determine the contribution of EO to firm performance.

Following this research stream, the next step could be to look more deeply into the EO-firm performance relationship by identifying intermediate steps between these two variables (Zahra, Sapienza, and Davidsson 2006; Baker and Sinkula 2009). In this vein, Wang (2008) recently found that the learning orientation of the firm was mediating the link between EO and firm performance. In this study, we aim to extend this line of work by offering a wider picture of the EO-firm performance relationship.

On the one hand, there is a growing body of work connecting entrepreneurship and organizational learning (Cope 2003; Wang 2008; Blackburn and Kovalainen 2009). Organizational learning is defined as the process through which organizations change or modify their mental models, rules, processes or knowledge, to sustain or improve their performance (Dibella, Nevis, and Gould 1996), which is very close to the concept of entrepreneurship. Organizational learning capability (OLC) is defined as the organizational and managerial characteristics or factors that facilitate the organizational learning process or allow an organization to learn (Goh and Richards 1997; Hult and Ferrell 1997). As EO is a strategic posture (Covin and Slevin 1989) or attitude developed by managers towards entrepreneurship, OLC might be understood as the organizational characteristics that follow or are consistent with the previous managerial posture and also sustain entrepreneurship. Hence, OLC could represent a way through which managers attempt to implement EO.

On the other hand, innovation consists of successful exploitation of new ideas (Amabile et al. 1996). The effects of entrepreneurial actions are manifested in product,

process and administrative innovations (Ireland and Webb 2007; Covin and Miles 1999; Schumpeter 1934). According to Ireland et al. (2005: 557), the inclusion of innovation as an indicator of entrepreneurship results, reflecting the views of Drucker (1998: 152), and Schumpeter (1934), maintains that innovation is an important outcome of the entrepreneurship function. In fact, Schuler (1986) understands entrepreneurship as the practice of innovating, and claims that what distinguishes entrepreneurial from non-entrepreneurial firms is the rate of innovation. The innovation performance of a firm refers to its product and process innovations. Therefore, EO could be considered as an antecedent of innovation performance.

The main objective of this paper is to analyze the relationships between EO, OLC, innovation performance and firm performance. More precisely, we want to examine what is the role played by important organizational consequences of EO, such as organizational learning capability (OLC) and innovation performance, within the EO-firm performance relationship. We propose that organizational learning capability (OLC) and innovation performance play a mediating role in the EO-firm performance relationship. We suggest that such mediations are relevant in order to get a better understanding of the EO-firm performance relationship.

By doing so, we make two contributions: (1) provide a more complete picture of the EO-firm performance relationship that highlights the role of organizational learning capability and innovation performance and (2) explain intra-industry performance differences as a function of EO, OLC and innovation performance. Hypotheses are tested on a database obtained through a survey on a population of firms that is homogeneous in terms of size (most of firms are small and medium enterprises), industry and technology: Italian and Spanish ceramic tile producers.

This introduction is followed by the development of a conceptual background and hypotheses concerning the EO-firm performance relationship. The third section describes the methodology used to gather our database and to test our hypotheses on data from the Italian and Spanish ceramic tile industry. We carry out a test through structural equations modeling and we present the results in section four. Findings provide original empirical evidence of the relevant role played by OLC and innovation performance in the relationship between EO and firm performance. These findings are relevant for managers because they provide guidelines on how to implement the EO attitude and make the most of it. The paper concludes with a discussion of the results and their implications, and suggestions for further research.

Conceptual Background and Hypotheses

EO is focused on the strategy-making process (Rauch et al. 2009). We conceive EO as a managerial attitude that will guide this entire strategy-making process following an entrepreneurial strategic posture (Covin and Slevin 1989). The extensive literature on the relationship between EO and firm performance suggest a general positive link (Wiklund 1999; Sadler-Smith et al. 2003; Rauch et al. 2009; Baker and Sinkula 2009). We propose that, between the EO managerial attitude and firm performance, OLC and innovation performance could play a relevant role.

Furthermore, this is connected to strategic management literature as EO could be an important managerial choice explaining intra-industry differential firm performance (Zott 2003; Easterby-Smith & Prieto 2008). EO could be regarded as an antecedent of innovation performance, which could be a useful parameter to explain why firms perform differently (Nelson 1991; Zott 2003). Furthermore, OLC could reinforce the effect of EO on innovation performance as it implies that the entrepreneurial posture is having effects within the

organization or that the organization is acting in an entrepreneurial way, based on managerial premises.

Several authors (Ireland and Webb 2007; Covin and Miles 1999; Schumpeter 1934) argue that entrepreneurial actions have direct effects on product, process and administrative innovations. The literature has traditionally conceived innovation results as an indicator of entrepreneurship (Ireland et al. 2005; Drucker 1998; Schumpeter 1934); however this relationship needs further examination. EO increases proactiveness and willingness to take risks and innovate (Zahra et al. 1999) within a particular organization. As a result, EO may be considered one of the antecedents of innovation performance (Renko, Carsrud, and Brännback 2009; Baker and Sinkula 2009).

The innovation performance of a firm includes product and process innovations; these two kinds of innovation outcomes are very closely linked (Utterback and Abernathy 1975) and constitute a highly complex process that generally involves all company functions. A 'product' is a good or service offered to the customer, and a 'process' is the way the good or service is produced and delivered (Barras 1986). Thus, product innovation is defined as the product or service introduced to meet the needs of the market or of an external user and process innovation is understood as a new element introduced into production operations or functions (Damanpour and Gopalakrishnan 2001). Product innovations focus on the market and are aimed at the customer, while process innovations focus on the internal workings of the company and are aimed at increasing efficiency (Utterback and Abernathy 1975).

Innovation is a crucial factor in firm performance as a result of the evolution of the competitive environment (Wheelwright and Clark 1992; Newey and Zahra 2009). The importance of innovation for good long-term company results is now widely recognized and has been extensively reported in the literature. Consequently, innovation performance is considered to have a direct effect on firm performance (Wheelwright and Clark 1992; Renko

et al. 2009; Baker and Sinkula 2009) and can be considered as a more precise dependent variable of EO than firm performance (Ireland et al. 2003). The following hypothesis is therefore put forward:

Hypothesis 1: Innovation performance acts as a mediating variable between EO and firm performance.

Some authors have suggested that the relationship between EO and innovation performance is conditional or dependent organizational factors (Lumpkin and Dess 1996). Zahra et al. (1999) proposed that research should focus on identifying the underlying processes that determine the contributions of EO to firm performance. However, they also surmise that one of the most profound contributions of EO may lie in its links with organizational learning, which increases the firm's competencies in market assessment, or creating and commercializing new knowledge-intensive products. In fact, Dess et al. (2003) report that entrepreneurship has a direct effect on organizational learning, which is considered as a mediating variable between entrepreneurship and knowledge.

Entrepreneurial firms encourage non-authoritarian structures that facilitate creativity, collaboration, and dialogue (Cope 2003; Fletcher and Watson 2007). EO might provide the management support for the organizational learning process and capability (Zahra et al. 2006; Wang 2008). Similarly, Zahra et al. (1999) consider that EO promotes and supports organizational learning and learning values, such as teamwork or openness. Covin et al. (2006) maintain that the strategizing activities that organizational learning entails are critical for maximizing the effect of EO on firm performance.

The organizational learning literature attempts to analyze and determine whether and how certain learning is being accomplished in organizations (Crossan, Lane, and White 1999). A stream of research on this area has focused on the characteristics that facilitate this process (Pedler, Burgoyne, and Boydell 1997). OLC is defined as the organizational and

managerial characteristics or factors that facilitate the organizational learning process or allow an organization to learn (Dibella et al. 1996; Goh and Richards 1997; Hult and Ferrell 1997). Recently, Chiva and Alegre (2009) proposed a new and integrative conceptualization of OLC following a comprehensive analysis of all the theoretical perspectives and literatures involved in the facilitating factors of organizational learning. Five facilitating factors of organizational learning were identified: experimentation, risk-taking, interaction with the environment, dialogue and participative decision-making. We base ourselves on this conceptualization of OLC.

OLC might require a certain strategic posture that facilitates this organizational approach. EO might be considered as the basic managerial approach to support learning within organizations. Organizational learning has been showed to have beneficial effects for firm performance (Zollo and Winter 2002; Prieto and Revilla 2006; Wang 2008; Baker and Sinkula 2009). Therefore, we put forward the following hypothesis:

Hypothesis 2: OLC acts as a mediating variable between EO and firm performance.

Organizational learning can be easily linked to creativity (Amabile et al., 1996). The organizational learning process consists of the acquisition, dissemination and use of knowledge (Argote, McEvily and Reagans 2003), and is therefore an extremely useful process to generate new ideas. Innovation requires the generation and implementation of new ideas. Zaltman, Duncan and Holbek (1973) highlight openness to innovation as a critical part of the first stage of the innovation process; that is, whether the members of an organization are willing to learn and change or are resistant to innovation.

Previous research suggests that organizational learning affects innovation performance (Calantone et al. 2002; Newey and Zahra 2009). McKee (1992) understands product innovation as an organizational learning process and claims that directing the organization towards learning fosters innovation effectiveness and efficiency. Wheelwright and Clark

(1992) suggest that learning plays a determinant role in new product development projects because it allows new products to be adapted to changing environmental factors, such as customer demand uncertainty, technological developments or competitive turbulence. More recently, Hult et al. (2004) point out that if a firm is to be innovative, its management must devise organizational features that embody a clear learning orientation. These lines of argument lead us to the following hypotheses:

Hypothesis 3: OLC acts as a mediating variable between EO and innovation performance.

Based on the above discussion on EO, OLC, innovation performance, and firm performance, we propose the conceptual model shown in Figure 1. In Figure 1, Organizational Learning Capability, Innovation Performance and Firm Performance are second-order factors. EO is a first-order factor. Size is included in the model as a control variable. To reduce the clutter, their latent dimensions are not shown.

The contention of our model is threefold: (1) the effect of EO on firm performance is mediated by innovation performance, (2) the effect of EO on firm performance is mediated by OLC, and (3) the effect of EO on innovation performance is mediated by OLC. The purpose of this model is to explain the EO-firm performance relationship by offering a wider picture that includes the intermediate steps between the EO managerial attitude and final firm performance. By doing so, we also aim to explain performance differences in a particular industry by considering EO, OLC and innovation performance.

Insert Figure 1 about here

Method

Sample and Data Collection

We test our hypotheses by focusing on a single industry: Italian and Spanish ceramic tile producers. Knowledge manifests itself in various ways in different industries. Thus, the analysis of a single industry may be advantageous for assessing OLC and innovation performance, as knowledge and learning involved in innovation processes is likely to be more homogeneous (Santarelli and Piergiovanni 1996). One further benefit of examining Italian and Spanish ceramic tile industries is that, because it is a rather homogeneous population, we control to a certain extent for size, industry, and national culture contingency factors (Lyon, Lumpkin and Dess 2000; Rauch et al. 2009).

Ceramic tile production is a largely globalized industry. In 2004, Italian and Spanish ceramic tile production represented 77% of EU production (Ascer 2006). The world's biggest ceramic tile producer is China, followed by Spain, Italy, Brazil and Turkey. Italian and Spanish firms lead world ceramic tile exports thanks to superior technology and design.

Italian and Spanish ceramic tile producers are organized in a similar way. Most of them are considered to be SMEs, as they do not generally exceed an average of 250 workers and they tend to be geographically concentrated in industrial districts: Sassuolo in northern Italy and Castellón in eastern Spain (Valencia Chamber of Commerce 2004). Features of the ceramic tile industry suggest it belongs to the scale-intensive and the science-based trajectories of Pavitt's taxonomy (Pavitt 1984). In the production of ceramic tiles, technological accumulation is mainly generated by (1) the design, building and operation of complex production systems (scale-intensive trajectory), and (2) knowledge, skills and techniques emerging from academic chemistry research (science-based trajectory). Previous studies provide compelling evidence of the significant innovating behavior of Italian and Spanish ceramic tile producers (Enright and Tenti 1990; Flor and Oltra 2004). Several recent

studies have analyzed product innovation in the ceramic tile industry and have found enamels and product design to be the most important areas of product improvement. New enamels provide better product characteristics, such as non-slip properties or better frost resistance. Novelty in product design is focused on new sizes, improved mechanical characteristics and aesthetics (Flor and Oltra 2004).

Finally, by focusing our data collection on the ceramic tile industry, we reduce the range of extraneous variations that might influence the constructs of interest (Santarelli and Piergiovanni 1996). While we recognize the shortcoming of such sampling, we believe that the advantages of this approach outweigh the disadvantages of limited generalizability. Survey fieldwork was undertaken from June to November 2004. A pre-test was carried out on four technicians from ALICER, the Spanish Center for Innovation and Technology in Ceramic Industrial Design, to ensure that the questionnaire items were fully understandable in the context of the ceramic tile industry. The questionnaire was applied using a 7-point Likert scale.

A key information technique consistent with previous studies was used to obtain data (Lyon et al. 2000). The questionnaire was addressed to various company directors. The General Manager answered the items dealing with EO and firm performance (Moreno and Casillas 2008; Escribá-Esteve et al. 2008). The Product Development Manager responded to the innovation performance questions, since this manager has knowledge of all activities concerning innovation (Calantone et al. 2002). Finally, the Human Resources Manager answered items dealing with OLC (Wang 2008). Appointments were made with respondents so that the questionnaire could be answered during a personal interview. Following Malhotra (1993), we offered a feedback report on the survey results to the participating firms in order to encourage a higher response rate.

Our study received a total of 182 completed questionnaires, 82 from Italian firms and 100 from Spanish firms. The sample obtained represents around 50% of the study population (Valencia Chamber of Commerce 2004). Both the number of responses and the response rate can be considered satisfactory (Spector 1992; Williams, Garvin, and Hartman 2004). Non-response bias was assessed through a comparison of sample statistics with known population values such as annual sales volume or number of employees. The websites of the Italian (Assopiastrelle 2006) and the Spanish (Ascer 2006) associations of ceramic tiles producers provide this information for most of the firms in the industry. Table 1 shows the description of the sample in terms of location and size.

Insert Table 1 about here

Measures

Entrepreneurial Orientation. EO was measured using the widely used nine-item, 7-point scale proposed by Covin and Slevin (1989). This measurement scale has been used satisfactorily by a number of empirical papers (Covin, Green, and Slevin 2006; Green, Covin, and Slevin 2008; Escribá-Esteve et al. 2008).

Organizational Learning Capability. In light of the OLC concept adopted in our theoretical review, we selected the measurement instrument developed by Chiva and Alegre (2009). It is a fourteen-item, 7-point scale that includes five different dimensions consistent with the previous literature: experimentation, risk-taking, interaction with the external environment, dialogue and participative decision making. Experimentation is defined as the degree to which new ideas and suggestions are attended to and dealt with sympathetically. Risk-taking is conceived as the tolerance of ambiguity, uncertainty, and errors by members of the organization. This OLC dimension refers to an organizational characteristic while the EO

dimension focuses on a managerial attitude. Interaction with the environment is defined as the scope of relationships with the environment. Dialogue is considered to be the sustained collective inquiry into the processes, assumptions, and certainties that make up everyday experience. Finally, Participative decision-making refers to the level of influence employees have on the decision-making process.

Innovation performance. We conceive innovation performance as a construct with three different dimensions consistent with the previous literature: product and process innovation effectiveness and innovation efficiency (Appendix**)**. These dimensions have been widely discussed in innovation research (Brown and Eisenhardt 1995; OECD 2005). The OECD Oslo Manual provides a detailed measurement scale for assessing the economic objectives of product and process innovation and this is the scale that we propose for measuring product and process innovation effectiveness. This scale was put forward by the OECD to provide some coherent drivers for innovation studies, thereby achieving greater homogeneity and comparability among innovation studies. Nowadays, many innovation surveys use this widely validated scale (INE, 2008; Alegre, Lapiedra, and Chiva 2006).

Innovation efficiency is the third dimension considered for measuring innovation performance. It is widely accepted that innovation efficiency can be determined by the cost and the time involved in the innovation project (Wheelwright and Clark 1992; Brown and Eisenhardt 1995; Chiesa, Coughlan, and Voss 1996).

Firm performance. To measure firm performance, we asked general managers to rate their firm's performance over the last three years compared to competing firms. We used Venkatraman's (1989) business performance scale. Specifically, managers were asked to score their firm's growth and profitability on a scale from 1 to 7, with 1 indicating that the firm was among the lowest scoring competing firms and 7, among the highest scoring.

Control Variable. Firm size was included as a control variable in the overall model since it explains variation in organizational performance. Firm size affects the endowment of significant inputs for the business process, such as money, people and facilities, and has been shown to influence organizational performance (Tippins and Sohi 2003). Respondents were asked to classify their company into one of the four European Commission categories (Table 1).

Analyses

The primary analyses of the data set are based on structural equations modeling (SEM). SEM has been developed in a number of academic disciplines to substantiate theory. SEM allows for the inclusion of latent variables that can only be measured through observable indicators. In this study, concepts such as EO or OLC are difficult to observe. Furthermore, SEM assesses measurement errors and allows for simultaneously estimating all the relationships proposed in the conceptual model (Hair et al., 1998; Bou-Llusar et al. 2008). EQS 6.1 software was used to estimate the models for our research hypotheses.

SEM allows for designing reflective- or formative indicator models. Mackenzie, Podsakoff and Burke Jarvis (2005) define these two types of measurement models in the following terms:

> *Reflective-indicator models "posit that covariation among measures is explained by variation in an underlying common latent factor. It is for this*

reason that the indicators are referred to as effects indicators that are reflective of the underlying construct they represent."

Formative-indicator models "posit that the measures jointly influence the composite latent construct, and meaning emanates from the measures to the construct in the sense that the full meaning of the composite latent construct is derived from its measures."

Our conceptual model meets the four criteria outlined by Mackenzie et al. (2005) according to which a reflective model would be a better option for the measurement model: (1) the indicators are manifestations of the construct; (2) the indicators share a strong common them; (3) the indicators are expected to covary with each other, and (4) the indicators are expected to have the same antecedents and consequences. As a result, our conceptual model has been designed as a reflective-indicator model.

Psychometric Properties of Measurement Scales

The psychometric properties of the measurement scales were assessed in accordance with accepted practices (Gerbing and Anderson 1988; Tippins and Sohi 2003), and included content validity, reliability, discriminant validity, convergent validity, and scale dimensionality. Table 2 exhibits factor correlations, means, and standard deviations.

Content validity was established through a revision of extant literature and through personal interviews with ceramic tile industry experts (four ALICER technicians). We computed the coefficient alpha and composite reliability indicator to assess scale reliability (Fornell and Larker 1981; Bou-Llusar et al. 2008). All scales achieved acceptable coefficient alphas and composite reliability indicators of at least 0.70 (Table 2).

Insert Table 2 about here

Discriminant validity was assessed through confirmatory factor analysis (CFA) by comparing the χ^2 differences between a constrained confirmatory factor model with an interfactor correlation set to 1 (indicating they are the same construct) and an unconstrained model with an interfactor correlation set free. All χ^2 differences were found to be significant, providing evidence of discriminant validity (Anderson and Gerbing 1988; Gatignon et al. 2002; Tippins and Sohi 2003). CFA was also used to establish convergent validity by confirming that all scale items loaded significantly on their construct factors (Anderson and Gerbing 1988). Additionally, convergent validity was also confirmed by comparing the χ^2 differences between a constrained confirmatory factor model with an interfactor correlation set to 0 (indicating that there is no relationship between the two constructs) and an unconstrained model with an interfactor correlation set free. All χ^2 differences were found to be significant, providing evidence of convergent validity (Gatignon et al. 2002).

We checked the constructs' dimensionality through the loadings of the measurement items on the first-order factors, and the loadings of the first-order factors on the second-order factors. All loadings were above 0.40 and significant at $p<0.001$. No cross-loadings appeared.

Before testing our hypotheses, we assessed the extent of common method variance by conducting a Harman's single-factor test (Podsakoff and Organ 1986; Podsakoff et al. 2003). This is a problem that can arise when dependent and independent variables are collected from a single informant. In our study, we used different key informants to minimize this problem. However, EO and firm performance were asked to the same respondent: the General Manager of the firm. The results of the confirmatory factor analysis with all the indicators loading into a single-factor (χ^2=4405.78; 1377 d.f.; BBNFI= 0.500; CFI=0.589; RMSEA=0.11;

χ^2/d.f.=3.2) showed a poor fit, suggesting that the single-factor possibility is not relevant (Bou-Llusar et al. 2008).

Results

Figure 2 shows the results of the structural equations analysis. We carried out the analysis including all the items and all the dimensions described in the measurements section. The chi-square statistic for the model is significant, but other relevant fit indices suggest a good overall fit (Tippins and Sohi 2003).

The mediating effect of innovation performance on the relationship between EO and firm performance is established due to the following conditions (Tippins and Sohi 2003). Firstly, there is a positive relationship between EO and innovation performance. Secondly, there is a positive relationship between innovation performance and firm performance. And thirdly, the direct effect of EO on firm performance is low and non-significant. These conditions provide compelling evidence for the full mediating effect of innovation performance on the relationship between EO and firm performance and lend substantial support to Hypothesis 1. So, this mediation relationship represents a significant contribution to our understanding of the positive influence of EO on firm performance.

Results shown in Figure 2 provide support to the mediating effect of OLC on the relationship between EO and firm performance. Firstly, there is a positive relationship between EO and OLC. Secondly, there is a positive relationship between OLC and firm performance. And thirdly, the direct effect of EO on firm performance is low and non-significant. These conditions provide compelling evidence for the full mediating effect of OLC on the relationship between EO and firm performance and lend substantial support to Hypothesis 2. So, this mediation test provides further empirical evidence of the relevant role

that organizational learning plays in the link between EO and firm performance (Wang, 2008).

Results also provide support for Hypothesis 3. However, the mediating effect of OLC on the relationship between EO practice and innovation performance is found to be partial. There is a positive relationship between EO and OLC; there is a positive relationship between OLC and innovation performance, and, finally, the direct effect of EO on innovation performance is significant. These results provide support for Hypothesis 3 by showing a partial mediating role of OLC on the relationship between EO and innovation performance. This mediation relationship is also relevant in understanding the effects of EO attitude on the outcomes of the innovation process.

Therefore, EO might be regarded as an antecedent of the firm's OLC and innovation performance. There is a positive and statistically significant impact of EO on both constructs. Both impacts are moderate; this indicates that OLC and innovation performance might have other antecedents, such as human resource management practices, in the case of OLC, or marketing and technological capabilities, in the case of innovation performance.

Insert Figure 2 about here

Discussion

Entrepreneurship and EO have received a great deal of research attention in recent years. Although EO is usually considered to have a positive impact on firm performance, this relationship requires a broader analysis of the intermediate steps between EO and firm

performance. In our research, we have found OLC and innovation performance playing a mediating role in the EO-firm performance relationship. Results suggest that EO enhances OLC and innovation performance, which in turn enhance firm performance. Innovation performance acts as a mediating variable between EO and firm performance. Our findings are an important contribution to the recent extension of the EO-firm performance research stream focusing on the intermediate links between EO and firm performance (Rauch et al. 2009)

In this paper, we also suggest that the relationship between EO and innovation performance can not simply be considered as a direct relationship, but it is also conditional or dependent on OLC, the organizational factors that facilitate the organizational learning process. EO is a managerial attitude that must be supported by certain organizational conditions that facilitate learning and have positive implications for performance. Organizational learning is a basic element of innovation, as the development of new ideas or concepts are considered to be essential to develop new products or processes. Our study contributes to the literature on entrepreneurship by evidencing the importance of certain organizational characteristics, OLC, for EO to be implemented fruitfully. This managerial attitude requires certain organizational practices that catalyze its effects on organizations, specifically on innovation performance. EO may have little direct effect on innovation performance if organizational and human resources are not willing to follow this approach. OLC, the factors that facilitate the organizational learning process, may partially mediate the relationship between EO and innovation performance, by extending this attitude to the rest of the organization. Firms with a strong EO will enter new-product markets aggressively and incur greater risks, which will require them to cope with more complex and changing environments and will call for learning. Organizational learning has been pointed at as novel area of research in entrepreneurship (Blackburn and Kovalainen 2009); we claim that much of

its relevance for entrepreneurship lies in its effects on innovation performance and on firm performance.

EO might be considered as an important determinant of firm performance. However, Rauch et al. (2009) highlighted that there is a considerable amount of variation in results on the EO-performance relationship. We suggest that this important variation might be due to not taking into account intermediate links such as organizational learning and innovation issues. Our findings could explain why some firms might manifest a low performance while their managers show a clear EO attitude: the organizational learning and innovation links would be missing.

This research provides a more complete examination of the effects of EO on firm performance and offers an explanation to intra-industry differences in firm performance (Nelson 1991; Easterby-Smith and Prieto 2008). Given that firm performance may vary among ceramic tile producers, we attempt to understand this asymmetry within the context of managerial attitudes (EO), organizational characteristics facilitating organizational learning (OLC), and the performance of innovation processes. Results suggest that competitive advantage in the ceramic tiles industry requires firm strategies focusing on EO, OLC and innovation. This finding represents a contribution to the strategic management stream that seeks to explain differences in firm performance within a particular industry.

Furthermore, this research also contributes to the organizational learning literature by suggesting the importance of managers and their attitudes and posture in order to effectively implement the factors or conditions to learn within organizations. Further research should analyze other potential antecedents of OL, like organizational culture or human resource management practices.

Implications for Practitioners

This article has a number of implications for practitioners. Although managers recognize the importance of entrepreneurship and EO, their implications for and demands on the rest of the organization are often ignored in the process toward its success. In this paper, we suggest implementing an organizational learning approach when management has chosen to follow an EO. An initial management action could be to enhance the OLC dimensions – experimentation, risk-taking, interaction with the environment, dialogue, and participative decision-making – so that learning and innovation processes could be more fruitful. Furthermore, we underline the importance of measuring the effects of EO on organizations by analyzing their innovation performance. Innovation is a key concept for organizations today, as it represents the essence of their competitive advantage.

Limitations and Future Research Directions

Our results must be viewed in the light of the study's limitations. From a content point of view, we have focused on OLC and innovation performance as intermediate links between EO and firm performance. However, other organizational issues related to organizational learning and innovation, such as adaptive and generative learning or human resources interventions (Sadler-Smith and Badger 1998; Wang 2008) could be incorporated in our conceptual model. Future research is required to further complement the whole picture of the EO-performance relationship.

Other limitations are based on the methods we have used. As with all cross-sectional research, the relationship tested in this study represents a snapshot in time. While it is likely that the conditions under which the data were collected will remain essentially the same, there are no guarantees that this will be the case. Furthermore, EO may have further implications on innovation performance in the long term, but as this is not a longitudinal study we cannot evaluate its effects. Future longitudinal studies might assess EO outcomes in the long term in both OLC and innovation performance.

The use of self-reported firm performance may be regarded as a further measurement limitation (Venkatraman 1989). This choice was conditioned by the difficulties of obtaining objective performance data, which in turn can also be affected by accounting methods (Dechow, Sloan, and Sweeney 1995). Nevertheless, future and complementary research could improve these deficiencies by using objective firm performance data.

The analysis of measurement scales constitutes an accepted research method that is particularly useful to test theoretical relationships between concepts such as EO, OLC, innovation and firm performance (Covin et al. 2006; Green et al. 2008). However, further qualitative research would be useful to provide a more in-depth picture of these relationships in a variety of cases within the sample. Such an analysis would depict specific situations that are out of the norm of this study hypotheses, such as those minority firms that have a high EO but a low performance. This could be due to problems with learning and innovation processes.

Because this research is based on a single industry analysis, it has benefited from dealing with firms that are likely to be economically and technologically homogeneous. However, it must be stressed that single industry conclusions should be considered with caution. Further research in other industries is needed to empirically assess the effect of EO on OLC and innovation performance.

References

Alegre, J., Lapiedra, R., Chiva, R. (2006). 'A measurement scale for product innovation performance,' *European Journal of Innovation Management,* 9 (4), 333-346.

Amabile, T., Conti, R., Coon, H., Lazenby, J., and M. Herron (1996). 'Assessing the work environment for creativity,' *Academy of Management Journal*, 39: 1154-1184.

Argote, L., McEvily, B., and R. Reagans (2003). 'Managing knowledge in organizations: An integrative framework and review of emerging themes,' *Management Science,* 49, 571-582.

Argyris, C. and D. Schön (1978). *Organizational learning: a theory of action perspective*. Reading: Addison-Wesley.

Ascer (2006). *Informe de los sectores Español y Mundial en 2005*. Castellón: Ascer.

Assopiastrelle. (2006). *Consumo mondiale 2005*. Bologna: Assopiastrelle.

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

Barras, R. (1986). 'Towards a theory of innovation in services,' *Research Policy,* 15, 61-73.

Blackburn, R. and A. Kovalainen (2009). 'Researching small firms and entrepreneurship: Past, present and future,' *International Journal of Management Reviews*, 11, 127-148.

Bou-Llusar, J.C., Escrig-Tena, A.B., Roca-Puig, V. and I. Beltrán-Martín (2008). 'An empirical assessment of the EFQM excellence model: Evaluation as a TQM framework relative to the MBNQA Model,' *Journal of Operations Management,* 27, 1-22.

Brown, S.L. and Eisenhardt, K.M. (1995). 'Product development: past research, present findings, and future directions,' *Academy of Management Review*, 20, 343-378.

Calantone, R.J., Cavusgil, S.T. and Zhao, Y. (2002). 'Learning orientation, firm innovation capability, and firm performance,' *Industrial Marketing Management*, 31, 515-524.

Chiesa, V. Coughlan, P. and Voss, C.A. (1996). 'Development of a technological innovation audit,' *R&D Management*, 13, 105-136.

Chiva, R. and Alegre, J. (2009). 'Organizational learning capability and job satisfaction: An empirical assessment in the ceramic tile industry,' *British Journal of Management,* 20(3), 323-340.

Cope, J. (2003). 'Entrepreneurial Learning and Critical Reflection: Discontinuous Events as Triggers for 'Higher-level' Learning,' *Management Learning*, 34(4), 429-450.

Covin J. G., Green K. M., and Slevin, D.P. (2006). 'Strategic Process Effects on the Entrepreneurial Orientation–Sales Growth Rate Relationship,' *Entrepreneurship, Theory and Practice*, 30 (1), 57 – 81.

Covin, J.G. and Miles, M.P. (1999). 'Corporate entrepreneurship and the pursuit of competitive advantage', *Entrepreneurship, Theory and Practice*. 23(3), 47–64.

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

Crossan, M, Lane, H. and White, R. (1999). 'An organizational learning framework: from intuition to institution,' *Academy of Management Review*, 24 (3), 522-537.

Damanpour, F. and Gopalakrishan, S. (2001). 'The dynamics of the adoption of product and process innovations in organizations,' *Journal of Management Studies*, 38 (1), 45-65.

Dechow, P. M., Sloan, R. G. and Sweeney, A.P. (1995). 'Detecting earnings management,' *The Accounting Review*, 70(2), 193-225.

Dess, G.G., Ireland, R.D., Zahra, S.A., Floyd, S.W., Janney, J.J., and Lane, P.J. (2003). 'Emerging Issues in Corporate Entrepreneurship,' *Journal of Management*, 29(3), 351-378.

Dibella, A.J., Nevis, E.C. and Gould, J.M. (1996). 'Understanding organizational learning capability,' *Journal of Management Studies*, 33(3): 361-379.

Dimitratos, P, Lioukas, S. and Carter, S. (2004). 'The relationship between entrepreneurship and international performance: The importance of domestic environment,' *International Business Review*, 13, 19-41.

Drucker, P.F. (1998). 'The discipline of innovation,' *Harvard Business Review*, 76 (6): 149-157.

Easterby-Smith, M. and I.M. Prieto (2008). 'Dynamic Capabilities and Knowledge Management: an Integrative Role for Learning?,' *British Journal of Management*, 19, 235-249.

Enright, M.J. and P. Tenti (1990). 'How the diamond works: The Italian ceramic tile industry,' *Harvard Business Review*, March-April, 90-91.

Escribá-Esteve, A., Sánchez-Peinado, E. and Sánchez-Peinado, M.L. (2008). 'Moderating influences of the firm's strategic orientation-performance relationship', *International Small Business Journal*, 26(4), 463-489.

Fletcher, D.E. and Watson, T.J. (2007). 'Entrepreneurship, Management Learning and Negotiated Narratives: 'Making it Otherwise for Us-Otherwise for Them,' *Management Learning*, 38(1), 9-27.

Flor, M.L. and M.J. Oltra (2004). 'Identification of innovating firms through technological innovation indicators: An application to the Spanish ceramic tile industry.' *Research Policy*, 33, 323-336.

Fornell, C. and D.F. Larker (1981). 'Evaluation structural equation models with unobservable variables and measurement error,' *Journal of Marketing Research,* 18, 39-50.

Gatignon, H., Tushman, M.L., Smith, W., and P. Anderson (2002). 'A structural approach to assessing innovation: Construct development of innovation locus, type, and characteristics,' *Management Science*, 48, 1103-1122.

George, G., Wood, D.R. Jr., and R. Khan (2001). 'Networking strategy of boards: Implications for small and medium-sized enterprises,' *Entrepreneurship and Regional Development*, 13, 269-285.

Goh, S. and G. Richards (1997). 'Benchmarking the learning capability of organisations,' *European Management Journal*, 15, 575-83.

Green K.M., Covin J.G. and D.P. Slevin (2008). 'Exploring the relationship between strategic reactiveness and entrepreneurial orientation: The role of structure–style fit,' *Journal of Business Venturing*, 23, 356-380.

Hair, H.F., Anderson R.E., Tatham, R.L. & Black, W.C. (1998). *Multivariate Data Analysis*, London: Prentice Hall.

Hult, G.T.M. and O.C. Ferrell (1997). 'Global Organizational Learning capability in purchasing: construct and measurement,' *Journal of Business Research.* 40, 97-111.

Hult, G.T.M., Hurley, R.F. and G.A. Knight (2004). 'Innovativeness: Its antecedents and impact on business performance,' *Industrial Marketing Management*, 33, 429-438.

INE (2008). *Encuesta sobre Innovación Tecnológica en las Empresas 2008*. Madrid: INE.

Ireland, R.D., Reutzel, C.R. and J.W. Webb (2005). 'Entrepreneurship research in AMJ: what has been published, and what might the future hold?,' *Academy of Management Journal*, 48, 556-564.

Ireland, R.D. and J.W. Webb (2007). 'A cross disciplinary exploration of Entrepreneurship Research,' *Journal of Management*, 33, 891-927.

Lumpkin, G.T., and G.G. Dess (1996). 'Clarifying the entrepreneurial orientation construct and linking it to performance,' *Academy of Management Review*, 12, 135-172.

Lyon, D.W., Lumpkin, G.T., and G.G. Dess (2000). 'Enhancing entrepreneurial orientation research: Operationalizing and measuring a key strategic decision making process,' *Journal of Management*, 26, 1055-1084.

Malhotra, N.K. (1993). *Marketing Research: An Applied Orientation*. Englewood Cliffs, N.J.: Prentice-Hall.

MacKenzie, S.B., Podsakoff, P.M., and Burke Jarvis, C. (2005). 'The problem of measurement model misspecification in behavioral and organizational research and some recommended solutions', *Journal of Applied Psychology*, 90(4), 710-30.

McKee, D. (1992). 'An organizational learning approach to product innovation,' *Journal of Product Innovation Management*, 9, 232-245.

Miller, D. and P.H. Friesen (1978) 'Archetypes of Strategy Formulation,' *Management Science*, 24, 921-933.

Moreno, A.M. and J.C. Casillas (2008). 'Entrepreneurial Orientation and Growth of SMEs: A Causal Model,' *Entrepreneurship Theory and Practice*, 32, 507-528.

Nelson, R.R. (1991). 'Why do firms differ and how does it matter?,' *Strategic Management Journal*, 12, 61-74.

Naman, J.L., and D.P. Slevin (1993). 'Entrepreneurship and the concept of fit: A model and empirical tests,' *Strategic Management Journal*, 14, 137-153.

Newey, L.R. and S.A. Zahra (2009). 'The evolving firm: How dynamic and operating capabilities interact to enable entrepreneurship,' *British Journal of Management*, 20, S81-S100.

OECD (2005). *The measurement of scientific and technological activities. Proposed guidelines for collecting and interpreting technological data*. Oslo Manual. Paris: OECD.

Oswick, C., Anthony, P., Keenoy, T., and I.L. Mangham (2000) 'A dialogic analysis of organizational learning,' *Journal of Management Studies,* 37, 887-901.

Pavitt, K. (1984). 'Sectoral patterns of technical change: towards a taxonomy and a theory,' *Research Policy,* 13, 343-373.

Pedler, M., Burgoyne, J. and T. Boydell (1997). *The learning company: A strategy for sustainable development*. Maidenhead: McGraw-Hill.

Podsakoff, P.M., and D.W. Organ (1986). 'Self-reports in organizational research: Problems and prospects,' *Journal of Management,* 12, 531-545.

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

Prieto, I.M. and E. Revilla (2006). 'Assessing the impact of learning capability on business performance: empirical evidence from Spain,' *Management Learning*, 37, 499-523.

Rauch, A., Wiklund, J, Lumpkin, G.T., and M. Frese (2009). 'Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future,' *Entrepreneurship: Theory and Practice*, 33, 761-780.

Renko, M. Carsrud, A. and Brännback, M. (2009). 'The effect of a market orientation, entrepreneurial orientation, and technological capability on innovativeness: A study of young biotechnology ventures in the United States and in Scandinavia,' *Journal of Small Business Management,* 43(3), 331-369.

Richard, O.C., Barnett, T., Dwyer, S. and K. Chadwick (2004). 'Cultural diversity in Management, firm performance, and the moderating role of entrepreneurial orientation dimensions,' *Academy of Management Journal,* 47, 255-266.

Runyan, R., Dröge, C., and Swinney, J. (2008). 'Entrepreneurial orientation versus small business orientation: What are their relationships to firm performance?,' *Journal of Small Business Management,* 46(4), 567-588.

Sadler-Smith, E., Hampson, Y., Chaston, I. and Badger, B. (2003). 'Managerial behavior, entrepreneurial style, and small firm performance,' *Journal of Small Business Management*, 41(1), 47-68.

Sadler-Smith, E. and Badger, B. (1998). 'Cognitive style, learning and innovation,' *Technology Analysis & Strategic Management*, 10(2), 247-266.

Santarelli, E. and R. Piergiovanni (1996). 'Analysing literature-based output indicators: the Italian experience,' *Research Policy*, 25, 689-711.

Schein, E.H. (1993). 'On dialogue, culture, and organizational learning,' *Organizational Dynamics*, 22, 40-51.

Schuler, R.S. (1986). 'Fostering and facilitating entrepreneurship in organizations: Implications for organization structure and human resource management practices,' *Human Resource Management*, 25, 607-629.

Schumpeter, J.A. (1934). *The theory of Economic Development*. Cambridge. MA: Harvard University Press.

Sharma, P. and J.J. Chrisman (1999). 'Toward a reconciliation of the definitional issues in the field of corporate entrepreneurship,' *Entrepreneurship: Theory and Practice*, 23, 11-27.

Spector, P.E. (1992). *Summated rating scale construction: an introduction*. California: Sage University.

Tippins, M.J. and R.S. Sohi (2003). 'IT competency and firm performance: is organizational learning a missing link?,' *Strategic Management Journal*, 24, 745-761.

Utterback, J. and W. Abernathy (1975). 'A dynamic model of product and process innovation,' *Omega*, 3, 639-656.

Valencia Chamber of Commerce (2004). *Informe de la nueva economía global y su incidencia en los sectores tradicionales de la Comunidad Valenciana*. Valencia: Valencia Chamber of Commerce.

Venkatraman, N. (1989). 'Strategic Orientation of business enterprises: the construct, dimensionality, and measurement,' *Management Science*, 35, 942-962.

Wang, C.L. (2008). 'Entrepreneurial Orientation, Learning Orientation, and Firm Performance,' *Entrepreneurship: Theory and Practice*, 32, 635-657.

Wheelwright, S.C. and K.B. Clark (1992). *Revolutionizing product development – quantum leaps in speed, efficiency, and quality*. New York: The Free Press.

Wiklund, J. (1999) 'The sustainability of the entrepreneurial orientation – performance relationship,' *Entrepreneurship Theory and Practice*, 24, 37-48.

Williams, L.J., Gavin, M.B. and N.S. Hartman (2004). 'Structural equation modeling methods in strategy research: Applications and issues'. In Ketchen, D.J. Jr and Bergh; D.D. (Eds.)

Research Methodology in Strategy and Management (vol. 1): pp. 303-346. Oxford: Elsevier.

Zahra, S. A., Nielsen, A. P. and W.C. Bogner (1999). 'Corporate entrepreneurship, knowledge, and competence development,' *Entrepreneurship, Theory and Practice,* 23, 169-89.

Zahra, S.A., Sapienza, H.J. and P. Davidson (2006). 'Entrepreneurship and dynamic capabilities: A review, model and research agenda,' *The Journal of Management Studies*, 43, 917-955.

Zaltman, G, Duncan, R., and J. Holbek (1973). *Innovations and Organizations*. New York: Wiley.

Zollo, M., and S.G. Winter (2002). 'Deliberate learning and the evolution of dynamic capabilities,' *Organization Science,* 13, 339-351.

Zott, C. (2003). 'Dynamic capabilities and the emergence of intraindustry differential firm performance: insights from a simulation study', *Strategic Management Journal*, 24, 97-125.

FIGURE 1: Conceptual model

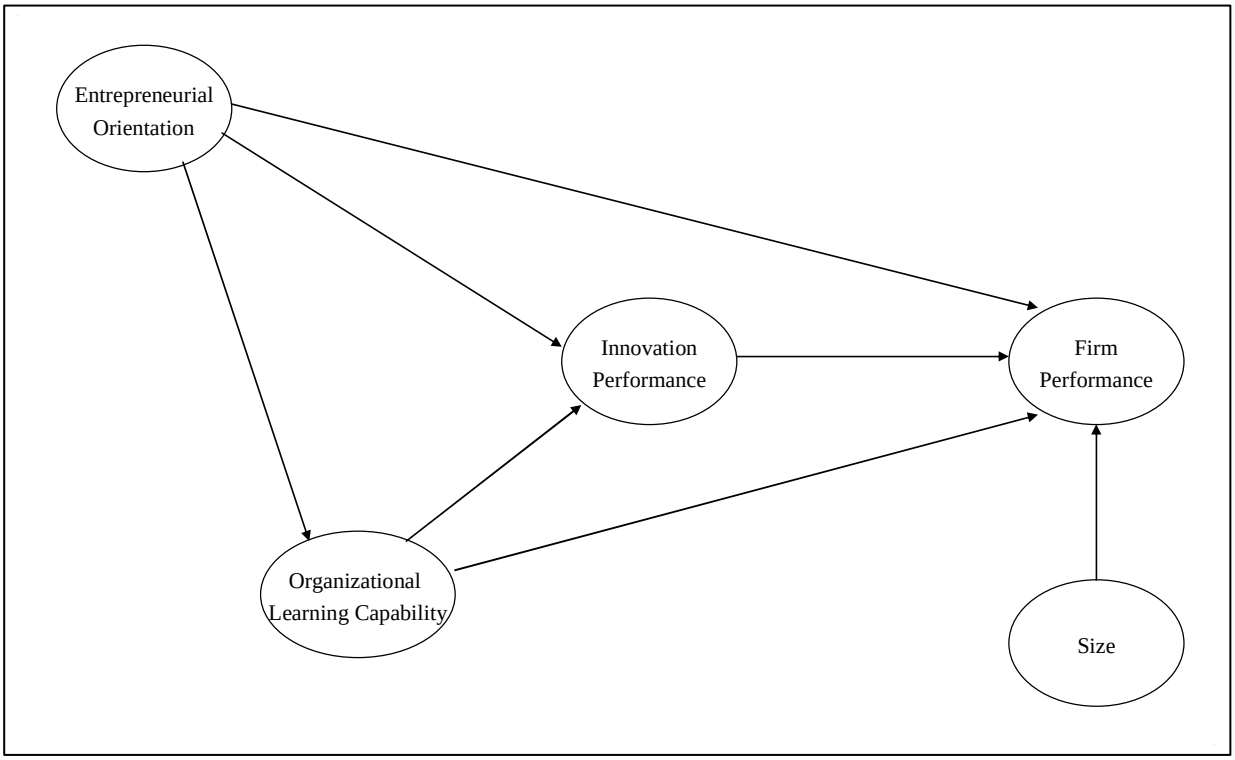


TABLE 1: Sample firm size and location

	Number of Employees				
	(1) Micro-enterprises (Fewer than 10)	(2) Small enterprises (Between 11 and 49)	(3) Medium enterprises (Between 50 and 249)	(6) Large enterprises (Over 250)	Total
Italian Firms	0	17	40	25	82
Spanish Firms	0	27	65	8	100
Total	0	44	105	33	182

Note: Size categories correspond to the European Commission Recommendation, 6th May 2003 (http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:124:0036:0041:en:PDF)

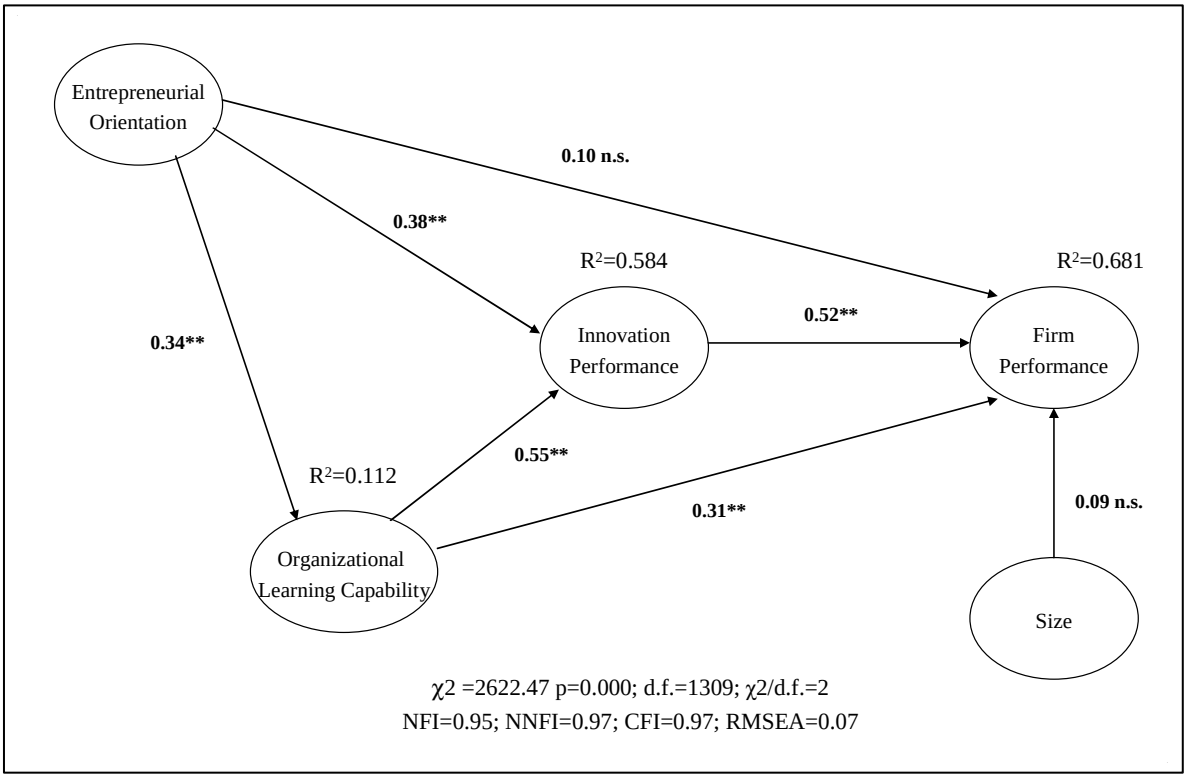
TABLE 2: Factor correlations, means, standard deviations, and alpha reliabilities

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11
1. EXP	5.22	1.13	(α=0.74 / CR=0.76)										
2. RISK	4.56	1.38	0.53**	(α=0.70 / CR=0.71)									
3. ENV	4.77	1.33	0.59**	0.60**	(α=0.82 / CR=0.82)								
4. DIALOG	5.44	1.08	0.60**	0.38**	0.52**	(α=0.83 / CR=0.83)							
5. PARTICIP	4.58	1.41	0.45**	0.56**	0.62**	0.48**	(α=0.88 / CR=0.87)						
6. PRODUCT EFFECTIV.	5.07	1.11	0.48*	0.38**	0.46**	0.55**	0.33**	(α=0.91 / CR=0.91)					
7. PROCESS EFFECTIV.	4.90	1.12	0.44**	0.41**	0.48**	0.54**	0.42**	0.84**	(α=0.94 / CR=0.94)				
8. INNOVATION EFFICIENCY	4.69	1.22	0.49**	0.48**	0.52**	0.48**	0.45**	0.80**	0.78**	(α=0.92 / CR=0.91)			
9. GROWTH	4.87	1.27	0.43**	0.36**	0.56**	0.50**	0.48**	0.62**	0.65**	0.55**	(α=0.93 / CR=0.92)		
10. PROFITABILITY	4.71	1.19	0.44**	0.44**	0.52**	0.40**	0.44**	0.63**	0.66**	0.63**	0.76**	(α=0.92 / CR=0.91)	
11. ENTREPRENEURIAL ORIENTATION	4.11	1.12	0.28**	0.14	0.23**	0.31**	0.09	0.53**	0.39**	0.48**	0.37**	0.42**	(α=0.87 / CR=0.83)

N = 182; Alpha reliabilities and Composite Reliabilities are shown in brackets on the diagonal.

** Correlation is significant at the 0.01 level.

FIGURE 2: Structural Equations Model



Note: For the sake of brevity, only the loads on the hypotheses paths are shown. Parameters not shown here are all standardized, significant at $p < 0.001$, and above 0.4

Appendix:

Innovation Performance Measurement Scale

Please state your firm performance compared to that of your competitors over the last three years with regard to the following items		
Dimension	**Item**	**Literature source**
Product innovation effectiveness	PT1. Replacement of products being phased out	OECD (2005)
	PT2. Extension of product range within main product field through new products	
	PT3. Extension of product range outside main product field	
	PT4. Development of environment-friendly products	
	PT5. Market share evolution	
	PT6. Opening of new markets abroad	
	PT7. Opening of new domestic target groups	
Process innovation effectiveness	PS1. Improvement of production flexibility	
	PS2. Reduction of production costs by cutting labor cost per unit	
	PS3. Reduction of production costs by cutting material consumption	
	PS4. Reduction of production costs by cutting energy consumption	
	PS5. Reduction of production costs by cutting rejected production rate	
	PS6. Reduction of production costs by cutting design costs	
	PS7. Reduction of production costs by cutting production cycle	
	PS8. Improvement of product quality	
	PS9. Improvement of labor conditions	
	PS10. Reduction of environmental damage	
Project innovation efficiency	EF1. Average innovation project development time	Brown and Eisenhardt (1995); Chiesa et al. (1996);
	EF2. Average number of innovation project working hours	
	EF3. Average cost per innovation project	
	EF4. Degree of overall satisfaction with innovation project efficiency	