

# **ENTREPRENEURIAL ORIENTATION, INNOVATION AND FIRM PERFORMANCE: THE IMPORTANCE OF ORGANIZATIONAL LEARNING CAPABILITY**

**Joaquín Alegre\***

Dept. of Management 'Juan José Renau Piqueras'  
University of Valencia

**Ricardo Chiva**

Dept. of Business Administration and Marketing  
Universitat Jaume I

**ABSTRACT:** Entrepreneurial orientation, which explains how entrepreneurship is put into practice, is considered to have a positive impact on firm performance. However, this direct relationship does not seem to be empirically conclusive. Therefore, dependent variables that are more directly sensitive to entrepreneurial orientation, and contingent variables should therefore be considered. In this paper we suggest, firstly, that innovation performance acts as a mediating variable between entrepreneurial orientation and firm performance; secondly, that entrepreneurial orientation is positively related to organizational learning capability; and thirdly, organizational learning capability plays a significant role in determining the effects of entrepreneurial orientation on innovation performance.

**KEY WORDS:** entrepreneurial orientation, organizational learning capability, innovation performance, firm performance.

\*Corresponding author. Joaquín Alegre, University of Valencia, Dept. of Management 'Juan José Renau Piqueras', Avda. de los Naranjos, s/n, 46022 Valencia (Spain). e-mail: [joaquin.alegre@uv.es](mailto:joaquin.alegre@uv.es) , Tel: ++34 963 828877, Fax: ++34 963 82833

**Acknowledgements.** The authors are grateful to the IVIE, the UJI-Bancaja (P1·1B2008-13) and the Ministry of Science and Innovation (ECO2008-00729) programs for the financial support for this research.

## 1. INTRODUCTION

Encouraging entrepreneurship is an effective means of creating jobs, increasing productivity and alleviating poverty (OECD, 2005). Entrepreneurship is a young field of inquiry, research into which is attracting the interest of a growing number of scholars (Ireland, Reutzler and Webb, 2005). Sharma and Chrisman (1999: 17) maintain that entrepreneurship encompasses acts of organizational creation, renewal or innovation occurring within or outside an existing organization. However, management research has mainly focused on the entrepreneurial process or orientation (Ireland and Webb, 2007) that explains how entrepreneurship is put into practice. Entrepreneurial orientation (EO) can be considered as the processes, practices, and decision-making activities that lead to entrepreneurship (Lumpkin and Dess, 1996; Richard, Barnett, Dwyer and Chadwick, 2004). 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 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). In order to understand the EO-firm performance relationship, dependent variables that are more directly sensitive to EO and contingent variables should be considered.

Entrepreneurship is widely viewed as an important stimulus of positive outcomes at both firm and society levels (Ireland and Webb, 2007). At the firm level, entrepreneurial actions are manifest 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, reflecting the views of Drucker (1998: 152) and Schumpeter (1934), maintains that innovation is the specific function of entrepreneurship. Schuler (1986) understands entrepreneurship as the practice of innovating, and claims that what distinguishes entrepreneurial from non-entrepreneurial firms is the rate of innovation. 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. To our knowledge, no other empirical research has investigated the relationship between EO, innovation and firm performance.

On the other hand, following 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, despite previous research on these factors, these authors call for further studies to clarify the role of contingency approaches in explaining the EO-firm performance relationship. Research should focus on identifying the underlying processes that determine the contribution of EO to performance (Zahra et al., 1999). Dess, Ireland, Zahra, Floyd, Janney and Lane (2003) highlight the importance of corporate entrepreneurship in promoting organizational learning. They affirm that entrepreneurship creates new knowledge, and that organizational learning mediates this relationship. Furthermore, Wang (2008) has recently introduced the mediating role of learning orientation into the EO-firm

performance relationship. In our research, we analyze the role of organizational learning capability in explaining the relationship between EO and innovation performance.

The concept of organizational learning has attracted a great deal of attention in recent years in both academic and business circles (Bapuji and Crossan, 2004; Easterby-Smith et al., 2000), mainly due to the increasingly dynamic and complex economic environment. 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, to sustain or improve their performance. Organizational learning capability (OLC) has therefore been considered a key indicator 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). This capability has been positively related to variables like job satisfaction (Chiva and Alegre, 2009), or innovation performance (Aragón-Correa et al., 2007). However, in spite of the importance of EO, no research has considered the links between 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 are tested on a sample of firms from the Italian and Spanish ceramic tile industry, the first and second world exporters, respectively. Results are obtained from responses to a questionnaire by 182 Italian and Spanish ceramic tile company managers.

This introduction is followed by a brief overview of EO, OLC and innovation performance. In the second section, we discuss the relationships between these concepts and present our hypotheses. The third section describes the structural equation modeling methodology used to test these hypotheses on data from the Italian and Spanish ceramic tile industry. We present the results in section five. The paper concludes with a discussion of the results and their implications, and suggestions for further research.

## **2. CONCEPTUAL BACKGROUND**

### **2.1. Entrepreneurial orientation**

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

Innovativeness is 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 pursuit 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 to involve anticipating and acting on future needs by searching for new opportunities (Miller and Friesen, 1978; Lumpkin and Dess, 1996), which might involve new developments of products, markets etc. Proactiveness refers to how a firm reacts to market opportunities by seizing initiative and acting opportunistically to influence trends and, perhaps, even create demand (Jogarathnam et al., 1999), hence acting as a leader, not a follower. Covin and Slevin (1989) consider proactiveness to closely resemble an aggressive competitive orientation, which implies intensive challenging of competitors in an effort to outperform them.

Risk taking is defined as a willingness to commit significant resources to opportunities that have a 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 and Alegre (2009) 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 the factors that lie outside the organization's direct sphere 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 compliance with two conditions: novelty and use. In general, the requisite of novelty is verified since the innovation process launches 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; 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 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 efficiency in 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, these authors 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 project efficiency. Product and process innovation efficacy reflect the degree of success of an innovation, while innovation project efficiency reflects the effort expended to achieve that degree of success.

### 3. HYPOTHESES

Based on the above discussion on EO, OLC and innovation performance, we propose the conceptual model shown in Figure 1. 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 about (1) the relationship between EO and performance; (2) the relationship between EO and OLC; and (3) the relationship between OLC and innovation performance.

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#### 3.1. Entrepreneurial orientation and performance

EO has traditionally been 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 (Thoumrungrroje and Tansuhaj, 2005). In order to model the EO–firm performance relationship, other dependent variables that are more directly sensitive to EO are recommended.

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 as an indicator of entrepreneurship (Ireland et al., 2005; Drucker, 1998; Schumpeter, 1934); however no research has empirically analyzed this relationship. As EO increases a firm's proactiveness and willingness to take risks and innovate (Zahra et al., 1999), EO and innovation performance may be linked. EO may be considered one of the antecedents of innovation.

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). 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) 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**

Some authors have suggested that the relationship between EO and innovation performance is conditional or dependent on environmental and organizational factors (Lumpkin and Dess, 1996; Zahra et al., 1999; Liu et al., 2002). Zahra et al. (1999) proposed that research should focus on identifying the underlying processes that determine the contributions of EO to firm performance. 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.

As entrepreneurial firms are risk tolerant and innovative, they encourage non-authoritarian structures that facilitate creativity, collaboration and flexibility (Wang, 2008). Proactive action and aggressive gestures toward competitors involve searching for and scanning new information, which has to be challenged (Wang, 2008). EO might provide the management support for the organizational learning process and capability. According to Slater and Narver (1995), the market and EO provide the foundations for organizational learning. Similarly, Zahra et al. (1999) and Liu et al. (2002) consider that EO promotes organizational learning and learning values like teamwork, openness, etc. Covin et al. (2006) maintain that the strategizing activities that organizational learning entails are critical to maximize the effect of EO on firm performance.

OLC might require a certain strategic posture that facilitates this organizational approach. Entrepreneurial strategic posture or 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) 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. In fact, organizational learning and innovation overlap in the definition of innovation as the 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. 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.

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 therefore closely related to innovation performance (Argote et al., 2003; Lemon and Sahota, 2004).

These lines of argument lead us to 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).

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. In this largely globalized industry, 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. While we recognize the shortcoming of such sampling, we believe that the advantages of this approach outweigh the disadvantages of limited generalizability.

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 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. 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 (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). 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.

## **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*

In light of the OLC concept adopted in our theoretical review, we selected the measurement instrument developed by Chiva & Alegre (2009). The instrument comprises a set of scales that represent the 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 et al. (2007) validated this measurement scale through an employee-based survey in the ceramic tile industry. In this study we apply the same measurement scale in the same industry at the firm level, this time through interviews with 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, 2005b). 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 considered 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 the detailed analysis of a specific innovation project, 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 perceptual assessments in their innovation efficiency audit toolbox. The four-item scale we propose to measure innovation efficiency is consistent with this issue. The innovation performance measurement scale is presented in the Appendix.

#### 4.2.4. Firm performance

To measure firm performance, we asked general managers to rate their firm's performance over the last three years as 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 of competing firms and 7, among the highest scoring.

### 4.3. 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 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 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

Figure 1 shows 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. EO has a significant and positive impact on innovation performance, and there is a positive, strong and significant impact of innovation performance on firm performance.

The mediating effect of innovation performance on the relationship between EO practice 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 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 3. Thus, this mediation relationship represents a significant contribution to our understanding of the positive influence – supported by both theory and some previous empirical research– of EO on performance

Results provide support for Hypotheses 4 and 5. The structural equations model shows a moderate effect of EO on OLC and an important impact of OLC on 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. Part of the effect of EO on innovation performance is direct, while the other part is indirect through OLC.

On the other hand, 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 technological investment, in the case of innovation performance.

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

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## 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 direct relationship does not seem to be empirically conclusive and unconditional. In our research, we include innovation performance in the EO-firm performance relationship, based on the importance of innovation for entrepreneurship (Ireland et al., 2005; Drucker, 1998; Schuler, 1986; Schumpeter, 1934). Innovation performance is considered to be a three dimensional construct: product and process innovation effectiveness, and innovation efficacy. Results suggest that EO enhances innovation performance, which in turn enhances firm performance. Innovation performance acts as a mediating variable between entrepreneurial orientation and firm performance.

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 strategic posture 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 by evidencing the importance of OLC for EO to be fruitful. This strategic posture requires certain organizational practices that catalyze its effects on organizations, specifically on innovation performance. Entrepreneurship, which might be considered as a management attitude, may have little direct effect on innovation performance if organizational and human resources are not willing to follow this approach. OLC, or the factors that facilitate the organizational learning process (experimentation, dialogue, etc), 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.

This article has 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. Furthermore, we underline the importance of measuring its effects on organizations by analyzing their innovation performance. Innovation is a key concept for organizations today, as it represents the essence of their 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 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 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, innovation and firm performance (Covin et al., 2006; Green et al., 2008; Escribá-Esteve et al., 2008). However, further qualitative research would be useful to provide a more in-depth picture of these relationships.

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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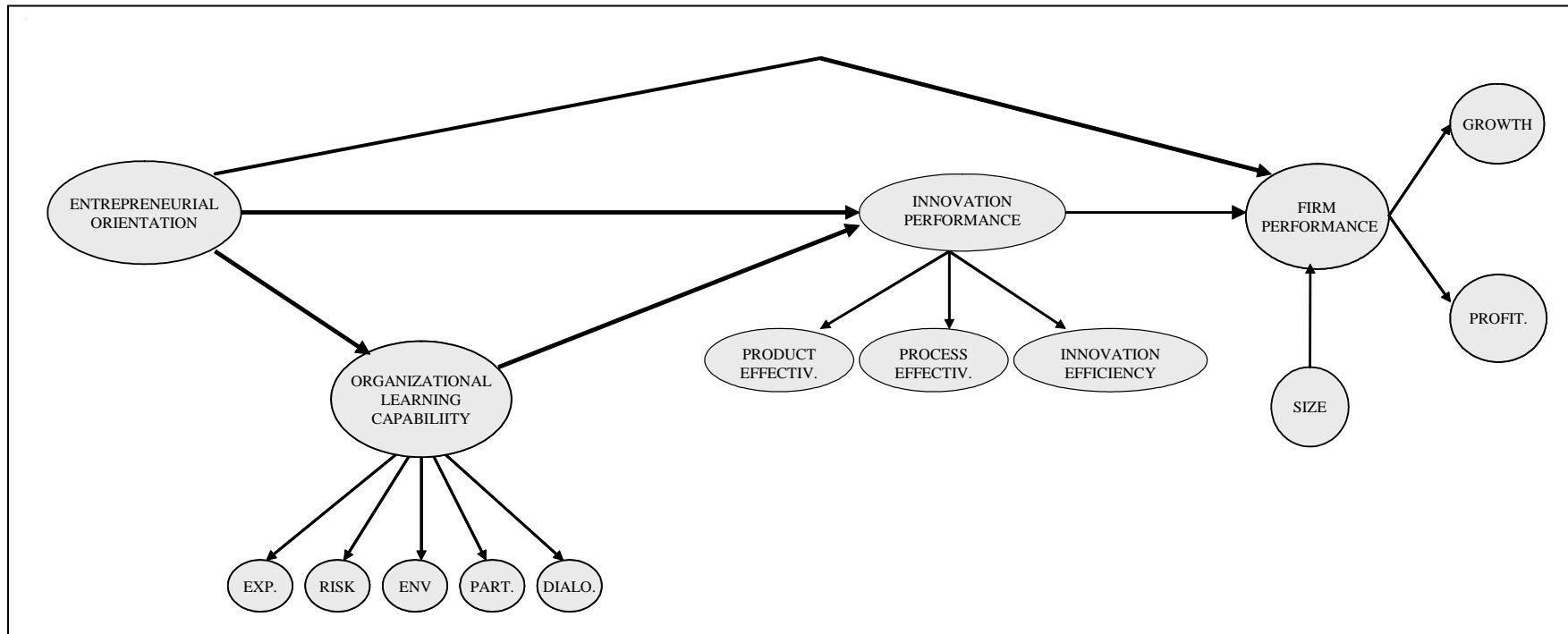
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**FIGURE 1: Conceptual model.**



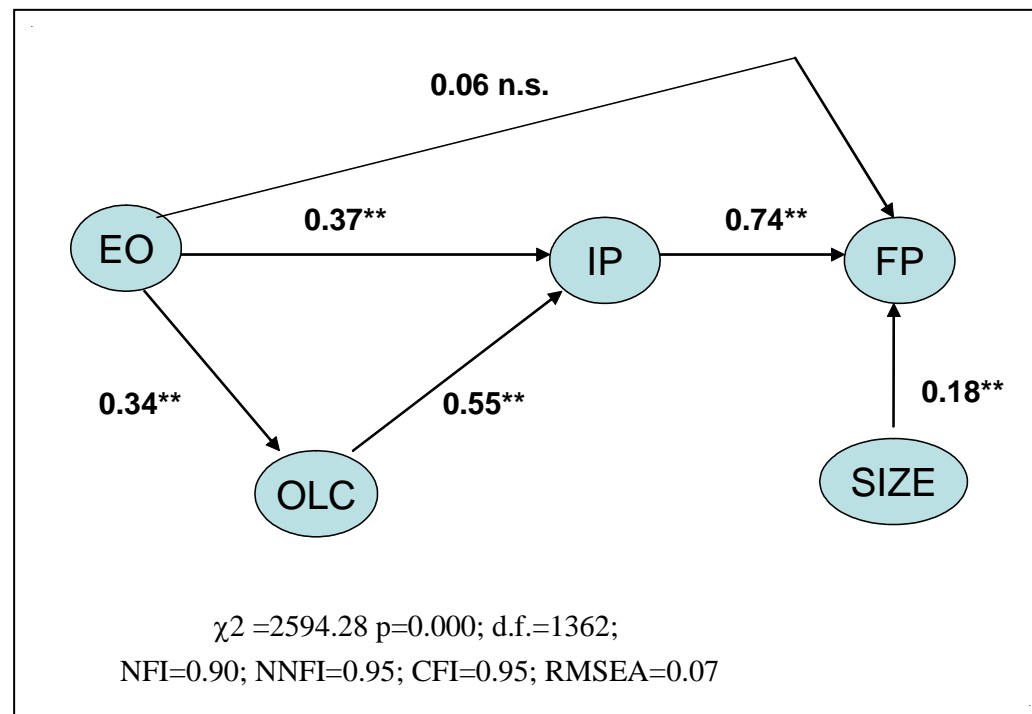
**TABLE 1: Factor correlations, means, standard deviations, and alpha reliabilities**

	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. Parameters not shown here are all standardized, significant at  $p < 0.001$ , and above 0.4.

## Appendix: Innovation Performance Measurement Scale

Please state your company performance compared to that of your competitors over the last three years with regard to the following items.

Dimension	Item	Literature source
<b>Product innovation effectiveness</b>	PT1. Replacement of products being phased out	OECD (2005b)
	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	
<b>Process innovation effectiveness</b>	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	
<b>Product innovation efficiency</b>	EF1. Average innovation project development time	Brown and Eisenhardt (1995); Barczak (1995); Valle and Avella (2003)
	EF2. Average number of innovation project working hours	
	EF3. Average cost per innovation project	
	EF4. Degree of overall satisfaction with innovation project efficiency	