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**EXPLORING THE EFFECT OF KNOWLEDGE  
MANAGEMENT PRACTICES ON EXPORTS:  
A DYNAMIC CAPABILITIES VIEW**

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## Abstract

In this work we examine the relationship between knowledge management practices and export intensity from the dynamic capabilities perspective. Building on a theoretical review of the literature, we argue that knowledge management dynamic capabilities act as a mediating variable in this relationship. Based on a sample of 183 companies in the ceramic tile industry, we contrast this proposal with structural equation modeling. Our results indicate that the implementation of knowledge management practices is a necessary but not sufficient condition to improve export performance, requiring the existence of dynamic capabilities to reconfigure these practices. We suggest some practical implications and possible lines for future research.

**Key words:** *knowledge management practices, dynamic capabilities, exports.*

## 1. INTRODUCTION

The uncertainty, dynamism and volatility characterize a new global economy with a different landscape (Bettis and Hitt, 1995) and hypercompetitive environments (D'Aveni, 1994). Companies must learn to cope with changing market conditions, which requires the ability to generate new resources. Penrose (1959) defined the firm as a set of heterogeneous physical and human resources between organizations, which would explain their differences in performance (Makadok, 2001). In this sense, the role of knowledge is crucial, because those companies that learn faster are better able to adapt to its environment (Bower, 1993).

For this reason, learning has become a major factor for achieving long-term competitive advantage (Teece et al., 1997) and for international success (Saarenketo et al., 2004). In recent years, firm dynamic capabilities have been considered as an enduring source of competitive advantage, allowing the creation of unique configurations and continuous updates of resources (Kogut and Zander, 1992) to address rapidly changing environments and improve organizational performance in areas such as marketing, production, innovation and international strategy.

This work tries to elucidate the contribution of knowledge management to export performance, which affects organizational performance. Organizational learning has become one of the most mentioned concepts by scholars in recent times; however, as proposed by Miller (1996), our theoretical and empirical knowledge about learning is still incomplete. Studying knowledge management still presents a significant challenge, since it is necessary to properly define the scope and operationalization of this construct. In this sense, concepts such as market orientation have been incorporated in recent studies (Sousa, Martinez and Coelho, 2008), based on organizational learning, as market-oriented firms recognize and respond better to threats and opportunities in the environment. As posed by Rose and Shoham (2002), it offers an integrated approach to assess the export performance through the assessment of the organization's ability to predict, react and take advantage of the changing environment.

Being able to create and exploit capabilities is essential to successfully compete in foreign markets. Internationalization activities make firms become involved in a process of learning and knowledge accumulation (Sapienza et al., 2006). Foreign market growth depends on the existing capabilities of the firm, but also on the potential to reconfigure and adapt to other markets. International markets are characterized by a higher competitive pressure than the domestic market (Prashantham, 2005), and market knowledge becomes obsolete very quickly, so it is necessary to lay the foundation for continuous learning. Among the modes of internationalization, exporting is a viable strategic option and usually the first for many companies (Zhao and Zou, 2002). It is considered the fastest and most effective entry mode (Leonidou et al., 2007; Hultman, Robson and Katsikeas, 2009). However, there are still few works that have investigated the effect of knowledge in exporting companies and their outcomes (Morgan et al., 2003; Martín, Rastrollo and González, 2009).

In this sense, our interest focuses on the study of the knowledge-management processes of those small-sized companies that are mainly internationalized through export ventures. The adoption of this approach is suitable as a theoretical basis for explaining the internationalization process, therefore, based on previous literature, we conceptualize Knowledge management by using a series of Knowledge

management practices (KMP) and dynamic capabilities of knowledge management (KMDC) that could improve export performance.

This paper is organized as follows. In the next section we provide a revision of the main issues about resource-based view, knowledge-based view and organizational learning, as well as the dynamic capabilities view, particularly in the export context. We explain the research methodology and the analyses carried out to test our proposal. Finally, we present and discuss the results, and we propose some implications and directions for further research.

## **2. THEORETICAL FRAMEWORK AND HYPOTHESES**

### **2.1. Resource-Based View, Knowledge Management and Organizational Learning**

Resource-based view has been widely used to explain the internationalization of businessness, especially in the context of exports (Katsikeas, Leonidou and Morgan, 2000; Dhanaraj and Beamish, 2003; Hitt et al., 2006). From this perspective, organizations can be understood as a set of unique resources, tangible and intangible. These resources can persist over time (Teece et al., 1997) and become a source of sustainable competitive advantage when they are valuable, rare, difficult to imitate and non substitutable. Nevertheless, to benefit from these resources they must be properly managed (Sirmon, Hitt, and Ireland, 2007). From this standpoint, resource-based view tries to explain why an organization can outperform others (Penrose, 1959; Wernerfelt, 1984; Barney, 1991). However, this perspective has been considered a static approach, which has prompted it to evolve into a more dynamic view. In this sense, knowledge-based view (KBV) focuses on knowledge as the most valuable resource in the company. This theory has emerged in the literature as a continuation and extension of the resource-based view, recognizing the importance of knowledge in organizational processes and receiving great support from researchers (Miller and Shamsie, 1996). The way the organization creates and uses knowledge can be the key to achieve a sustainable competitive advantage over time (Grant, 1996) and the creation, dissemination and integration of knowledge has

become a strategic resource in the organization (Grant, 1996). From a psychological approach, Cyert and March (1963), and Nonaka and Takeuchi (1995) conceive knowledge as a key factor for innovation and competitiveness. Therefore, how managers use the resources related to knowledge largely determines the performance of the organization (von Krogh, 1998).

Basically, learning is a process of acquisition, assimilation, and exploitation of knowledge (Cohen and Levinthal, 1990; Argote, McEvily and Reagan, 2003). Knowledge is the central element in the learning process, which consists on the acquisition, integration and exploitation of knowledge (Cohen and Levinthal, 1990). The main distinction of the types of knowledge refers to implicit or explicit nature, being in the first case a product of the experience and transmitted through the application, while in the second case, it can be transmitted through communication (Spender, 1996). Tacit and explicit dimensions of knowledge can reside in an individual or organization on the collective level, therefore, the concept of organizational learning is deeply rooted in individual learning (Shrivastava, 1983). Knowledge management is essentially the creation and application of knowledge as a resource (Grant, 1996), and new knowledge is generated from new combinations of knowledge and other resources (Kogut and Zander, 1992). If the acquisition and exploitation of knowledge is considered a key resource for sustainable competitive advantage (Tsai and Ghoshal, 1998), therefore, the correct implementation of certain organizational practices is helpful to explain the different results of the organization.

Organizational learning capacity can be defined as all those tangible and intangible resources and skills that the company uses to pursue new forms of competitive advantage (Teece et al., 1997). We can identify two intermediate stages between organizational learning capability and organizational performance: (1) organizational learning and knowledge management processes and (2) dynamic capabilities. Organizational learning, knowledge management and processes related to the creation, retention and knowledge transfer (Argote, McEvily and Reagan, 2003) arise from the learning of dynamic capabilities (Zollo and Winter, 2002; Easterby-Smith and Prieto, 2008), which allow the company to make changes in their current practices preventing them from becoming rigidities (Leonard-Barton, 1992).

## **2.2. Knowledge and internationalization of the firm**

Internationalization plays a vital role in business strategy (Prashantham, 2005). It can be defined as the process by which firms increase their involvement in operations across borders (Welch and Luostarinen, 1988). Traditional international theories propose that the internationalization of the firm increases as does their own learning; thus, the role of firm knowledge in the development of its international activity has been widely alluded to (Johanson and Vahlne, 1977; Sharma and Blomstermo, 2003). Research on internationalization process is built mainly along two models. Uppsala model (Johanson and Vahlne, 1977; 1990) considers that firms follow a sequential process of internationalization based on the incremental learning derived from their activity overseas. This model is based on the theory of organizational behavior (Cyert and March, 1963), and as shown by Andersen (1997), rooted on resource-based view. In contrast, empirical research has shown that some firms do not follow this pattern of internationalization as they are not enforced by these constraints, identifying this different model of internationalization as the phenomenon of “born globals” or “international new ventures” (Oviatt and McDougall, 1994). These firms can get involved in international activities at a faster rate, and therefore they are not supposed to follow the incremental path of the stages theories. Thus, born globals might have different organizational or managerial capabilities that do not constrain their international expansion.

As market knowledge becomes obsolete very quickly, it is necessary to establish the foundation for continuous learning. In this sense, the acquisition and use of relevant knowledge would allow the company to improve its competitive performance (Yli-Renko, Autio and Sapienza, 2001). From KBV, globalization would favor the creation and maintenance of competitive advantage; for instance, collaboration and relationships with other firms help to improve their knowledge base, thus shortening the time necessary to internationalize (Huber, 1991).

In practice, the first real step in the internationalization process is usually export (Jones, 2001), defined as the sale of products or services out of the domestic markets, since it is the fastest and more popular entry mode for many SMEs. Exporting is the most common formula of internationalization, especially for small-sized companies,

because it allows firms to adjust their international commitment as they gain experience, obtaining a greater flexibility without a high commitment of resources (Anderson and Gatignon, 1986), compared to others like licensing or joint ventures (Morgan and Katsikeas, 1997). Furthermore, export activity also generates advantages for the learning process of the company (Buckley and Casson, 1985).

Research on internationalization has proposed that export performance depends on structural factors of the company, management, incentives and obstacles to the internationalization process (Bonaccorsi, 1992). However, despite the academic effort that has been undertaken in the past 30 years, literature on the determinants of export performance has not yet established a strong theoretical basis. As posed by Sousa et al. (2008) in a recent theoretical review, research on this issue is highly fragmented, with different concepts and methodologies, and inconsistent results. Previous literature has stated that the main determinants of export performance are internal, influencing factors such as size, experience and expertise of the company (Zou and Stan, 1998). One of the variables more supported is the managerial commitment, which highly determines the proactiveness to seek for opportunities in the market (Chetty and Hamilton, 1993; Cavusgil and Zou, 1994), especially in SMEs, in which decisions on international strategy usually are due on a person or a reduced management team (Boter and Holmquist, 1996; Fernandez and Nieto, 2005).

### **2.3. Knowledge Management Practices, Dynamic capabilities and Export Strategy**

Given the growing importance of knowledge as the main resource of the firm, knowledge management systems have also begun to take hold, as they support the creation, transfer and application of knowledge in organizations (Alavi and Leidner, 2001). However, in such a competitive environment, it is required a dynamic formula that allows a constant fit of these resources. Therefore, in recent times dynamic capabilities are configured as the hub through which the organization would be able to adapt their skills to a changing environment.

Knowledge management involves the creation and application of knowledge. Knowledge management systems collect the abilities and the know-how that allow the firm to develop distinctive activities (Alavi and Leidner, 2001). Knowledge Management Practices (KMP) are conceptualized as organizational routines (Nelson and Winter, 1982) oriented towards knowledge. Efficient KMP enables the development of routines and capabilities: even if a firm can afford different resources, knowledge being one of the most important, it needs to develop effective KMP to get the best from these resources. Therefore, KMP deals with the application of knowledge: once it has been created, the mechanisms that allow the firm to use it are knowledge retention and knowledge transfer. At this point, the literature considers two main KMP: knowledge dissemination and storage. We build on these notions to conceptualize our construct of KMP.

**Knowledge dissemination practices** include processes that facilitate the knowledge application through formal and informal channels (Zahra and George, 2002).

**Knowledge storage systems** are information technology-based systems, that are developed to support the processes of operational knowledge retrieval and storage (Alavi and Leidner, 2001; von Zedwitz, 2002).

However, the adoption of KMP, which basically take action in routine operations, do not necessarily imply that such practices might be appropriate in the future. Therefore, as Hitt and Bettis (1996) suggest, it is necessary to consider the role of dynamic capabilities, which allow such practices to achieve and reconfigure sustainable competitive advantage (Henderson and Cockburn, 1994). A dynamic capability is a learned and stable pattern of collective activity, from which the organization systematically generates and modifies its operating routines to improve efficiency (Zollo and Winter, 2002). Zahra et al. (2006) define dynamic capabilities as the processes to reconfigure resources and operational routines. Since the creation of dynamic capabilities requires the accumulation, articulation and codification of knowledge, knowledge management and dynamic capabilities are strongly related concepts (Zollo and Winter, 2002), as knowledge management processes drive the development, evolution and use of these capabilities (Eisenhardt and Martin, 2000). Organizational practices are also closely related to dynamic capabilities, so organizations are considered entities generating dynamic capabilities, which are

strongly rooted in the routines and organizational processes and are also conditioned by their history (Teece and Pisano, 1994). Dynamic capabilities view takes into account the evolving nature of resources and capabilities of the firm to adapt to changes in their environment (Lavie, 2006). So, it tries to fill gaps in the theories that attempt to explain the competitive advantage from internal (Wernerfelt, 1984; Barney, 1991) or external factors (Porter, 1981). From the evolutionary perspective of Nelson and Winter (1982), a competitive advantage that is always based in the same basic capabilities is not sustainable over time, as external agents weakens these capabilities. Consequently, dynamic capabilities are those that can generate new capabilities that do allow a sustainable competitive advantage (meta-capabilities or capabilities of second order).

Knowledge can be acquired outside (Zahra and Nielsen, 2002; Lavie, 2006), or inside the firm (Zahra and George, 2002). However, the concept of dynamic capability requires that this knowledge is obtained through both sources to create new capabilities. Therefore, we base on previous literature to propose two dimensions of knowledge management dynamic capability: internal knowledge development and external knowledge integration.

**Internal knowledge development.** People in the organization can create and disseminate new knowledge inside the borders of the firm, requiring the existence of an exploitation process. From the evolutionary theories, this involves an accumulative learning that allows the firm to expand their current capabilities. This accumulation of internal knowledge plays a crucial role for the firm in terms of value creation, as it enhances its ability to exploit new opportunities (Spender and Grant, 1996). In this sense, absorptive capacity is a key learning capability, based in firm's prior knowledge (Cohen and Levinthal, 1990).

**External knowledge integration.** Firms can create a wider knowledge base through the exploration outside their boundaries. Exploration refers to learning through processes of concerted variation, planned experimentation and play (Baum et al., 2000). This process helps the firm to recombine their current knowledge with new knowledge from their environment (Ettlie and Pavlou, 2006), thus generating new knowledge and capabilities.

However, some academics suggest that explorative learning can come also from internal sources, because new knowledge combinations can also arise as a result of the learning process inside the firm (Henderson and Cockburn, 1994). As De Clerq and Dimov (2008) posit, despite the importance of these internal and external dimensions for the knowledge development, few studies have addressed their joint effect on performance. Recently, Prange and Verdier (2011) proposed, from Dynamic Capabilities View (DCV), that different types of capabilities support different internationalization processes. They introduce the concept of “international ambidexterity”, referring to the importance of joining both dimensions, exploration and exploitation, to improve international performance and achieve growth. The initial steps into foreign markets generally involve explorative efforts (Cavusgil, 1980); from the dynamic capabilities view at the international context, exploitative learning is path-dependent on the knowledge accumulation that comes from the international experience, while explorative internationalization deals with the ability of a firm to achieve new forms of knowledge; these kind of capabilities are more important to develop new products or markets, independently of the path-dependency.

Usually, dynamic capabilities have been addressed regardless of their nature (Teece et al., 1997), so in this work, we will try to measure their contribution in the context of export strategy, thus we hypothesize:

*H1: The adoption and use of Knowledge Management Practices (KMP) has a positive effect on Knowledge Management Dynamic Capabilities (KMDC).*

*H2: The adoption and use of Knowledge Management Dynamic Capabilities (KMDC) has a positive effect on Export intensity.*

Knudsen and Madsen (2002) suggest an interesting theoretical framework building on DCV. They consider that the initiation or continuation of an export venture may be justified by changes in capabilities of the firm. i.e., informational architecture and absorptive capacity; therefore, the export venture always implies exploration related to the development of new knowledge. As these authors suggest,

the DCV complements rather than contradicts the findings on export behavior research, as it can embrace export performance as well as internationalization processes; however, to the best of our knowledge, few works have addressed this issue.

Therefore, we try to fill this gap by focusing on the role of dynamic capabilities as a key dimension in this relationship. We expect that dynamic capabilities are the link that might help the firm to reconfigure their knowledge management practices to adapt to foreign markets to succeed in the development of their export strategy. Consequently, we propose the following hypothesis:

*H3: Knowledge Management Dynamic Capabilities (KMDC) act as a mediating variable between Knowledge Management Practices (KMP) and Export intensity.*

### **3. 3. METHODOLOGY**

#### **3.1. Sample and Data Collection Procedure**

The empirical study was developed in the ceramic tile industry. Together with Italy, the Spanish ceramic tile industry is one of the world leaders, representing over 70% of world production. In the case of Spain, Valencian Community is the biggest exporter of tiles, accumulating 95% of exports according to data from IVEX (2010). Both industries, Spanish and Italian, have similar characteristics so that its analysis is of particular relevance for the aims of this work. They are geographically concentrated in industrial districts, located in Sassuolo (Italy) and Castellon (Spain). Most firms are medium-sized, not exceeding 250 employees. Although, in general, these companies may have certain structural weaknesses arising from its size, the ceramic industry is highly globalized and these firms show a strong export growth. In particular, Spain and Italy represent 70% of European production, and are the second and third world producers, thanks to their leadership in design and technology. This industry is placed in the category of scale-intensive industry according to the

classification proposed by Pavitt (1984). Given the characteristics of the study, one sector analysis is particularly suitable as it facilitates the identification and measurement of critical resources in an industry (Hitt et al., 2001). In our case, medium-high technological intensity industries tend to be more export intensive (Bell, Crick, and Young, 2004; Wheeler, Ibeh and Dimitratos, 2008). Furthermore, knowledge management processes can vary considerably between industries (Santarelli and Piergiovanni, 1996). Therefore, the consideration of a single sector under study allows us to more accurately approximate the reality of this industry.

Field work was carried out through a 7-point Likert scale questionnaire, sent from June to November 2004. This questionnaire was developed and pre-tested with the help of ALICER, the Spanish Centre for Innovation and Technology in Ceramic Industrial Design, to assure that the items included were correctly understood by respondents. We received a total amount of 183 valid questionnaires, 101 from Spanish firms and 82 from Italian firms, which represents about the 50% of the population under study (Chamber of Commerce of Valencia, 2004), therefore the response rate is highly satisfactory (Williams et al., 2004). Nonresponse bias was assessed through a comparison of variables such as number of employees or sales volume, available in secondary data sources. As has been exposed, due to the characteristics of the industry, our sample is mainly composed of SME.

### **3.2. Measurement of variables**

KM practices and KM dynamic capabilities were assessed through measurement scales. Previous literature revision and Confirmatory Factor Analysis (CFA) led to operationalize KM practices through two dimensions: Knowledge dissemination practices and Knowledge storage systems. The first consists of four items that highlight the participation of employees by group interaction, which is needed to disseminate tacit knowledge in the organization (Nonaka and Takeuchi, 1995). The second consists of three items reflecting the capabilities of the firm to retain the relevant information and apply it in the development of a new project.

Regarding KM dynamic capability, CFA upheld two dimensions of the construct, external knowledge integration and internal knowledge development. External knowledge integration is composed by five items dealing with the ability of the firm to acquire knowledge that is located outside their boundaries, but also to create new ones by collaborating with other agents. Internal knowledge development is path dependent in the organization (De Clerq and Dimov, 2008), so this construct is related to those abilities of the firm that help to create and manage the development of internal knowledge and is composed of six items.

Export intensity has been measured as the ratio of exports/sales volume in 2007. Among the objective indicators of export performance, export intensity is by far the most common in the literature and has been widely used in other works reporting similar research questions (Katsikeas, Leonidou and Morgan, 2000; Lages and Lages, 2004; Sousa et al., 2008). Following previous works, we introduced a lag of three years between the adoption of KMP and KMDC and exports, as this can help to reduce the problems arising from the simultaneity of the variables (Salomon and Shaver, 2000). Finally, as has been posited, we did not include control variables such as size, as firms in the sample show a high degree of homogeneity, being most of them medium-sized SME with less than 250 employees and also quite regular in terms of turnover.

### **3.3. Statistical Analyses**

For the empirical analysis we performed structural equation models with robust indicators. This type of second-generation multivariate analysis can solve several problems that may occur in multiple regression analysis (Dhanaraj and Beamish, 2003), and mainly allow us to analyze the relationships simultaneously, including error measurements in the model, so it is possible to identify a possible overestimation or underestimation of the strength of the relationships between the constructs. From a theoretical point of view, this technique confirms the reliability and validity measures of the constructs.

Our research model was estimated by using EQS 6.1 software. Sample is composed of 183 firms; therefore we highly rise above the minimum threshold of 100 subjects that is considered to perform structural equation modeling analyses (Williams et al., 2004).

## **4. RESULTS**

### **Psychometric properties of measurement scales**

To assure that the measurement scales are validated, we checked different dimensions including content validity, reliability and convergent and discriminant validity. Content validity accounts for the adequacy of the items to measure the magnitude (Nunnally, 1978). This is assumed when the scales have been constructed according to the existent literature and through the development of interviews with experts. Reliability indicates the efficacy of the items to measure the magnitude; convergent validity is accepted as factor loadings overcome the acceptable levels, and t-coefficients are significant (higher than 1.96). Discriminant validity was tested by performing a confirmatory factor analyses (CFA, see Appendix 1 and 2) comparing the differences between a constrained CFA with an interfactor correlation set to 1 and a unconstrained model with an interfactor correlation set free. Tables 2 and 3 provide evidence for discriminant validity (Gatignon et al., 2002)

Following the approach used by Singh, Goolsby and Rhoads (1994) and Tippins and Sohi (2003), we examined the relationship between KMP and Exports with KMDC acting as a mediator. Table 1 presents the result of the model analysis and the correlations, means and alpha reliability of the sample.

**Table 1. Factor correlations, means, reliabilities and standard deviations.**

	Mean	S.D.	Alpha reliabilities	1	2	3	4	5
Exports	39,49	29,371		1				
Knowledge dissemination practices	4,4344	1,31264	,809	,146*	1			
Knowledge storage systems	4,4754	1,44639	,808	,092	,511**	1		
External knowledge integration	3,9617	1,44331	,878	,216**	,290**	,323**	1	
Internal Knowledge Development	4,0355	1,58262	,931	,218**	,307**	,410**	,808**	1

\* Correlation is significant at the 0.05 level

\*\* Correlation is significant at the 0.01 level

**Table 2. Pairwise Confirmatory Analyses for Knowledge Management Practices**

KMP	Knowledge Storage Practices				
	$\phi$	d.f.	$\chi^2$	$\Delta\chi^2$	p
Knowledge	0.624	13	16,610		0.21
Dissemination	1	14	18,884	2,274	0.16
Practices	0	14	55,130	36,246	0.00

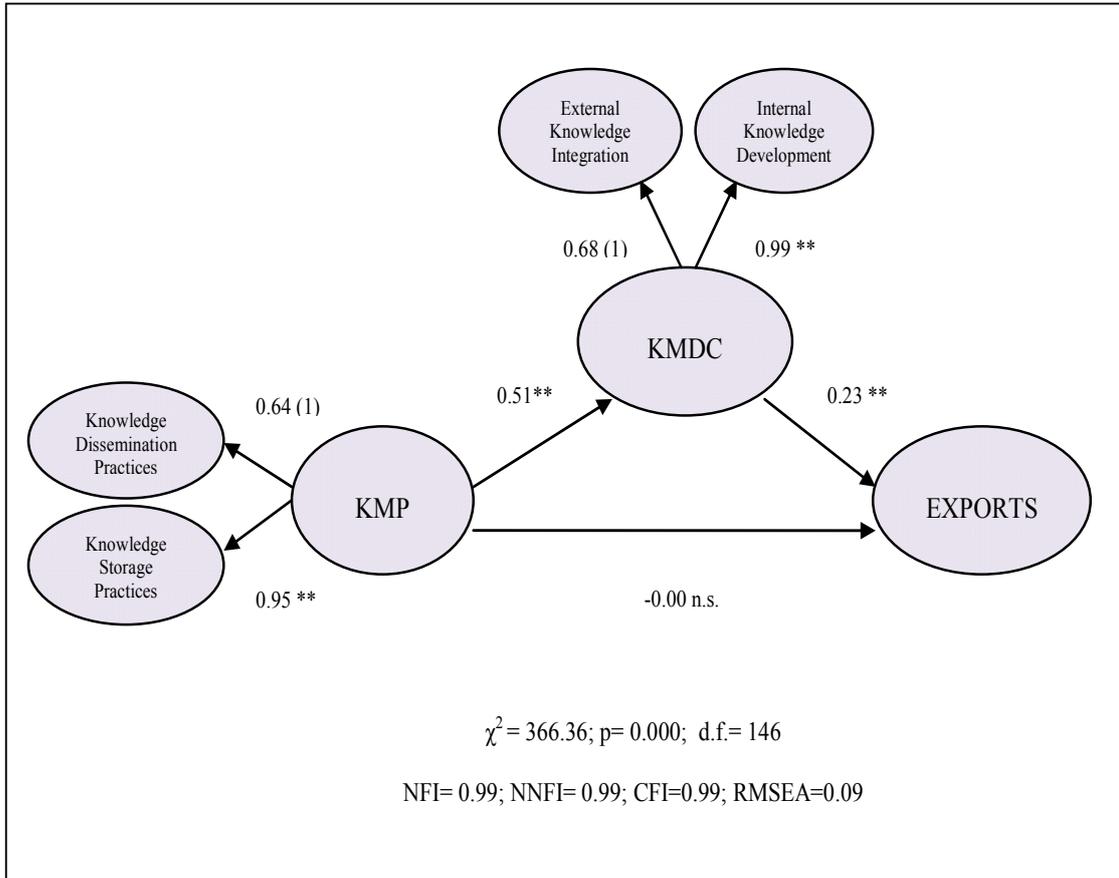
**Table 3. Pairwise Confirmatory Analyses for Knowledge Management Dynamic Capabilities**

KMDC	Internal Knowledge Development				
	$\phi$	d.f.	$\chi^2$	$\Delta\chi^2$	p
External	0.86	43	156,371		0.00
Knowledge	1	44	159,792	3,421	0.00
Integration	0	14	300,804	141,012	0.00

Chi-square is the most commonly used statistic to measure the model fit, and it is specially recommended for intermediate samples such as in this work (Tabachnick and Fidell, 1996). As can be seen in figure 1, Chi-square statistic for the model is significant. Furthermore, the fit indexes are higher than 0.90, which suggest a good overall fit (Tippins and Sohi, 2003).

As expected, the structural equation model shows a significant relationship between the adoption of Knowledge management practices (KMP) and Knowledge Dynamic Capabilities (KMDC), thus H1 is accepted. Furthermore, we can observe that there is also a significant relationship between KMDC and Export intensity, as posited by H2, thus we can also accept this hypothesis. If we perform a direct effect model, the path among KMP and Exports is not significant. However, many authors (Judd and Kenny, 1981; Collis, Graham and Flaherty, 1998; MacKinnon, Krull and Lockwood, 2000; Shrout and Bolger, 2002) argue that a significant direct effect is not necessary for mediation, as this requirement substantially reduces power to detect real mediation effects (McKinnon, Fairchild and Fritz, 2007). In fact, as Zhao, Lynch, and Chen (2010) explain, the relevant test of mediation is the significance of the indirect path (that is, the path from KMP to Exports, and the path from KMDC to Exports.) Following these authors, this type of mediating effect can be considered as “indirect-only mediation”. In our case, we believe this might be due to the positive influence on exports is not in the implementation on practices per se, but in the capability to reconfigure and adapt these practices. This means that the positive impact of the implementation of Knowledge Management Practices over export intensity is highly dependent on the existence of dynamic capabilities in knowledge management; thus, as we proposed, *Knowledge management dynamic capabilities act as a mediating variable between Knowledge management practices and export intensity*, so empirical results provide support for our main hypothesis.

**Figure 1. Empirical model**



KMP and KMDC are second-order factors. For the sake of brevity, only the first-order loadings are shown, being significant at  $p < 0.001$ .

The model shows a mediating positive and statistically significant relationship between the constructs of KMP and export intensity. This suggests that KMDC is the channel through which a firm can achieve better results in its export strategy, by enhancing its export intensity. Even if a firm efficiently deals with knowledge management practices, there is no point in this if it lacks the capabilities to reconfigure these practices to improve its export strategy.

## **5. DISCUSSION**

In recent years, organizational learning is one of the research areas receiving more attention from scholars. However, our knowledge about these questions, especially regarding empirical results, is still incomplete. This work examines the contribution of knowledge management to export intensity, closely related to organizational performance. The acquisition and exploitation of knowledge is considered a key resource for sustainable competitive advantage (Tsai and Ghoshal, 1998), and, consequently, the way managers use it can determine the performance of the organization (von Krogh, 1998). Knowledge regarding international markets evolves in a very dynamic way, so it becomes more important to take on the mechanisms that allow the firm to manage these important resources; therefore, the ability to learn and apply knowledge to foreign markets is crucial to for the success of international ventures. Nowadays, exports must be considered and analyzed as a strategic issue (Knudsen and Madsen, 2002). At this point, we believe that the DCV can offer a useful theoretical framework for export strategy research. Although the adoption of knowledge management practices is considered to positively impact the export strategy, there is an empirical lack of strong research supporting this idea. Consequently, a more in-depth view of this issue is needed to explain the mechanisms by which these practices can improve export ventures.

In this paper, we have examined the relationships among Knowledge management practices, Knowledge management dynamic capabilities and export intensity. Our findings suggest that the construct of KMDC is a key element, as these capabilities play a mediating role in this relationship. That is, in spite of adopting efficient knowledge management practices, its positive effect is dependent on the existence of dynamic capabilities in the organization.

### **Limitations**

We believe that some of the main limitations in the present study come from the measurement of the variables. Regarding the constructs of KMP and KMDC, responses are based primarily on the perception of the managers, although it is possible to overcome this limitation by using rigorous statistical analyses (Hair et al.,

1998). In addition, export performance is increasingly seen as a multidimensional construct (Zou, Taylor and Osland, 1998), with an economic and strategic component (Cavulsgil and Zou, 1994). Despite many studies have addressed export performance, there is still no consensus on the appropriate measure for this variable (Katsikeas, Leonidou and Morgan, 2000). In fact, there is no definition of export performance that is widely accepted. Nonetheless, it is considered that the combined use of objective and subjective measures would provide a fuller explanation of the export performance (Wheeler, Ibeh and Dimitratos, 2008), so future studies could take this into account to offer a wider perspective.

## **Implications**

Research on dynamic capabilities is a recent topic in strategic management, so it still needs for further analyses, in particular with respect to empirical results. We believe that the support for the mediating effect in our model is an interesting contribution in the literature, as this can be considered the key to benefit from knowledge management in the organization. Thus, we have provided knowledge-related key factors that can help the firm to improve their export performance. Besides this, we measured these constructs with a three year time lag, thus overcoming one of the main limitations of previous cross-sectional studies on this stream of research. Our results indicate that those firms that implemented knowledge management practices, but also developed knowledge management dynamic capabilities, were more capable to reconfigure these practices to adapt to the changing international conditions, improving export performance over time. We also consider that our focus on export activities is particularly interesting. Exporting is generally the most regular mode of internationalization and, undoubtedly, is essential for a country's economy. For this reason, we examined our proposal in a mature but highly globalized industry that is indeed composed of very dynamic exporting companies. Our results suggest that in an industry such as ceramic tile producers, highly dependent on exports, knowledge management practices and dynamic capabilities require more attention to achieve competitive advantage.

We believe this study can make some interesting contributions. This study enhances the important role of dynamic capabilities on internationalization and

export strategy, consistent with previous literature (Zollo and Winter, 2002; Easterby-Smith and Prieto, 2008). This can help to explain why some firms implementing KMP cannot achieve a better export performance, which in the end affects firm performance. Additionally, we clarify dynamic capability process; we have also shown the importance of exploration and exploitation related capabilities in the export context, extending previous theoretical works on this issue (Kudsen and Madsen, 2002; Prange and Verdier, 2011).

Furthermore, this work might entail some interesting implications for practitioners. It has been exposed that knowledge is a crucial resource for organizations, and consequently, its effective management can lead to a better performance. In the context of knowledge management and organizational learning, the implementation of best practices can provide the firm an important tool to improve their performance. However, and what is more important, we have shown that this is not a sufficient condition. Managers must provide mechanisms to create, disseminate, and store knowledge within the organization, and establish systems to apply and reconfigure the relevant knowledge. Human resources play a crucial role in this issue, so it becomes more important to foster employees' commitment towards organizational learning through activities such as teamwork or quality circles.

### **Directions for future research**

We have shown the importance of knowledge management dynamic capabilities as a mediating link between knowledge management practices and export intensity. Though, our conceptualization of exports is limited, so future studies could develop this proposal to build a stronger and integrative framework into internationalization strategy. Also, some other variables could be included, such as firm international experience. Likewise, research on different organizational contexts could help to assess this relationship in a more in-depth way to confirm if our findings differ between industries. Finally, the impact of these capabilities on firm-level performance should be explored. We believe that despite this contribution, the link between these capabilities in the export strategy needs further attention, so future studies could look more deeply into these issues.

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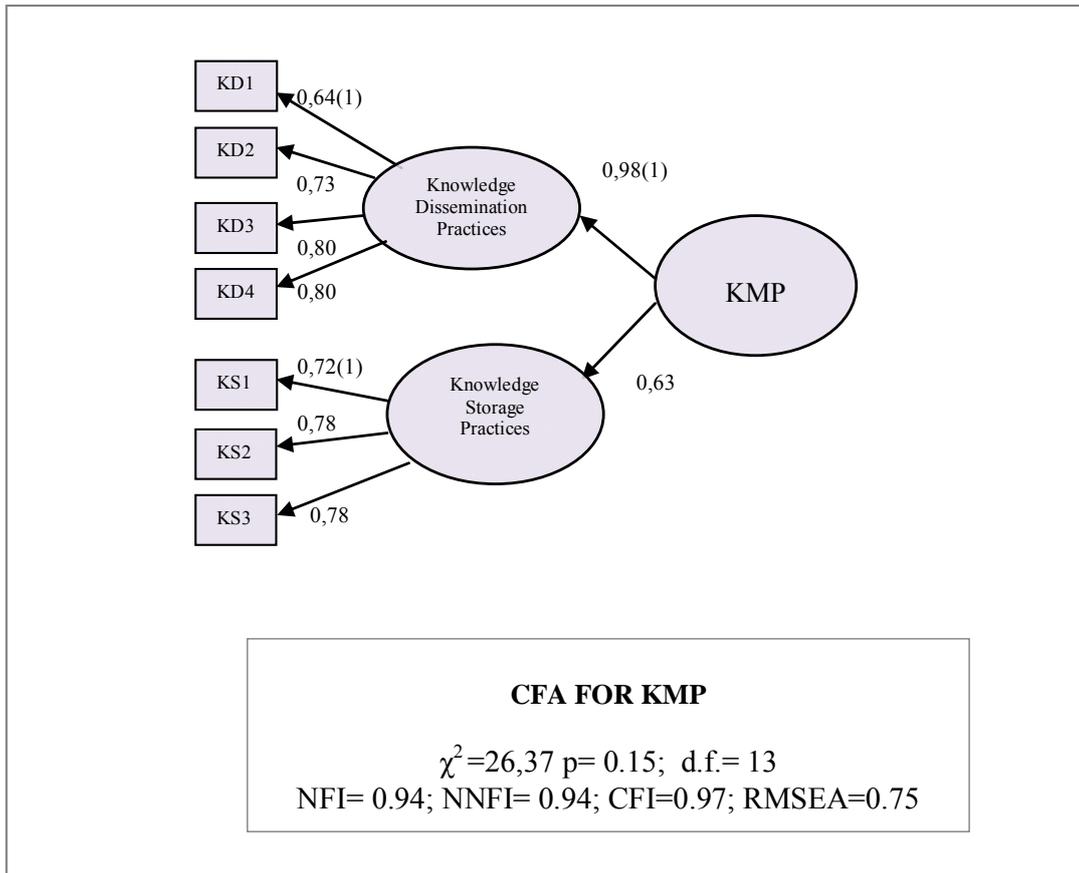
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## Appendix 1

Figure 3: CFA for Knowledge Management Practices



## Appendix 2

**Figure 3: CFA for Knowledge Management Dynamic Capabilities**

