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Entrepreneurial orientation, organizational learning capability and performance in the ceramic tiles industry^{*}

Joaquín Alegre and Ricardo Chiva^{**}

Abstract

Entrepreneurial orientation is considered to have a positive impact on firm performance. However, this direct relationship does not seem to be empirically conclusive. In our research we consider innovation performance as an intermediate variable, and explain that the relationship between entrepreneurial orientation and innovation performance is not unconditional, but subject to organizational learning capability. Structural equation modeling has been used to test our research hypotheses on a data set from the Italian and Spanish ceramic tile industry. Results suggest that (1) innovation performance acts as a mediating variable between entrepreneurial orientation and firm performance; (2) entrepreneurial orientation can be considered as an antecedent of organizational learning capability; and (3) organizational learning capability plays a significant role in determining the effects of entrepreneurial orientation on innovation performance. Finally, we highlight our study's limitations and we posit avenues for future research.

Keywords: Entrepreneurial orientation, organizational learning capability, performance.

JEL Classification: L26, L61.

Resumen

La orientación emprendedora es susceptible de tener un impacto positivo sobre el desempeño de la empresa. Sin embargo, empíricamente esta relación directa no es completamente consistente. Proponemos el desempeño innovador como una variable intermedia y, además, argumentamos que la relación entre orientación emprendedora y desempeño innovador no es incondicional, sino dependiente de la capacidad de aprendizaje organizativo. Utilizamos modelos de ecuaciones estructurales para contrastar nuestras hipótesis sobre la industria cerámica italiana y española. Los resultados sugieren que (1) el desempeño innovador actúa como una variable mediadora entre la orientación emprendedora y el desempeño de la empresa; (2) la orientación emprendedora puede ser considerada como un antecedente de la capacidad de aprendizaje organizativo; y (3) la capacidad de aprendizaje organizativo juega un papel importante en la determinación de los efectos de la orientación emprendedora sobre el desempeño. Finalmente, señalamos las limitaciones del estudio y proponemos futuras líneas de investigación.

Palabras clave: Orientación emprendedora, capacidad de aprendizaje organizativo, desempeño.

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1. Introduction

Encouraging entrepreneurship is an effective means of creating jobs, increasing productivity and alleviating poverty (OECD, 2005). Entrepreneurship is an attitude toward management that seeks to accentuate innovation, flexibility, and responsiveness driven by the perception of opportunity, while providing more sophisticated and efficient management (Guth and Ginsberg, 1990; Naman and Slevin, 1993; Jogaratnam et al. 1999). However, research has mainly focused on the entrepreneurial process or orientation that explains how entrepreneurship is undertaken. Lumpkin and Dess (1996) defined entrepreneurial orientation (EO) as the processes, practices, and decision making activities that lead to entrepreneurship. This concept, similar to Covin and Slevin's (1989) entrepreneurial strategic posture, is characterized by frequent and extensive innovation, aggressive competitive orientation, and a strong risk taking propensity by top management.

Although most research considers that entrepreneurial orientation has a positive impact on firm performance (Zahra and Covin, 1995; Lumpkin and Dess, 1996; Wiklund, 1999), this direct relationship does not seem to be empirically conclusive (Slater and Narver, 2000). One of the reasons might be that firm performance depends directly on many variables both internal and external to the organization (Thoumrungroje and Tansuhaj, 2005) or that the benefits of EO often take many years to come to fruition (Zahra and Covin, 1995; Madsen, 2007). Consequently, other dependent variables more sensitive to EO should be suggested and some contingent variables should be considered in order to understand the relationship EO-firm performance.

Schuler (1986) maintains that what distinguishes entrepreneurial from non entrepreneurial firms is the rate of innovation, understanding that entrepreneurship is the practice of innovating. Based on the importance of innovation for entrepreneurship, in this paper we will consider innovation performance as the dependent variable and therefore analyze the relationship between EO and innovation performance.

On the other hand, and based on Lumpkin and Dess (1996), any relationship between EO and performance seems to be context specific, i.e. internal or external factors influence how an EO will be configured to achieve high performance. However and spite the prior research on these factors, they still encourage research efforts at understanding the role of contingency approaches in explaining the relationship between EO and performance. Research should focus on identifying the underlying processes

that determine the contribution of EO to performance (Zahra et al., 1999). In this research, we aim to analyze the role of organizational learning capability in explaining the relationship between EO and innovation performance.

Organizational learning is since some time ago one of the most claimed concepts by academic and business worlds (Easterby-Smith, Crossan and Nicolini, 2000; Bapuji and Crossan, 2004; Bueno, Ordóñez de Pablos and Salmador-Sánchez, 2004). This is mainly due to the increasingly dynamic economic environment, the importance of innovation, and the progressively more essential role of human resources. In spite of its complexity, reflected in the numerous perspectives proposed, organizational learning might be defined as the process through which organizations change or modify their mental models, rules, processes or knowledge, keeping or improving their performance. Therefore, organizational learning capability (OLC) has been considered a key index of an organization's effectiveness and potential to innovate and grow (Jerez-Gómez et al., 2005)

OLC might be 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; Chiva et al. 2007). This capability has been positively related to variables like job satisfaction (Chiva and Alegre, 2009), or innovation performance (Alegre and Chiva, 2008). However, and spite the importance of EO, no research has considered relating OLC, EO, innovation and firm performance.

In sum, the aim of this paper is to analyze the relationships between EO, OLC, innovation and firm performance. Hypotheses will be tested in the Italian and Spanish ceramic industry, which are the first and second world exporters, respectively. Results are obtained from the questionnaire responses of 182 Italian and Spanish ceramic tile company managers.

The introduction is followed by a brief review of EO, OLC and innovation performance. In the second section the relationships between these concepts are argued and the hypotheses posed. The third section describes the methodology used for contrasting these hypotheses, the structural equation modeling technique, using data from the Italian and Spanish ceramic tile industry. The results are commented in the fifth section. Finally, a discussion of the results and their implications and further research lines are also posed.

2. Conceptual background

In this epigraph, a brief review of EO, OLC and innovation performance is presented.

2.1. *Entrepreneurial orientation*

EO can be considered as the processes, practices, philosophy, and decision making activities that leads organizations to entrepreneurship (Lumpkin and Dess, 1996). Covin and Slevin (1989) considered EO or strategic posture as embodying frequent and radical innovation, aggressive competitive orientation or proactiveness, and a strong risk taking.

Innovativeness means an organization's tendency to engage in and support new ideas, novelty, experimentation, and creative processes that may result in new products, services or technological processes, as well as the seeking of creative, unusual, or new solutions to problems and needs (Covin and Slevin, 1989; Lumpkin and Dess, 1996; Morris and Jones, 1999). Lumpkin and Dess (1996) consider that although innovations can vary in their degree of radicalness, innovativeness represents a basic willingness to depart from existing technologies or practices and venture beyond the current state of the art. Therefore, radical innovations are very much related to entrepreneurship.

Proactiveness is considered (Miller and Friesen, 1978; Lumpkin and Dess, 1996) as anticipating and acting on future needs by searching new opportunities, which might imply new developments of products, markets etc. Proactiveness refers to how a firm relates to market opportunities by seizing initiative and acting opportunistically to influence trends and, perhaps, even create demand (Jogarathnam et al., 1999). Consequently, it implies acting as a leader, not a follower. Covin and Slevin (1989) consider that proactiveness is very similar to an aggressive competitive orientation, which implies challenge intensely competitors in an effort to outperform them.

Risk taking is defined as a willingness to commit significant resources to opportunities that have reasonable chance of failure (Covin and Slevin, 1989; Lumpkin and Dess, 1996; Morris and Jones, 1999). Lumpkin and Dess (1996) consider that firms with an EO are often typified by risk taking behavior, such as incurring heavy debt or making large resource commitments, in the interest of obtaining high returns by seizing opportunities in the marketplace.

2.2. 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 (Dibella et al., 1996; Goh and Richards, 1997; Hult and Ferrell, 1997; Yeung et al., 1999). Following a comprehensive literature review, Chiva, Alegre and Lapiedra (2007) identified five essential facilitating factors of organizational learning: experimentation, risk taking, interaction with the external environment, dialogue and participative decision making.

Experimentation can be defined as the degree to which new ideas and suggestions are attended to and dealt with sympathetically. Experimentation is the most heavily supported dimension in the OL literature (Hedberg, 1981; Nevis et al., 1995; Tannembaum, 1997). Nevis et al. (1995) consider that experimentation involves trying out new ideas, being curious about how things work, or carrying out changes in work processes.

Risk taking can be understood as the tolerance of ambiguity, uncertainty, and errors. Sitkin (1996, p. 541) goes as far as to state that failure is an essential requirement for effective organizational learning, and to this end, examines the advantages and disadvantages of success and errors.

Interaction with the external environment is defined as the scope of relationships with the external environment. The external environment of an organization is defined as factors that are beyond the organization's direct control of influence. Environmental characteristics play an important role in learning, and their influence on organizational learning has been studied by a number of researchers (Bapuji and Crossan, 2004, p. 407).

Dialogue is defined as a sustained collective inquiry into the processes, assumptions, and certainties that make up everyday experience (Isaacs, 1993, p. 25). Some authors (Isaacs, 1993; Schein, 1993; Dixon, 1997) understand dialogue to be vitally important to organizational learning. Although dialogue is often seen as the process by which individual and organizational learning are linked, Oswick et al. (2000) show that dialogue is what generates both individual and organizational learning, thus creating meaning and comprehension.

Participative decision making refers to the level of influence employees have in the decision-making process (Cotton et al., 1988). Organizations implement

participative decision making to benefit from the motivational effects of increased employee involvement, job satisfaction and organizational commitment (Daniels and Bailey, 1999; Scott-Ladd and Chan, 2004).

2.3. *Innovation performance*

Innovation consists of successful exploitation of new ideas (Myers and Marquis, 1969). It therefore requires that two conditions be met: novelty and use. In general, the requisite of novelty is verified since the innovation process puts into practice an invention, a scientific discovery or a new production or management technique. The requisite of utility is borne out through its use or commercial success.

Innovation results include product and process innovations; two kinds of innovation outcomes that are very closely linked (Utterback and Abernathy, 1975) and constitute a highly complex process which 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 aspire to increasing efficiency (Utterback and Abernathy, 1975).

According to Damanpour and Gopalakrishnan (2001), the difference between product and process innovation is important because their implementation requires different organizational skills: product innovation requires the company to take on board the importance of customers' needs, design and production, whereas process innovation calls for the application of technology in order to improve the efficiency of the development and commercialization of the product. Product innovations tend to be adopted at a greater rate than process innovations, as the former are more easily observed and advantageous. Furthermore, they maintain that product innovations are carried out more quickly than process innovations, as they are more autonomous and do not usually give rise to so much resistance on introduction.

In this research, we conceive innovation performance as a construct with three different dimensions: product innovation efficacy, process innovation efficacy and innovation projects efficiency. Product and process innovation efficacy reflect the

degree of success of an innovation. On the other hand, innovation projects efficiency reflects the effort carried out to achieve that degree of success.

3. Hypotheses

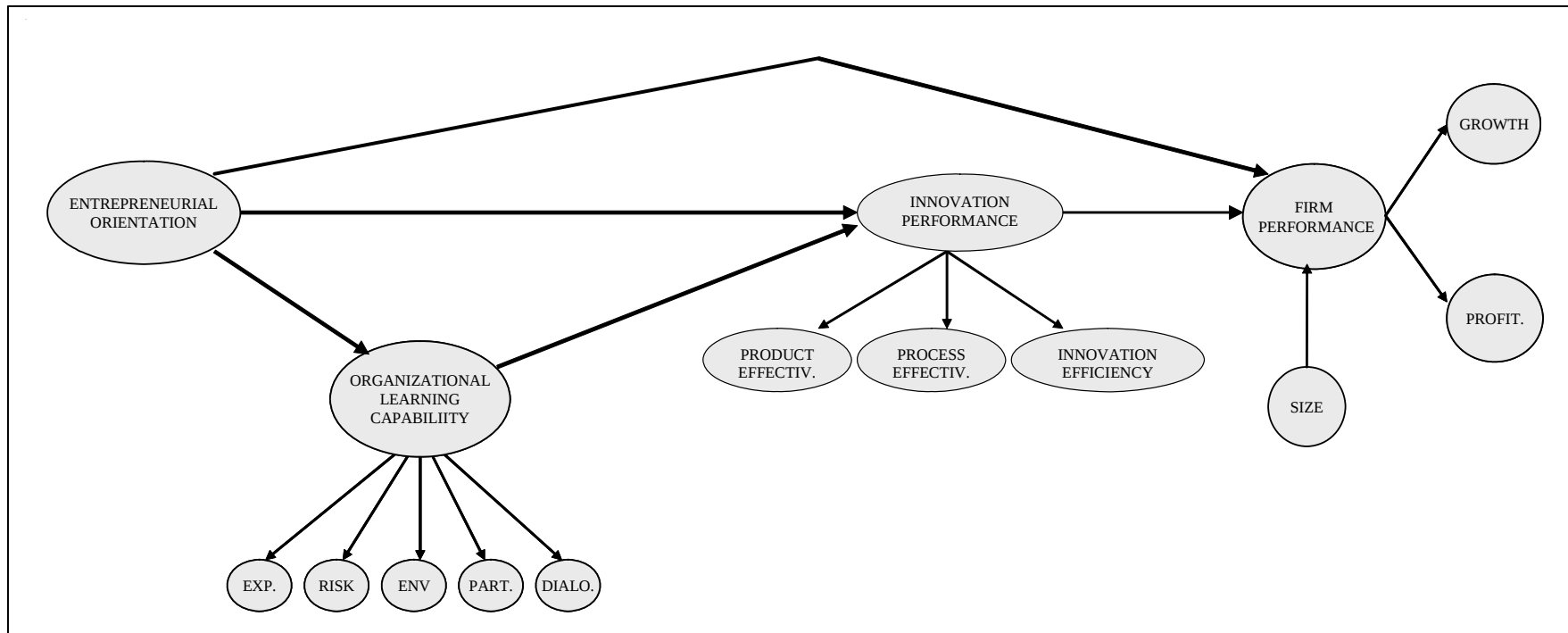
Based on the above discussion on EO, OLC and innovation performance, the conceptual model shown in Figure 1 is proposed. The contention of our model is that the effect of EO on innovation performance is mediated by OLC. Furthermore, innovation performance has a positive effect on firm performance. Accordingly, we develop and simultaneously test hypotheses representing (1) the relationship between EO and performance; (2) the relationship between EO and OLC; and (3) the relationship between OLC and innovation performance.

3.1 Entrepreneurial orientation and performance

EO has been traditionally linked to firm performance (Zahra and Covin, 1995; Wiklund, 1999; Jogaratnam et al., 1999; Madsen, 2007). However, this relationship may not be immediately apparent (Dess et al., 1999) as empirical research suggests that the benefits of EO often take many years to emerge (Zahra and Covin, 1995; Madsen, 2007) and that firm performance depends directly on different internal and external organizational contingencies and variables (Thoumrungroje and Tansuhaj, 2005). Consequently, in order to model the EO-firm performance relationship, other dependent variables more sensitive to EO should be suggested and some contingent variables should be considered in order to explain this relationship.

As EO improves firm performance by increasing firm's proactiveness and willingness to take risks and by innovating (Zahra et al., 1999), which is considered sometimes (Schuler, 1986) what distinguishes entrepreneurial from non entrepreneurial firms, we may suggest EO and innovation performance should be linked. Innovation is a crucial factor in firm performance as a result of the evolution of the competitive environment (Wheelwright and Clark, 1992; Bueno and Ordoñez, 2004) that depends on several organizational and managerial variables. EO may be considered one of the antecedents of innovation. The importance of innovation for good long-term company results is now widely recognized and has been extensively reported in the literature (Capon et al., 1992; Lemon and Sahota, 2004; Montalvo, 2006). Consequently, innovation performance is considered to have a direct effect on firm performance (Wheelwright and Clark, 1992; West and Iansiti, 2003; Brockman and Morgan, 2003)

FIGURE 1: Conceptual model.



and can be considered as a more precise dependent variable of EO than firm performance.

Therefore the following hypotheses are put forward:

Hypothesis 1: EO is positively related to innovation performance.

Hypothesis 2: Innovation performance is positively related to firm performance.

Hypothesis 3: Innovation performance acts as a mediating variable between EO and firm performance.

3.2. Entrepreneurial orientation and organizational learning capability

The relationship between EO and innovation performance is suggested to be conditional or dependent on environmental and organizational factors (Lumpkin and Dess, 1996; Zahra et al., 1999; Liu et al., 2002). Zahra et al. (1999) suggested that research should focus on identifying the underlying processes that determine the contributions of EO to a company's performance. They also put forward that one of the most profound contributions of EO may lie in its links with organizational learning that increase the company's competencies in assessing its markets or creating and commercializing new knowledge intensive products. Entrepreneurship, which is a management attitude, may hardly have a direct effect on innovation performance when organizational and human resources are not ready to follow this approach. OLC or the factors that facilitate the process of learning within organizations (experimentation, dialogue, etc) may partially mediate the relationship between EO and innovation performance, by extending this view to the rest of the organization. Firms with a strong EO will aggressively enter new-product markets and incur greater risks, which will require coping with more complex and changing environments and will call for learning.

EO might provide the management support for organizational learning process and capability. According to Slater and Narver (1995), market and EO provide the foundation for organizational learning. Similarly, Zahra et al. (1999) and Liu et al. (2002) consider that EO promote organizational learning and learning values like teamwork, openness, etc.

OLC might require a certain strategic posture that facilitates this organizational approach. Entrepreneurial strategic posture or the EO might be considered as the basic managerial approach to support learning within organizations.

Given the potential impact that EO has on OLC, the following hypothesis is proposed:

Hypothesis 4: Entrepreneurial orientation is positively related to organizational learning capability.

3.3. Organizational learning capability and innovation performance

Organizational learning can be easily linked to innovation outcomes. Zaltman, Duncan and Holbek (1973) point out that a critical part of the first stage of the innovation process is openness to the innovation; that is, whether the members of an organization are willing to learn and change or are resistant to innovation. In fact, organizational learning and innovation overlap in the definition of innovation as successful implementation of creative ideas within an organization (Amabile et al., 1996).

Previous research suggests that organizational learning affects innovation performance. 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. Recently, Hult et al. (2004) point out that if a firm is to be innovative, management must devise organizational features that embody a clear learning orientation.

Implementing an innovation strategy to achieve specific objectives requires undertaking a knowledge gap analysis by comparing what a firm knows with what a firm must know (Zack, 1999). In this vein, one step further was recently taken by Bueno and colleagues (2004) by suggesting a competence gap analysis identifying the type of knowledge that is required and the type learning process that is to be executed (Bueno et al., 2004).

All in all, innovation implies the generation and implementation of new ideas, processes or products. The organizational learning process consists of acquisition, dissemination and use of knowledge, and is thereby closely related to innovation performance (Argote et al., 2003; Lemon and Sahota, 2004).

These lines of argument allow us to propose the following hypothesis:

Hypothesis 5: There is a positive relationship between organizational learning capability and innovation performance.

4. Research methodology

4.1 Sample and data collection procedure

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 to assess OLC and innovation performance, as knowledge and learning involved in innovation processes will be likely to be more homogeneous (Santarelli and Piergiovanni, 1996).

Italian and Spanish ceramic tile production in 2004 represented 77% (Ascer, 2006) of EU production. The world's biggest ceramic tile producer is China, followed by Spain, Italy, Brazil and Turkey. The ceramic tile industry is largely globalized. However, Italian and Spanish firms lead world ceramic tile exports thanks to superior technology and design. These firms have substantial common traits. 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 (Chamber of Commerce of Valencia, 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; Patel and Pavitt, 1995). 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; Alegre et al., 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. We recognize the shortcoming of such sampling, but we believe that the advantages of this approach outweighed the disadvantages of limited generalizability.

Field work was undertaken from June to November 2004. A pre-test was carried out on four technicians from ALICER, the Spanish Centre for Innovation and Technology in Ceramic Industrial Design, to assure 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 informant technique consistent with previous studies was used to obtain data (Kumar et al., 1993). The questionnaire was addressed to various company directors. The General Manager answered the firm performance items, the Product Development Manager responded to the innovation performance questions, while the Human Resource Manager answered items dealing with OLC. An appointment was established with the respondents so that the questionnaire could be answered in a personal interview. Following Malhotra (1993), we offered a feedback report on the survey results to the participating firms in order to encourage firms to answer.

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 population under study (Chamber of Commerce of Valencia, 2004). Both the number of responses and the response rate can be considered satisfactory (Spector, 1992; Williams et al., 2004). Nonresponse bias was assessed through a comparison of sample statistics to known values of the population such as annual sales volume, number of employees. The websites of the Italian (Assopiastrelle, 2006) and the Spanish (Ascer, 2006) associations of ceramic tiles producers offer this information for most of the industry companies.

4.2. Measurements

4.2.1. 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 & Slevin, 2006; Green, Covin & Slevin, 2008; Escribá-Esteve, Sánchez-Peinado & Sánchez-Peinado, 2008). These items were addressed to the General Manager of the company.

4.2.2. Organizational Learning Capability

From the OLC concept adopted in our theoretical review, we select the measurement instrument developed by Chiva and colleagues (2007). The instrument comprises a set of scales that represent theoretical dimensions or latent variables through their items. Following this instrument, we conceive OLC as a construct with five different dimensions consistent with the previous literature: experimentation, risk

taking, interaction with the external environment, dialogue and participative decision making. Chiva and colleagues (2007) validated this measurement scale through an employee-based survey in the ceramic tiles industry. In this research we aim to implement again the same measurement scale in the same industry at the firm level by asking a key respondent: the Human Resource Manager.

4.2.3. Innovation performance

We conceive product innovation performance as a construct with three different dimensions consistent with the previous literature: product and process innovation effectiveness and innovation efficiency. These dimensions have been widely discussed in innovation research (Brown and Eisenhardt, 1995; OECD-EUROSTAT, 1997). The OECD Oslo Manual provides a detailed measurement scale to assess the economic objectives of product and process innovation, the scale that we propose to measure product and process innovation effectiveness. This scale was put forward by the OECD to provide some coherent drivers for innovation studies, thereby achieving a greater homogeneity and comparability among innovation studies. Nowadays, many innovation surveys use this widely validated scale.

Innovation efficiency is the third dimension taken into account to measure innovation performance. It is widely accepted that innovation efficiency is determined by the cost and the time involved in the innovation project (Wheelwright and Clark, 1992; Brown and Eisenhardt, 1995; Chiesa et al., 1996). Both cost and development time have been measured objectively (Griffin, 1993) and subjectively (Valle and Avella, 2003). Objective measurement usually refers to a specific innovation project that has been analyzed in detail, while subjective measurement has generally been implemented in innovation surveys.

Besides the relevance of cost and time to determine innovation process efficiency, several studies have also included a subjective assessment on overall innovation project efficiency. Ancona and Caldwell (1992) used subjective assessment items on overall innovation performance in their research into external communications of product development teams. Barczak (1995), in her empirical study in the telecommunications industry, also uses an overall satisfaction item with the firms' new product development efforts to measure performance. Chiesa et al. (1996) also introduced perceptive assessments in their innovation efficiency audit toolbox. The four-item scale we propose to measure innovation efficiency is consistent with this issue.

Innovation performance was therefore measured using a 7-point scale addressed to Product Development Managers.

4.2.4. Firm performance

To measure firm performance, we asked general managers to rate their firm's performance over the last three years against competing firms. We used Venkatraman's (1989) business performance scale. Specifically, general managers were asked to score their firm's growth and profitability on a scale from 1 to 7, with 1 indicating that the firm belonged to the lowest-scoring of competing firms and 7, to the highest scoring of competing firms. All measurement scales are shown in the Appendix.

4.3. Control variables

Firm size was included as control variables in the overall model since they it explain the 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 six categories according to the number of employees and turnover, devised *ad hoc* on the advice of the four ALICER technicians who participated in the study, and by bearing in mind that the ceramic tile industry predominantly consists of SMEs.

4.4. Analyses

The primary analyses of the data set are based on structural equations modeling. Structural equations models have been developed in a number of academic disciplines to substantiate theory. This approach involves developing measurement models to define latent variables and then establishing relationships or structural equations among the latent variables. EQS 6.1 software was used to estimate the models for our research hypotheses.

One common rule-of-thumb on the minimum threshold for SEM use is that of 100 subjects (Williams et al., 2004); our sample meets this threshold.

5. Results

Table 1 exhibits the descriptive statistics of the sample. Figure 1 show the results of the structural equations analysis. The chi-square statistic for the model is significant, but other relevant fit indices suggest a good overall fit (Seibert et al., 2001; Tippins and Sohi, 2003).

Hypotheses 1 and 2 are confirmed. On the one hand, EO has a significant and positive impact on innovation performance; on the other hand, there is a positive, strong and significant impact of innovation performance over firm performance.

The mediating effect of innovation performance on the relationship between EO practice and firm performance is established because of 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 over firm performance is low and nonsignificant. These conditions provide compelling evidence that there exists a full mediating effect of innovation performance on the relationship between EO and firm performance and provide substantial support for Hypothesis 3. Thus, this mediation relationship represents a significant contribution in the understanding of the positive influence –supported both by theory and some previous empirical research– between EO and performance.

Results provide support for Hypothesis 4 and 5. The structural equations model shows a moderate effect of EO on OLC and an important impact of OLC over innovation performance. These relationships are positive and significant.

Taken together, hypotheses 1, 4 and 5 evidence a partial mediating effect of OLC on the relationship between EO and innovation performance. One part of the effect of EO on innovation performance is direct and the other part is indirect through OLC.

On the other hand, EO might be regarded as an antecedent of OLC and innovation performance of the firm. There is a positive and statistically significant impact of EO over 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 technological investment, in the case of innovation performance.

Another significant effect shown in the model is the one of the control variable, size, over the dependent variable of the model, firm performance. This is consistent with previous results in the literature.

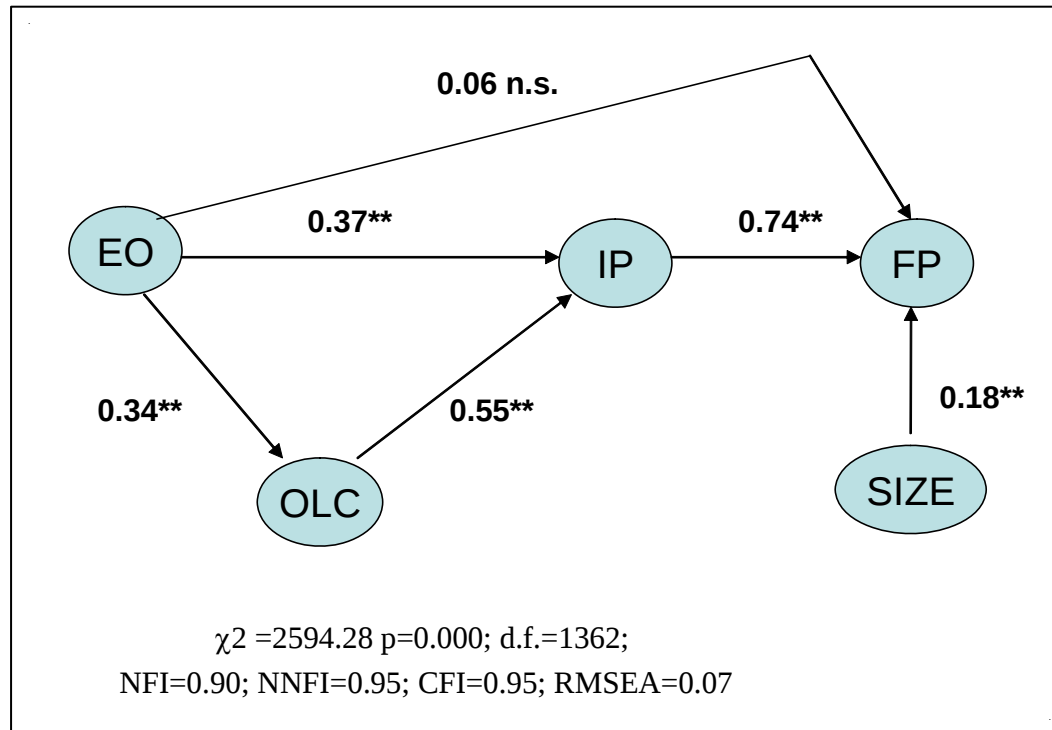
TABLE 1: Factor correlations, means, standard deviations, and alpha reliabilities

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

N = 182; alpha reliabilities are shown in brackets on the diagonal.

** Correlation is significant at the 0.01 level.

FIGURE 2: Structural Equations Model.



OLC, IP, and FP are second-order factors. EO and Size are first-order factors. For the sake of brevity, only the loads on the hypotheses paths are shown. The not-shown parameters are all standardized, significant at $p < 0.001$, and above 0.4.

** significant at $p < 0.001$.

6. 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 wider 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 innovation performance, which in turn enhances 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-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. Furthermore, EO represents the managerial foundation for organizational learning, as it provides learning values, like teamwork, dialogue or experimentation. 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 OLC for EO to be fruitful. 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 (Bueno et al., 2004). 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 resides in its effects on innovation performance.

EO might be considered as an important determinant of firm performance. However, Rauch and colleagues (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 has provided a finer-grained examination of the effects of EO on firm performance and offers an explanation to intraindustry differences in firm performance (Zott, 2003). Given that firm performance may vary among ceramic tile producers, we attempted 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.

This article has implications for practitioners. Even though managers recognize the importance of entrepreneurship and EO, its implications and requirements in the rest of the organization is often an ignored process for its success. In this paper, we suggest to implement an organizational learning approach when an EO has been selected by managers. Furthermore, we underline the importance of measuring its effects on organizations by analyzing their innovation performance. Innovation is a key concept for organizations nowadays, which represents their essence of competitive advantage.

Our results must be viewed in the light of the study's limitations. 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 we are not carrying out 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 due to the difficulties of obtaining objective performance data, which in turn might also be manipulated by accounting methods (Dechow et al., 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 and innovation performance (Covin et al., 2006; Green et al., 2008; Escribá-Esteve et al., 2008). However, further qualitative research could be useful to provide a more in-depth picture of these relationships.

Because this research carries out 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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