Linking Entrepreneurial Orientation and Firm Performance: The Role of Organizational Learning Capability and Innovation Performance
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This research contributes to the entrepreneurial orientation (EO)–performance literature by offering a wider picture that includes two intermediate steps: organizational learning capability (OLC) and innovation performance. This study also provides an explanation of intra-industry firm performance differences by focusing on EO. We use structural equation modeling to test the hypotheses on a data set from Italian and Spanish ceramic tile producers. The results support our conceptual model and demonstrate its usefulness in explaining differences in intra-industry firm performance. Findings suggest that OLC and innovation performance should be enhanced by managers in order to boost the positive EO–performance link.

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, p. 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 (EO) (Ireland and Webb 2007) that explains how entrepreneurship is put into practice. EO can be considered as a managerial attitude oriented toward the strategy-making processes that provide organizations with a basis for entrepreneurial decisions and actions (Lumpkin and Dess 1996; Richard et al. 2004).

Although EO is theoretically beneficial for firms (Ireland and Webb 2007) and a positive relationship with performance could be expected (Rauch et al. 2009; Runyan, Dröge, and Swinney 2008), some results have not been fully conclusive. For example, Dimitratos, Lioukas, and Carter (2004) found recently a nonsignificant 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 return on assets nor return on equity in the banking industry in the United States. This might be due mainly to the concept of firm performance that can be influenced by many variables both internal and external to the organization (Thoumrungroje and Tansuhaj 2005) and to the long-time benefits of EO come to fruition (Madsen 2007; Zahra and Covin...
In this line of thinking, Zahra, Nielsen, and Bogner (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 (Baker and Sinkula 2009; Zahra, Sapienza, and Davidson 2006). 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 (Blackburn and Kovalainen 2009; Cope 2003; Wang 2008). 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 toward entrepreneurship, OLC might be understood as the organizational characteristics that follow or are consistent with such managerial posture. Hence, OLC could represent a way in 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 (Covin and Miles 1999; Ireland and Webb 2007; Schumpeter 1934). According to Ireland, Reutzel, and Webb (2005, p. 557), the inclusion of innovation as an indicator of entrepreneurship results, reflecting the views of Drucker (1998, p. 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 he 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. EO could therefore 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 the role played by important organizational consequences of EO, such as OLC and innovation performance, within the EO–firm performance relationship. We suggest that OLC and innovation performance play a mediating role in the EO–firm performance relationship and 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 OLC 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-sized enterprises [SMEs]), 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 equation modeling and we present the results in fourth section. Findings provide original empirical evidence of the important 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 (Baker and Sinkula 2009; Rauch et al. 2009; Sadler-Smith et al. 2003; Wiklund 1999). 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 (Easterby-Smith and Prieto 2008; Zott 2003). 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 (Covin and Miles 1999; Ireland and Webb 2007; 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 (Drucker 1998; Ireland, Reutzel, and Webb 2005; Schumpeter 1934); however, this relationship needs further examination. EO increases proactiveness and willingness to take risks and innovate (Zahra, Nielsen, and Bogner 1999) within a particular organization. As a result, EO may be considered one of the antecedents of innovation performance (Baker and Sinkula 2009; Renko, Carsrud, and Brännback 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, whereas 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 (Newey and Zahra 2009; Wheelwright and Clark 1992). 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 (Baker and Sinkula 2009; Renko, Carsrud, and Brännback 2009; Wheelwright and Clark 1992) 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:

H1: 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 on organizational factors (Lumpkin and Dess 1996). Zahra, Nielsen, and Bogner (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 firm’s competencies such as market assessment or new product development. 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 nonauthoritarian 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 (Wang 2008; Zahra et al. 2006). Similarly, Zahra et al. (1999) consider that EO promotes and supports organizational learning and learning values, such as teamwork or openness. Covin, Green, and Slevin (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 OLC. Recently, Chiva and Alegre (2009) proposed a new and integrative conceptualization of OLC. Five facilitating factors of organizational learning were identified: experimentation, risk-taking, interaction with the environment, dialogue, and participative decision making. We adopt 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 shown to have beneficial effects for firm performance (Baker and Sinkula 2009; Prieto and Revilla 2006; Wang 2008; Zollo and Winter 2002). We therefore put forward the following hypothesis:

**H2: 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 for generating 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, Cavusgil, and Zhao 2002; Newey and Zahra 2009). McKee (1992) understands product innovation as an organizational learning process and claims that directing the organization toward 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, Hurley, and Knight (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:

**H3: OLC acts as a mediating variable between EO and innovation performance.**

Based on the given discussion on EO, OLC, innovation performance, and firm performance, we propose the conceptual model shown in Figure 1. In Figure 1, OLC, innovation performance, and firm performance are second-order factors. EO is a first-order factor. Size and location are included in the model as control variables. To reduce the clutter, 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.

**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 percent...
of European Union 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 because of 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 (1984) taxonomy. 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; Oltra, Flor, and Alegre 2002). 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 nonslip properties or better frost resistance. Novelty in product design is focused on new sizes, improved mechanical characteristics, and aesthetics (Oltra, Flor, and Alegre 2002).

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 Piergianni 1996). Although 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 pretest 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 addressed to various company directors. The general manager answered the items
dealing with EO and firm performance (Escribá-Esteve, Sánchez-Peinado, and Sánchez-Peinado 2008; Moreno and Casillas 2008). The product development manager responded to the innovation performance questions, because this manager has knowledge of all activities concerning innovation (Calantone, Cavusgil, and Zhao 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 represented in 2004 around 50 percent of the target population, more precisely, 47.40 percent of Italian ceramic tiles producers and 52.08 percent of Spanish ceramic tiles producers (Assopiastrelle 2006; Valencia Chamber of Commerce 2004). Both the number of responses and the response rate can be considered satisfactory (Spector 1992; Williams, Gavin, and Hartman 2004). Nonresponse 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.

### Measures

**EO.** EO was measured using the widely used nine-item, seven-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; Escribá-Esteve, Sánchez-Peinado, and Sánchez-Peinado 2008; Green, Covin, and Slevin 2008).

**OLC.** 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 14-item, seven-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 (Appendix).

**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; Organisation for Economic Co-operation and Development [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 mea-

| Table 1 | Sample Firm Size and Location |
|---------|------------------------------|
|         | Number of Employees          |
| (1) Microenterprises (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 |

Size categories correspond to the European Commission Recommendation, May 6, 2003 (http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:124:0036:0041:en:PDF).
suring 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 (Alegre, Lapiedra, and Chiva 2006; INE 2008).

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 (Brown and Eisenhardt 1995; Chiesa, Coughlan, and Voss 1996; Wheelwright and Clark 1992).

Firm Performance. To measure firm performance, we asked general managers to rate their firm’s performance over the last 3 years compared with 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 Variables. Firm size and location were included as control variables in the overall model because they could be able to explain 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).

Respondent firms were all located in the Italian (Sassuolo, in Northern Italy) or the Spanish ceramic tile industrial districts (Castellón, in Eastern Spain). Location was included in the model (1 = located in Italy, 2 = located in Spain) to control whether sitting in a particular industrial district that provides access to a specific institutional setting, a geographical market for labor and energy had any significant impact on firm performance.

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 (Bou-Llusar et al. 2009; Hair et al. 1998). EQS 6.1 (Multivariate Software, Inc., Encino, CA) software was used to estimate the models for our research hypotheses.

SEM allows for designing reflective or formative indicator models. Our conceptual model meets the four criteria outlined by Mackenzie, Podsakoff, and Burke Jarvis (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 theme; (3) the indicators are expected to covary with one 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 (Bou-Llusar et al. 2009; Fornell and Larker 1981). All scales achieved acceptable coefficient alphas and composite reliability indicators of at least 0.70 (Table 2).

Discriminant validity was assessed through confirmatory factor analysis (CFA) by comparing the $\chi^2$ 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 $\chi^2$ differences were found to be significant, providing evidence of discriminant validity (Gerbing and Anderson 1988; Gatignon et al. 2002; Tippins and Sohi 2003). CFA was also
Table 2
Factor Correlations, Means, Standard Deviations, and Alpha Reliabilities

|   | Mean | S.D. | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12  |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|
| 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** | 0.53** | (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 | 0.25** | 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.
S.D., standard deviation.
used to establish convergent validity by confirming that all scale items loaded significantly on their construct factors (Gerbing and Anderson 1988). Additionally, convergent validity was also confirmed by comparing the $\chi^2$ 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 $\chi^2$ 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 et al. 2003; Podsakoff and Organ 1986). 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 CFA with all the indicators loading into a single-factor ($\chi^2 = 4405.78$, $df = 1377$, BBNFI = 0.500, CFI = 0.589, RMSEA = 0.11, $\chi^2/df = 3.2$) showed a poor fit, suggesting that the single-factor possibility is not relevant (Bou-Llusar et al. 2009).

**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).

\[ \chi^2 = 2829.962 \text{ p}=0.000; \text{d.f.}=1361; \frac{\chi^2}{\text{d.f.}}=2.08 \]

NFI=0.95; NNFI=0.97; CFI=0.97; RMSEA=0.07

*Note.* For the sake of brevity, only the loads on the hypotheses paths are shown.

** Significant at 1% level ($p < 0.01$). Parameters not shown here are all standardized, significant at $p < .001$, and above .4.
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). First, there is a positive relationship between EO and innovation performance. Second, there is a positive relationship between innovation performance and firm performance. And third, the direct effect of EO on firm performance is low and nonsignificant. 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 H1. 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 for the mediating effect of OLC on the relationship between EO and firm performance. First, there is a positive relationship between EO and OLC. Second, there is a positive relationship between OLC and firm performance. And third, the direct effect of EO on firm performance is low and nonsignificant. 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 H2. So, this mediation test provides further empirical evidence of the important role that organizational learning plays in the link between EO and firm performance (Wang 2008).

Results also provide support for H3. 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 H3 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.

Control variables have a low and nonsignificant impact on firm performance. The proposed relationships are verified regardless of firm size and location.

**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 make 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 cannot 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 providing evidence of the importance of certain organizational characteristics, OLC, for EO to have an impact on firm performance. 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 learning is not facilitated. 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 when testing 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 when 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 (Easterby-Smith and Prieto 2008; Nelson 1991). 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 innovation performance. Results suggest that competitive advantage in the ceramic tile 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, such as organizational culture or human resource management practices.

Implications for Practitioners

This paper 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 (Chiva, Grandío, and Alegre 2010; Sadler-Smith and Badger 1998; Wang 2008) could be incorporated in our conceptual model. Future research could examine the role of these concepts on 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. Although 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, Green, and Slevin 2006; Green, Covin, and Slevin 2008). However, further qualitative research would be
useful to provide an in-depth picture of these relationships in a variety of cases within the sample. This could be useful to describe specific cases that do not follow the hypotheses of this study (e.g., those few 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.

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## Organizational Learning Capability Measurement Scale

**Could you please assess the importance of the following items in your organization?**

| Dimension                          | Item                                                                 | Literature Source                     |
|------------------------------------|---------------------------------------------------------------------|---------------------------------------|
| **Experimentation**                | EXP1. People here receive support and encouragement when presenting new ideas. | Chiva and Alegre (2009)               |
|                                    | EXP2. Initiative often receives a favorable response here so people feel encouraged to generate new ideas. |                                       |
| **Risk Taking**                    | RISK1. People are encouraged to take risks in this organization.     |                                       |
|                                    | RISK2. People here often venture into unknown territory.             |                                       |
| **Interaction with the External Environment** | ENV1. It is part of the work of all staff to collect, bring back, and report information about what is going on outside the company. |                                       |
|                                    | ENV2. There are systems and procedures for receiving, collating, and sharing information from outside the company. |                                       |
|                                    | ENV3. People are encouraged to interact with the environment: competitors, customers, technological institutes, universities, suppliers, etc. |                                       |
| **Dialogue**                      | DIA1. Employees are encouraged to communicate.                       |                                       |
|                                    | DIA2. There is a free and open communication within my work group.  |                                       |
|                                    | DIA3. Managers facilitate communication.                             |                                       |
|                                    | DIA4. Cross-functional teamwork is a common practice here.           |                                       |
| **Participative Decision Making**  | PDM1. Managers in this organization frequently involve employees in important decisions. |                                       |
|                                    | PDM2. Policies are significantly influenced by the view of employees. |                                       |
|                                    | PDM3. People feel involved in main company decisions.                |                                       |
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   | PT1. Replacement of products being phased out.                       | OECD (2005)                       |
| Effectiveness        | 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   | PS1. Improvement of production flexibility.                          |                                   |
| Effectiveness        | 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   | EF1. Average innovation project development time.                    | Brown and Eisenhardt (1995); Chiesa, Coughlan, and Voss (1996); |
| Efficiency           | EF2. Average number of innovation project working hours.            |                                   |
|                      | EF3. Average cost per innovation project.                           |                                   |
|                      | EF4. Degree of overall satisfaction with innovation project efficiency.|                                   |