

Does international experience help firms to be green? A knowledge-based view of how international experience and organisational learning influence proactive environmental strategies

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ABSTRACT

Early research on environmental strategy in international firms focused predominantly on direct investment as an expansion strategy for multinationals. However, we know relatively little from a strategic management perspective about exporting, which is the most prevalent form of international expansion. For this reason, we examine whether the knowledge that export firms acquire abroad influences their environmental strategies. Using a sample of export firms from the food industry, we show that the number of years spent in developing export activities does not contribute to developing a proactive environmental strategy; however, a more complex experience of environmental international diversification is positively related to a firm's proactive environmental strategy. Finally, organisational learning capability moderates the positive relationship between environmental international diversification and environmental proactivity.

Keywords:

Export firms, international experience, environmental international diversification, organisational learning, proactive environmental strategy.

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1. Introduction

The processes of internationalisation and global economic integration by firms are currently gaining importance (Sapienza, Autio, George, & Zahra, 2006). As a result, growing environmental concerns are generating considerable challenges for international firms because environmental² regulations and priorities remain significantly different in the international arena (e.g. Bansal, 2005; Christmann, 2004; Christmann & Taylor, 2001, 2006; Rugman & Verbeke, 1998). Although some studies have found that international experience reinforces competitive advantages when a firm is challenged by different environmental requirements (e.g. Porter & van der Linde, 1995), other studies have highlighted the competitive difficulties facing international firms when they encounter different levels of environmental stringencies (e.g. King & Shaver, 2001).

Early research related to environmental strategy in international firms largely emphasised direct investment as an expansion strategy for multinationals. Traditional arguments focused on how multinationals search for more relaxed environmental regulations (e.g. Vernon, 1992). More recent literature has shown that multinationals may also find incentives to generate environmental standards beyond what is required by the law through voluntary environmental initiatives (e.g. Christmann and Taylor, 2001, 2006). Therefore, the debate regarding the connection between the natural environment and multinationals is ongoing. Several works, for instance, indicate that the transfer of environmental management practices to countries with relatively dissimilar environmental regulations usually results in higher adaptation costs (to realise location-specific 'linking' investments) for alignment with the specific advantages of the host countries (King & Shaver, 2001; Rugman & Verbeke, 1998, 2005). Other works have shown that voluntary adoption of an advanced environmental standard can reinforce a multinational's transparency, reputation, and legitimacy (Bansal, 2005; Dowell, Hart, &

² We use the terms 'environmental' and 'environment' to refer to the natural environment. When we talk about the general business environment, we explicitly use this term or the term 'context'.

Yeung, 2000) and improve relationships with stakeholders (Christmann, 2004; Darnall, Henriques, & Sadowsky, 2008).

We know relatively little from a strategic management perspective about environmental strategies and exporting, which is the most prevalent form of international expansion (Salomon & Shaver, 2005a). Despite recent evidence that export firms gain competitive advantage over their purely domestic counterparts (e.g. Salomon & Shaver, 2005a, 2005b), scant attention has been paid to whether international experience allows multinationals to develop advanced environmental approaches. For this reason, we examine whether the knowledge acquired through firms' different experiences overseas may promote more environmentally friendly strategies for those firms.

Using the knowledge-based framework for international firms as a reference (Barkema & Vermulen, 1998), we analyse potential differences in the value and complex nature of the knowledge generated by the export firms' international experiences. Indeed, by interacting and competing in a foreign market, export firms are exposed to knowledge that is unavailable to firms whose operations are confined to the domestic market (Grossman and Helpman, 1991a, 1991b). In this context, organisational capabilities may also play an essential role in assimilating and integrating environmental knowledge derived from different international experiences (Salomon & Jin, 2010). We propose in this paper that a capacity for organisational learning is important in determining the influence of international experience because it may reinforce a firm's potential to manage international operations.

Thus, we emphasise that the complexity of an export firm's international experience is crucial to its potential to generate proactive environmental strategies. We argue that a more complex international experience facilitates the generation of more tacit, ambiguous and unique sources of environmental value for the organisation. In addition, the contribution of the export firm's international experience to the adoption of a proactive environmental

strategy will differ depending on the firm's capacity for organisational learning (Fiol & Lyles, 1985).

The article is organised as follows: the next section reviews the theoretical background of our paper under the knowledge-based view of the firm; the third section describes hypothesis development; the fourth and fifth sections describe the research methodology and results, respectively, and the final section presents our study's main conclusions, limitations, and future research implications.

2. A knowledge-based view of firms' international experience and proactive environmental strategies: Hypotheses

The knowledge-based view of the firm (e.g. Nonaka, 1994) considers knowledge to be a firm's most strategically significant resource. The proponents of this view argue that knowledge-based resources and capabilities are among the major determinants of sustained competitive advantage among firms (Barney, 1991).

Several scholars have begun to analyse the positive effects of the firm's internationalisation process on the generation of knowledge (e.g. Blomstermo, Eriksson, & Sharma, 2004; Li, Li, & Dalgic, 2004; Petersen, Pedersen, & Lyles, 2008). Nachum and Zaheer (2005) explained that the decision to expand internationally is motivated not only by financial performance but also by access to knowledge and resources. On the other hand, the international business literature has also shown an influence in the reverse direction: existing knowledge allows informed decisions on market selection, mode choice, pace of internationalisation (e.g. Eriksson, Johanson, Majkgard, & Sharma, 2000; Johanson & Vahlne, 2006; Young, Hamill, Wheeler, & Davies, 1989), and ability to deal with the contextual uncertainties that characterise internationalisation (e.g. Liesch & Knight, 1999).

Early research suggested that knowledge is gradually accumulated in the international process (e.g. Eriksson, Johanson, Majkgard, & Sharma, 1997; Johanson & Vahlne, 1977,

1990; Johanson & Wiedersheim-Paul, 1975). These studies assumed that a firm abroad requires a period of years to develop knowledge (e.g. Chetty, Eriksson, & Lindbergh, 2006; Eriksson et al., 1997). Nonetheless, literature explaining the new process of ‘born-global’ firms has treated knowledge as an endowed resource that enables the firm to expand its international operations rapidly (e.g. Andersson & Wictor, 2003; Autio, 2005; Autio, Sapienza, & Almeida, 2000; Oviatt & McDougall, 1994, 2005; Zahra, 2005). Consequently, additional aspects of the firms’ activities abroad might offer a complementary perspective on the international experience. Indeed, international diversification, defined as expansion into multiple different geographic locations, can be regarded as one of the most relevant dimensions of corporate behaviour from a strategic point of view (e.g. Hitt, Hoskisson, & Kim, 1997; Hitt, Tihanyi, Miller, & Connelly, 2006; Li & Qian, 2005).

More recently, the role of organisational learning has been emphasised in the portion of the international literature that analyses the connection between corporate internationalisation and generation of knowledge (e.g. Autio et al., 2000; Petersen et al., 2008). Indeed, internationalising firms must be adept at enhancing their market knowledge (Prashantham, 2005). In this context, Autio et al. (2000) argued that early internationalisation may confer certain learning advantages that older firms may find difficult to replicate; these advantages are called ‘*learning advantages of newness*’. Furthermore, it has been argued that organisational learning compels managers to consider the knowledge gained from their diverse international markets and how that knowledge can be used in the firm (Casillas, Moreno, Acedo, & Gallego, 2009; Casillas, Moreno, & Barbero, 2010; Hsu & Pereira, 2008). Therefore, organisational learning capability plays a key role in determining whether firms can effectively assimilate and integrate the knowledge gained from their experiences abroad (Casillas et al., 2009; Hsu & Pereira, 2008).

Although the specific effects of export firms' international experiences on their environmental strategies have not yet been analysed, knowledge management and the capacity for organisational learning have important roles in the development of proactive environmental strategies (e.g. Marcus & Geffen, 1998; Sharma & Vredenburg, 1998). A proactive strategy has a dynamic capacity to design or alter operations, processes, and products to voluntarily prevent the negative environmental impacts that the firm would otherwise generate (Aragón-Correa & Sharma, 2003; Hart, 1995; Sharma & Vredenburg, 1998).

In the next sections, we analyse how the export firms' international experience, as represented by the number of years spent developing export activities and by the degree of environmental international diversification, may be related to the adoption of a proactive environmental strategy. Furthermore, we study the moderating role of organisational learning on these effects. The linkages proposed among the different constructs are illustrated in Figure 1.

Insert Figure 1 about here

2.1. International experience and proactive environmental strategies of export firms

2.1.1. Number of years of export activity and proactive environmental strategy

The behavioural internationalisation theory claims that learning about internationalisation is a cumulative process in which each step taken abroad adds to the firm's experiential knowledge (Eriksson et al., 1997; Johanson & Vahlne, 1977). The implications of this learning process are that the firm's previous experience results in its present knowledge and that firms' internationalisation behaviour is path dependent (that is, there is an incremental process in which the firm's pattern of behaviour is contingent upon and a function of its past international experience) (e.g. Benito & Gripsrud, 1992; Jiménez, 2010).

The interactive process of selling abroad generates a progressive accumulation of knowledge about foreign markets, operations, and agents' preferences, enabling the firm to overcome the potential liability of foreignness (Blomstermo et al., 2004). Experiential knowledge refers to knowledge that is acquired through selling or operating in the market over time (Penrose, 1959). Prior experiential knowledge gained through export operations can be viewed as an intangible and complex resource, and many of the social and cognitive processes underlying this asset may not be well understood by firms that lack this tacit asset as a partial consequence of the multiple factors related to this experience (Westhead, Wright, & Ucbasaran, 2001).

Even when explicit knowledge regarding different aspects of the international markets is available before export activities begin, the experience of exporting allows firms to understand in depth the host country's institutional requirements and the interconnections with different agents. Firms can also extend their technological knowledge by developing exporting. In fact, exporters can learn about opportunities for new products and benefit from the technological expertise of their buyers (Clerides, Laul, & Tibout, 1998). In addition, export firms can gradually develop connections within the host country that allow them to gain access to the local labour market and to the technical expertise of individuals in that market (Almeida, 1996). Finally, exporters can use host country competitors as an operational benchmark and even reverse-engineer their competitors' products to gain technological insights (Salomon, 2006). In sum, the complex social nature of the knowledge gained in developing export activities over a long period offers an opportunity to implement business strategies that are more appropriate in those markets.

Dealing with environmental situations in foreign markets can lead firms to generate and develop a set of best environmental practices guaranteeing entry to any market, no matter how environmentally regulated (Bansal, 2005). In general terms, export orientation has a positive

impact on firms' environmental performance through technological innovation. Pack and Westphal (1986) found that exporters were able to steadily improve their technological capabilities (including environmental technological capabilities) over time via collaboration between foreign and local R&D employees. Andonova (2003) reveals that export-oriented firms tend to adopt clean technologies more quickly than other firms do.

Exporting may involve social interactions that create incentives for a firm to adopt a more environmentally proactive approach because their foreign partner is doing so and they may otherwise fall behind (Perkins & Neumayer, 2009). For instance, export firms must often interact with local distributors in each market where they sell their products. Such distributors not only offer a relatively easy, low-cost way to distribute globally but also provide export firms with key contacts with foreign buyers, important local market knowledge, and sophisticated marketing services. Information from the distributor keeps the manufacturer informed about changes in the foreign market, ensuring faster and better adaptation (Bello, Chelariu, & Zhang, 2003; Zhang, Cavusgil, & Roath, 2003). If the distributor becomes 'green', the export firm will find a relevant business incentive and begin a network push to be green. Meanwhile, if the export firm is more environmentally advanced than its international distributors, the distributor may seek out a niche of green customers or promote the environmental attributes of that international market.

The literature also recognises that proactive environmental approaches require the development of certain organisational capabilities (Aragón-Correa & Sharma, 2003). Previous export experience may furnish good training in both the tacit knowledge needed to collaborate with others and the ability to handle new situations (Simonin, 1997). These dimensions are key requirements for firms taking proactive environmental approaches (e.g. Hart, 1995; Marcus & Geffen, 1998).

Hence, we propose that a longer export period offers the opportunity for progressive assimilation of knowledge. This knowledge can be used to implement a more advanced environmental approach emerging from a mixture of the best practices in the domestic and international markets.

Hypothesis 1: A firm's international experience in terms of the number of years of export activity is positively related to its proactive environmental strategy.

2.1.2. Environmental international diversification and proactive environmental strategy

Despite the effect of international experience, as already discussed, other studies criticise the passive view of experiential knowledge in the internationalisation process and show that firms can rapidly acquire valuable knowledge abroad, independent of the duration of their international activity (e.g. Andersson & Wictor, 2003; Autio, 2005). Therefore, we propose that the decisions influencing a firm's complex international experience may help to generate innovative capabilities through the internationalisation process.

A firm's international diversification is delimited by the number of different markets in which it operates or sells and by the importance of these markets to the firm. Diversification reflects the complex nature of international operations (Hitt et al., 1997; Li & Qian, 2005). By interacting and competing in different foreign markets, export firms are able to access two types of knowledge: market knowledge and technological knowledge (Salomon & Jin, 2010). Whereas market knowledge refers to the knowledge of customers, their preferences, and local customs, technological knowledge refers to the knowledge of operating processes, methods, and techniques (Salomon & Shaver, 2005b).

Export firms that diversify internationally may have diverse motives, including extension of innovative capabilities (e.g. Salomon & Jin, 2008). As a result, internationally diversified export firms acquire valuable knowledge from outside the boundaries of the firm, scan the

social context for potential technological changes or shifts in market preferences, evaluate organisational implications of diverse market information, and seize opportunities (Luo & Peng, 1999; Volberda, 1998). Andonova (2003) argues that greater exposure to international competition is likely to improve export firms' environmental performance through technology-diffusion and efficiency-gain effects. Vogel (1997) has hypothesised a 'trading-up' effect whereby more stringent standards in highly regulated foreign markets spill over into less highly regulated jurisdictions via exports. This effect is explained in terms of coercive supply chain pressures from environmentally demanding buyers, but scholars have also pointed to the importance of reputational motives (Drezner, 2001).

Firms' experiences in dealing with differences among regions' environmental institutional profiles can offer direct evidence of how environmental proactivity provides better opportunities to export to any market. Whereas multinational firms may want to install subsidiaries with a low environmental proactivity to provide products to less environmentally stringent markets (e.g. Vernon, 1992), export firms that act in regions with a very different environmental institutional profile from that of their home market may be more willing to adopt a proactive environmental strategy worldwide. Indeed, these firms are able to avoid the costs of internal and external bureaucracy.

Finally, exposure to and greater involvement with foreign customers and businesses in multiple and diverse markets may also promote the creation of other organisational capabilities useful for environmental developments, such as flexibility or stakeholder management (Starik, Marcus, & Ilinitch, 2000). Consequently, we propose:

Hypothesis 2: A firm's international experience gained by environmental international diversification of exporting is positively related to its proactive environmental strategy.

2.2. Organisational learning and proactive environmental strategies of export firms

Although information is relatively easy to obtain at present, learning to transform information into knowledge and manage that knowledge are among the most critical steps necessary for achieving a sustainable competitive advantage (Gupta & Govindarajan, 2000; Fiol & Lyles, 1985). Organisational learning may be defined as the development or acquisition of new knowledge or skills in response to internal or external stimuli, leading to a change in collective behaviour (Spicer & Sadler-Smith, 2006). Hence, the final output of this learning capability may be collective actions that lead to new products, procedures, systems, or strategies (Crossan, Lane, & White, 1999).

Different studies have emphasised the importance of a firm's organisational learning capability as an antecedent of a proactive environmental strategy (e.g. Hart, 1995; Marcus & Geffen, 1998; Sharma & Vredenburg, 1998). We propose that although many years of exposure to international operations or diverse markets may offer a better opportunity for export firms to gain valuable environmental information and experiences, the capacity for organisational learning provides the final impetus for the firms to understand and use those experiences. Considering the idiosyncrasies of the two sources of international experience analysed in this paper, we expect that organisational learning capability will have a different effect on the relationships between the proactive environmental strategy and each of these sources.

Regarding the export firms' international experience, as reflected by the number of years of export activity, we expect that a high level of organisational learning may maximise the potential of the sequentially gained knowledge. In fact, intensive routines of organisational learning may help firms to better assimilate the knowledge that emerges from years of experience (Autio et al., 2000). This idea is based on the assumption that learning is a process that depends on history (Cohen & Levinthal, 1990), following the classic sequential theories form of an international firm (Eriksson et al., 1997; 2000; Johansson & Vahlne, 1977).

We expect that export firms with high organisational learning capability will be better situated to effectively assimilate and integrate the environmental knowledge that they have acquired over time. Previous hypotheses stated that years of export activity would generate an opportunity for environmental improvement; we now also state that this opportunity will be greater if the firm has a robust organisational learning capability. Indeed, the capacity for organisational learning allows the knowledge emerging from the years of export activity to be easily adjusted and implemented within the firm's internal network, coexisting with and complementing the pre-existing knowledge. Although the moderating effect of organisational learning might be similar when the export activity is linked with improvements related to issues other than the environment (e.g. commercial or communication), we also believe that the multidimensionality and complexity of environmental problems are highly demanding in terms of organisational learning. Indeed, these problems are greatly affected by the ways in which governments, NGOs, citizens, consumers, suppliers, and society in general regard environmental matters such as reducing emissions, improving internal processes, developing 'earth-friendly' products and services, or promoting environmental campaigns. Consequently, firms need to strengthen their organisational learning capability to learn how to integrate environmental issues into their organisational processes, and simultaneously develop a profitable and socially responsible attitude. Therefore, firms with a high organisational learning capability will be able to accelerate their learning about environmental issues abroad and will be better positioned to use that knowledge to improve innovative productivity (e.g. Penner-Hahn & Shaver, 2005). In sum, export firms with a high organisational learning capability will be able to assimilate, integrate, and progressively exploit the environmental knowledge acquired in foreign markets.

Hence, we propose the following hypothesis:

Hypothesis 3a: Increased organisational learning capability is likely to strengthen the positive relationship between international experience in terms of the number of years of export activity and proactive environmental strategy.

Regarding export firms' international experience, as reflected by the degree of environmental international diversification, we expect that the benefits derived from gaining experience and knowledge will be especially useful for those firms with low levels of organisational learning. As mentioned previously, dealing with multiple regions with different legal and institutional requirements in terms of cultural, economic, and political approaches to the natural environment requires the development of functional logistics, commercial reputation, and trained human resources. At the same time, firms that develop their activities in different foreign markets have had to improve their flexibility, planning, understanding, or engagement with stakeholders (e.g. Arranz & Fernández de Arroyabe, 2009; Hitt et al., 1997).

When export firms have a low capacity for organisational learning, environmental international diversification might be especially useful, requiring the adoption of more innovative approaches, such as a proactive environmental strategy. In this sense, exporting may expose firms with low organisational learning capability to relatively advanced knowledge in the destination market, yielding technological insights that, in turn, help these firms to innovate (Salomon & Jin, 2010). Blalock and Gertler (2009) note that firms with poor initial technology are more likely to encounter new processes abroad that yield high returns at low cost. Consequently, such firms have more room to improve relative to international best practices and stand to reap the greatest marginal returns from exposure to this new knowledge.

Meanwhile, we expect that export firms with a high level of organisational learning will be able to translate a set of shared understandings and collective action into new products, processes, and strategies (Crossan et al., 1999), including a proactive environmental strategy.

The advantages generated by a high level of environmental international diversification will, however, be minor. These firms would have less to learn from exporting because the knowledge they encounter in the destination market either is already known to them or is inferior to the knowledge they already possess (Salomon & Jin, 2010). In other words, those export firms that have high organisational learning capability will be able to improve their environmental management by themselves with a relatively minor influence from operation in regions with different environmental institutional profiles.

We therefore propose the following hypothesis:

Hypothesis 3b: Increased organisational learning capability is likely to weaken the positive relationship between the international experience gained by environmental international diversification of export firms and proactive environmental strategy.

3. Methodology

3.1. Sample and data

Our sample was chosen from the Dun & Bradstreet (D&B) database at the end of 2004. This database includes 1556 export firms in the food industry that operate in Spain. A focus on one specific sector and country is often suggested in the resource-based view literature to remove the influence of peculiarities related to context (Barney, 2001).

We chose the food industry for our analysis. Three different factors are relevant to our selection of the sample: the environmental impact of the food industry, the relevance and growing importance of internationalisation to its activities, and the limited number of previous analyses.

Regarding the environmental impact of the industry, various recent works illustrate and describe the general agreement that the production, processing, transport, and consumption of food accounts for a significant portion of the environmental burden imposed by any Western

European country (e.g. EIPRO project, 2005; Manchester Business School, 2006; Tukker et al., 2005). The environmental impacts of the food industry are many and affect several different issues. Data from the Confederation of the Food and Drink Industries (CFDI) of the EU (CFDI, 2008) furnish several different examples that may illustrate this idea. First, the food and drink industry accounts for about 1.5% of total greenhouse gases (GHGs) in the EU-15. In the food chain, agriculture accounts for 49% of GHG emissions, followed by consumers at 18% and manufacturing at 11%. Second, food and drink manufacturing accounts for about 8% of industrial energy use in the OECD area, ranking fifth behind primary metals, chemicals, paper and pulp and non-metallic minerals. Third, the food industry is a major user and provider of packaging, which represents around 5% of total waste generation in the EU. Packaging waste accounts for 17% of municipal waste in the EU by weight and between 20% and 30% of municipal waste by volume. Fourth, Sánchez-Chóliz, Duarte and Mainar (2007) found that pollution in Spain is closely linked to food production, energy, extractive industries, chemistry and other manufacturing activities. Compared with other industries, the agriculture and food industry produces the highest volume of pollution in waste water (29.02%), mainly from agro-industrial activities.

The industry has also shown a growing interest in environmental sustainability, especially in energy and carbon management. This interest has manifested in voluntarily cutting energy use, water consumption and waste generation, in resource efficiency and in a range of initiatives with food chain partners (Confédération des industries agro-alimentaires de l'UE, 2008). Moreover, stakeholders (e.g. regulators, governments, consumers, suppliers, NGOs) are also paying increasing attention to the environmental implications of the food industry in relation to multiple issues, such as eco-labels and organic production (Gerbens-Leenes, Moll, & Schoot Uiterkamp, 2003; Sánchez-Chóliz et al., 2007). Following this trend, several studies are being developed in the industry to demonstrate that improvements to productivity and

competitive trade in the food industry are now major drivers of environmental performance (Alpay, Yalcin, & Dolekoglu, 2004; Carpentier & Ervin, 2002; Galdeano-Gómez, 2010; Managi & Karemera, 2005).

The percentage of exported products from the food industry is growing quickly all over the world; according to the World Bank, in 2005, nearly 9% of total global exports were products of the food industry, with a total value of 850 billion US dollars. On average, over 55% of the production of Spanish food industry firms is exported (Galdeano-Gómez, 2010). Hence, the Spanish context reflects a situation that has become common in developed countries, where firms that belong to this industry are subject to growing pressure from the stakeholders to improve their relationships with the environment. Meanwhile, firms have to be especially active to be competitive in the international arena given the influences of local and international competitors and distributors.

A number of factors explain the low number of environmental studies focused on the food industry. These factors include the nature of operations, with diffuse pollution through the value chain (production, transportation, consumption); in contrast, in other industries, the most relevant environmental impacts are easier to identify (Galdeano-Gómez, 2008, 2010). However, environmental quality, food safety and the pollution generated by agriculture and food production promise to play more influential roles in EU and OECD countries in both domestic and foreign trade (Bellesi, Lehrer, & Tal, 2005).

Our initial sample consisted of 155 firms selected by random sampling. We used three different approaches to obtain objective and subjective data. First, we obtained objective data on firm size, number of years of international experience, and return on equity from the D&B database. Second, we used data from the Environmental Sustainability Index (ESI) in 2002 and 2005 (Esty, Levy, Srebotnjak, & Sherbinin 2005) to describe the environmental situation of the international markets. We use this information as described in the Measures section.

Third, because data on firms' environmental strategies, organisational learning capability, and sales percentages attributed to each region are not available from published sources, we used personal interviews with the CEOs of each firm. Personal interviews may be more reliable than other kinds of surveys, and they are commonly used in strategic and environmental research to avoid misunderstandings or responses from people outside of the target demographic (Christmann, 2000; Cordano & Frieze, 2000; Sharma, 2000). For small and medium-sized firms, the environmental and strategic literature recognises that the views of the general manager or CEO are more relevant than the views of other respondents are because they better capture a firm's general and operational orientation (e.g. Chandler & Hanks, 1993; Lyon, Lumpkin, & Dess, 2000; Martín-Tapia, Aragón-Correa, & Senise-Barrio, 2008). Moreover, CEOs often know the most about their firm's international activities (e.g. Hagen, Zucchella, Cerchiello, & De Giovanni, 2011).

Although a large percentage of managers was available to participate in the study compared with most studies in the field, not all of the managers we approached were willing to participate in the personal interviews because of time restrictions or for personal reasons.

In the personal interviews, the CEO of each firm responded to a structured questionnaire during a personal interview that was constructed by the authors for research purposes and carried out by the survey company TNS in December 2004 and January 2005. We followed the recommendations of Podsakoff, MacKenzie, Lee and Podsakoff (2003) to reduce potential bias in this process. The questionnaire was constructed by using validated scales obtained from a review of the literature and adapted to the industry. Ambiguity was prevented by drafting clear, precise and concise questions. To construct and refine the questionnaire, we conducted preliminary interviews with a panel of experts in the food industry (including two academics, two consultants, and two general managers) and pre-tested the interview questions with managers of six different firms in the food sector who were not included in the final

sample. After we sent out the questionnaires, the anonymity of respondents was guaranteed. Finally, we conducted Harman's single-factor test by an exploratory factor analysis (EFA) with all items in the study.

Our final sample consisted of 106 firms (68.39% of the initial sample) with all information available. We did not find significant differences between the descriptive characteristics of the firms finally included in the study (e.g. location, activities, and size) and the original population. The high and significant correlation (.71) between external information from the D&B database and the information emerging from interviews suggests that the questionnaire results are accurate and can be treated with confidence. The sampled firms had an average of 54.66 employees, reflecting an industry that consists mostly of small and medium-sized firms. The firms in the final sample export mostly to the EU (68.56%), but they also export to Latin America (11.66%), the USA and Canada (6.92%), Eastern Europe (4.32%), Africa (4.55%), and Asia, Australia and New Zealand (3.98%).

3.2. Measures

3.2.1. Proactive environmental strategy

Most empirical studies on this subject have measured the different dimensions of proactive environmental strategies via managerial perceptions (e.g. Buysse & Verbeke, 2003; Christmann, 2000, 2004). We adapted the 14 items used by Aragón-Correa (1998) to measure proactive environmental strategy in a general context, adding four items related to the food industry (see Appendix A). Using a seven-point Likert scale, interviewees were asked to assess their firm's degree of development in relation to the environmental activities mentioned and to compare their activities with those of their competitors. A confirmatory analysis using LISREL 8.50 showed a single-factor model that fit the data well ($\chi^2 = 237.58$, $df = 135$, $p = .00$; $RMSEA = .07$, $NNFI = .96$, $CFI = .97$). Following the recommendations from the literature (Hair, Andersson, Tatham, & Black, 2009), we found that the indicators

were reliable, resulting in standardised factor loadings above .60 that were significant at a 5% significance level (t-value > 1.96). Specifically, standardised loads ranged from .66 to .98. The average variance extracted estimate is .74 for this construct, and construct reliability is .98; both of these values exceed the ‘rules of thumb’ suggested by Hair, Andersson, Tatham and Black (2009). The final value of the proactive environmental strategy of each firm was calculated using the mean of these 18 items (Cronbach’s alpha = .92). A high average score was considered indicative of a high degree of proactive environmental strategy.

3.2.2. *Environmental international diversification*

To measure environmental international diversification, we created an environmental entropy index (EEI) based on the general entropy index (GEI). The GEI, calculated using a measure that weights a firm’s diversification strategy by different market regions and common calculus, is obtained using the following formula (e.g. Hitt et al., 1997; Kim, Hwang, & Burgers, 1989; Li & Qian, 2005):

$$GEI = \sum_{i=1}^n P_i \cdot \ln\left(\frac{1}{P_i}\right)$$

where P_i is the sales percentage attributed to region_{*i*} by the managers of each export firm and $\ln(1/P_i)$ reflects the weight given to each global market region. The advantage of using this measure is that it considers both the number of global market regions to which a firm exports and the relative importance of each global market region to total sales (Hoskisson, Hitt, Johnson, & Moesel, 1993).

Regarding the environmental situation of the markets to which the firm exports, we defined ten different regions for our sample: Northern Europe (Sweden, Norway, Denmark, Finland, and the Netherlands), Central Europe (Germany, Austria, Belgium, France, United Kingdom, and Ireland), Southern Europe (Italy, Portugal, and Greece), Eastern Europe (Russia, Poland, and Czech Republic), North America (USA and Canada), Latin America,

Asia (excluding Japan), Japan and Oceania, Africa, and the domestic market. These categories were constructed according to the ESI delimitation of regions in 2002. The ESI is published by the Yale Center for Environmental Law and Policy and records the stringency of environmental regulations in each nation and the actions implemented by the respective national governments and other stakeholders to protect the natural environment. This index integrates information from different sources, especially the World Bank, the Organisation for Economic Cooperation and Development (OECD), and the World Economic Forum. All of the measures followed a similar methodology, allowing comparisons among countries. The ESI delimitation of regions is supposed to group together countries with similar approaches to the analysed variables regarding the natural environment. For this reason, the regions do not necessarily coincide with the countries' geographical positions.

Next, we assigned an environmental score to each region using the average sum of the ESI values of the countries belonging to that region according to the information provided by ESI in 2005 (Esty et al., 2005). The 2005 values were very similar to those included in ESI 2002 to delimitate the environmental regions. A high value of our index means that the firm is operating in multiple markets that are highly differentiated in terms of their environmental regulations and the sensitivity of stakeholders. In contrast, low values imply that the firm is acting either in one region or in a group of regions with very similar environmental institutional profiles.

Hence, considering the number of regions included in the analysis (i), the percentage of sales attributed to each region (p_i) and the 'environmental score' assigned to each global market (ES_i), we build an environmental entropy index (EEI). This index represents the firm's degree of environmental international diversification. We measure it as:

$$EEI = \sum_{i=1}^n \frac{P_i \cdot ES_i}{\sum_{i=1}^n P_i \cdot ES_i} \cdot \text{Ln} \left(\frac{1}{\frac{P_i \cdot ES_i}{\sum_{i=1}^n P_i \cdot ES_i}} \right)$$

3.2.3. Years of export activity

As in previous literature, we measured this type of international experience through the number of years that the firm has spent developing export activities (e.g. Hart, Webb, & Jones, 1994).

3.2.4 Organisational learning capability

Organisational learning capability is a complex multidimensional construct defined by several dimensions or characteristics. Specifically, we used three items from Calantone, Cavusgil and Zhao (2002) to measure the organisational commitment to learn (see Appendix A), which implies an organisational ability to learn new key abilities and valuable competencies for the firm's development (Kale, Singh, & Perlmutter, 2000; Lyles & Schwenk, 1994). We asked CEOs to evaluate each of the items on a seven-point Likert response scale (1 = strongly disagree, 7 = strongly agree). We found that the indicators were reliable, resulting in standardised factor loadings above .80 and significant at a 5% significance level (t-value > 1.96). The average variance extracted estimate was .76 for this construct, and construct reliability was .91; both values exceed the 'rule of thumb' suggested by Hair et al. (2009). The final value of the organisational learning of each firm was calculated using the mean of these three items (Cronbach's alpha = .88). A high average score was considered to indicate a high degree of organisational learning.

3.2.5. Control variables

Firm size: Organisational size has been shown to be an important determinant of the firm's environmental conduct. For this reason, we included it as a control variable (e.g. Aragón-Correa, 1998; Christmann, 2004). Size was measured as the natural logarithm of the total number of employees in 2004 (King & Shaver, 2001).

Firms' financial performance: Previous studies have pointed out that environmental strategy may be related to corporate financial performance (e.g. Hart & Ahuja, 1996; Russo & Fouts, 1997). We used return on equity (ROE) in 2004 as an indicator of financial performance to statistically control for this influence (Bansal, 2005).

4. Results

We used a multiple and moderated regression analysis (Cohen & Cohen, 1984) to test the hypotheses, introducing the moderating effect as a multiplicative variable. We had previously assessed the likely extent of common method variance, the conformity of our data's distribution to the assumptions of our analytic tools, and the extent of multicollinearity among the independent variables. To create the multiplicative terms, we proceeded to fix both the independent and the moderating variables on their means to avoid multicollinearity (Venkatraman, 1989). Analysis using the Kolmogorov-Smirnov test indicated that the distributions of the variables generally conformed to the normality assumption of regression analysis. Analysis of condition indices and variance inflation factors (VIF) showed that multicollinearity was not a problem for our analysis, with VIF values below five, as recommended by the literature (Hair et al., 2009). Table 1 shows the descriptive statistics and correlations.

Insert Table 1 about here

Table 2 shows the results of the regression analyses testing the hypotheses.

Insert Table 2 about here

In model 1, the control variables were entered. In model 2, we added the independent variables: number of years of export activity, environmental international diversification, and organisational learning capability. Finally, in model 3, the two moderating variables were introduced. Our three models show good fits, with an adjusted R^2 value of .20 for our final model. We now highlight our principal results.

First, in relation to the control variables, we show that firm size is positively related to the adoption of a proactive environmental strategy. The other control variables were not significant for the sampled firms. Second, our results show that international experience in terms of the number of years of export activity is not positively related to the adoption of a proactive environmental strategy. Thus, hypothesis 1 is not supported for our sampled firms. Third, the international experience gained by environmental international diversification is positively related to the adoption of a proactive environmental strategy by these firms. Hence, hypothesis 2 is supported. The organisational learning capability is also positively related to the adoption of a proactive environmental strategy, but this result is beyond the scope of our hypotheses in this work.

Fourth, we find that organisational learning capability does not impose any moderating effect on the relationship between number of years exporting and proactive environmental strategy. Stated differently, organisational learning capability neither increases nor decreases the effect of international experience, in terms of the number of years of export activity, on the adoption of a proactive environmental strategy for our sampled firms. Figure 2 illustrates this relationship. Consequently, hypothesis 3a is not supported by our data.

Finally, we observe that the greater the organisational learning capability, the weaker the relationship between international experience gained by environmental international

diversification and proactive environmental strategy will be. Therefore, organisational learning capability diminishes the positive effect of environmental international diversification on the development of a proactive environmental strategy. Figure 3 illustrates our findings and shows that export firms with a low capacity for organisational learning need to operate in regions with different environmental institutional profiles. These regions provide an external impetus for valuable environmental knowledge gained abroad, allowing the firms to develop a more advanced proactive environmental strategy.

Insert Figure 2 and Figure 3 about here

Consequently, the positive relationship between environmental international diversification and proactive environmental strategy is strengthened among firms that have low organisational learning capability, but this relationship remains strong when firms have a high capacity for organisational learning. Hence, hypothesis 3b is supported by our data.

5. Discussion, limitations and implications

International competition can promote improved environmental performance by inducing greater efficiency and easier diffusion of technology and information (Andonova, 2003). Although export firms do not have their own units abroad, they are able to acquire valuable knowledge abroad (Salomon & Jin, 2010) and gain access to the local labour market and the technical expertise of individuals in that market (Almeida, 1996). Drawing on a knowledge-based view of the firm, we originally stated that export firms could benefit from their international experiences to develop a proactive environmental strategy.

Our results reveal that involvement in markets with diverse environmental institutional situations is positively related to a proactive environmental strategy. However, the experience acquired over many years of export activity is not related to the generation of a proactive

environmental strategy for our sample. Hence, although hypothesis 2 is completely supported for our sample, our results do not offer support for hypothesis 1.

Our findings support the arguments of those scholars who suggest a limited importance of the accumulative knowledge in the firms' internationalisation process (e.g. Autio, 2005; Autio et al., 2000; Oviatt & McDougall, 1994, 2005; Zahra, 2005; Zahra & Hayton, 2008); however, export firms working in markets with different environmental institutional profiles gain a background of complex knowledge that is positively related to the adoption of a proactive environmental strategy for our sample. Our results show that this complex knowledge, derived from environmental international diversification, contributes to generating a more tacit, ambiguous, and unique source of value for the organisation. In sum, our results suggest that it is not the *quantity* of time but the *quality of the international time*, reflected in the degree of complexity of the firm's environmental international diversification, that matters in developing proactive environmental strategies.

The lack of a significant relationship between the number of years spent in exporting and the development of a proactive environmental strategy might be explained by the limited value generated by the process of spending years in exporting alone. We believe that the increasing availability of information regarding international markets (e.g. via government agencies or on the Internet) explains why a less complex experience is becoming less influential and might now be substituted by publicly available information.

Nevertheless, the capacity for organisational learning influences the final connection between the export firm's international experience and the proactive environmental strategy. Our final results show two complementary aspects. We observe, first, that organisational learning capability does not strengthen the relationship between international experience, in terms of the number of years of export activity, and proactive environmental strategy for our sample. In fact, firms with high organisational learning capability show a much more

proactive environmental strategy, but this result is independent of the number of years of exporting experience. This result emphasises the lack of a connection between the number of years of international experience and the proactive environmental strategy for our sample; the evidence does not support hypothesis 3a.

On the other hand, as suggested by hypothesis 3b, firms with a high level of organisational learning capability tend to develop a higher level of proactive environmental strategy independent of their degree of environmental international diversification. This result might emerge because these firms possess a set of internal mechanisms and capabilities that allow them to generate valuable environmental management strategies by themselves. At the same time, the knowledge acquired through environmental international diversification is highly relevant for those firms that have low organisational learning capability and want to develop a proactive environmental strategy. This result might be a consequence of firms with a low level of organisational learning capability needing to draw more on external experiences to gain enough knowledge to generate advanced and innovative proactive environmental strategies.

This paper tries to offer additional evidence to support the knowledge-based view of international firms and provides evidence about how the complex opportunities emerging from an export firm's international experience and the capacity for organisational learning can contribute to the innovative capability to be environmentally proactive. Our results suggest that managers of export firms play a significant role in bringing the export firm into contact with tacit and complex knowledge and in using it to generate a more proactive environmental strategy via organisational learning. Hence, the export firm's capacity to learn by actively seeking knowledge through international markets with different environmental profiles generates more rewarding knowledge than does simply exporting for a long period of time.

We also make an attempt to contribute to the natural resource-based view (Christmann, 2000; Hart, 1995; Marcus & Geffen, 1998; Russo & Fouts, 1997). Although previous studies have analysed the influence of international experience on corporate sustainability in multinationals (e.g. Bansal, 2005), no efforts have been made to link differentiated sources of export firms' international experience and the adoption of proactive environmental strategies.

Finally, we complement previous studies that analyse the influence of institutions on multinationals' environmental strategies by focusing on the influence of national and international environmental regulations (e.g. Christmann, 2004; Christmann & Taylor, 2001; Rugman & Verbeke, 1998). Therefore, we have developed a new index to take into consideration a broader environmental institutional profile of the various markets where firms develop export activities, including not only environmental regulatory aspects but also environmental cognitive and normative issues. Specifically, our environmental entropy index shows the degree of environmental international diversification of a given firm, taking into consideration the number of different regions where it operates, the weight given to each region, and the global environmental institutional profile of each region.

Our results have implications for practitioners and policy-makers as well. This research encourages managers to consider that integrating knowledge emerging from international markets into the firm's corporate strategy may add real value to the firm, not only by increasing short-term revenues but also by contributing to generating organisational capabilities that will be useful in the long term (Barkema & Vermeulen, 1998; Casillas et al., 2009; Casillas et al., 2010). Furthermore, managers can better understand that developing export activities in foreign markets can contribute to acquiring valuable environmental knowledge, which can be assimilated and integrated within their internal organisational structures. Through that integration, the export firm will be able to take advantage of the benefits derived from a more advanced proactive environmental strategy, such as minimised

operation costs (e.g. Christmann, 2000; Shrivastava, 1995) and increases in corporate transparency (Christmann, 2004), reputation, and legitimacy (e.g. Bansal, 2005; Kostova, Roth, & Dacin, 2008). Finally, managers need to coordinate and integrate the external environmental information with the information they already have through their capacity for organisational learning.

Our results also imply that governments should design special programmes and incentives that encourage learning from and for the internationalisation process. Indeed, well-designed governmental action and community awareness can work in conjunction with markets to stimulate improved environmental management. Through the creation of these incentives, firms will be able to develop organisational capabilities that reinforce their competitive advantage and at the same time protect the natural environment to develop socially responsible conduct.

The conclusions of this study are subject to several limitations that may simultaneously suggest future possibilities for empirical research. First, we caution against a direct generalisation of our results given the specific location and activity of our sample. Second, our data are cross sectional because we do not include observations from different years. Future longitudinal analyses should empirically reinforce the theoretical logic of our hypotheses. Third, in relation to the moderating effects, it is important to recognise that other types of interacting relations may be analysed in the future. Fourth, because of the lack of public information about firms' environmental strategies, percentage of sales attributed to each market and organisational learning, we used questionnaires to interview the CEO of each firm to collect these data. The main disadvantage of this method is that responses might be influenced by managers' perceptions and may not properly represent the perspective of the whole firm.

Finally, other questions related to the topic treated here could become the object of additional research and discussion. For instance, combining firms' international factors with other internal capabilities (e.g. capability of engaging with host, domestic, and transnational stakeholders) can help to complete the capabilities framework portion of our analysis. Finally, a detailed comparison between the environmental strategies of multinational enterprises and export firms could provide tools to be used to identify the role of firm size in corporate environmental strategy in an international context.

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Appendix A. Items in Scales

Proactive Environmental Strategy

Compared with your competitors and using a 1 to 7 scale, please specify the degree of development in your firm of the following activities related to the natural environment.

1. Natural environmental aspects in administrative work (paper, toner recycling, etc.).
2. Periodic natural environmental audits.
3. Recycling of residues and waste produced by the organisation.
4. Purchasing manual with ecological guidelines.
5. Natural environmental seminars for executives.
6. Natural environmental training for the firm's employees.
7. Total quality programme including natural environmental aspects.
8. Prevention systems to cover possible environmental accidents and emergencies caused by the organisation.
9. Natural environmental management manual for internal use.
10. Sponsorship of natural environmental events.
11. Use of natural environmental arguments in marketing.
12. Natural environmental information and training programmes for our distributors and customers.
13. Filters and controls for emissions and discharges.
14. Systematic control of energy consumption so as to reduce the organisation's demand.
15. Recycling of the water used by the organisation with the purpose of re-using it in other processes before discarding it.
16. Use of ecological ingredients in the manufacture of our products.
17. Natural environmental analysis of the product life-cycle (LCA).
18. Design of products and services according to ecological criteria (eco-design).

Organisational Learning Capability

Compared with your competitors and using a 1 to 7 scale, please specify the degree of agreement with the next statements.

1. The organisation has learnt and acquired new and important knowledge in the last three years.
2. The new members of the organisation have learnt critical abilities in the last three years.
3. The organisation's performance has been positively influenced by knowledge acquisition in the last three years.

Table 1
Descriptive statistics and correlations

	Mean	Standard deviation	Proactive environmental strategy	Firm size	Firm's financial performance	Years of export activity	Environmental international diversification
Proactive environmental strategy	3.64	1.43	1.00				
Firm size	3.00	1.36	.27*	1.00			
Firm's financial performance	1.74	13.70	-.14 [†]	.07	1.00		
Years of export activity	22.07	19.64	.04	.19*	.26**	1.00	
Environmental international diversification	0.77	0.44	.29***	.23**	-.06***	.26**	1.00
Organisational learning capability	5.50	1.16	.28**	.09	-.07 [†]	.18*	-.17*

[†] $p < .10$
^{*} $p < .05$
^{**} $p < .01$
^{***} $p < .001$

Table 2 Results of the moderated hierarchical regression analysis^a

	Model 1	Model 2	Model 3
Intercept	2.77*** (0.32)	2.88*** (0.32)	3.06*** (0.32)
Firm size	0.30** (0.10)	0.23* (0.10)	0.19* (0.10)
Firm's financial performance	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Years of export activity		0.00 (0.01)	0.00 (0.01)
Environmental international diversification		0.59* (0.23)	1.06** (0.36)
Organisational learning capability		0.27** (0.12)	0.28** (0.12)
Organisational learning capability X Years of export activity			0.00 (0.01)
Organisational learning capability X Environmental international diversification			- 0.71** (0.30)
<i>R</i> ²	0.10	0.20	0.24
<i>Adjusted R</i> ²	0.08	0.16	0.20
<i>F Change</i>	5.77*	5.64**	2.91*

Dependent variable: Proactive Environmental Strategy.

The values correspond to the non-standardized regression coefficients, with the typical errors in parentheses.

^a Non-standardized regression coefficients are shown. Standard errors are in parenthesis

N = 106

† $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

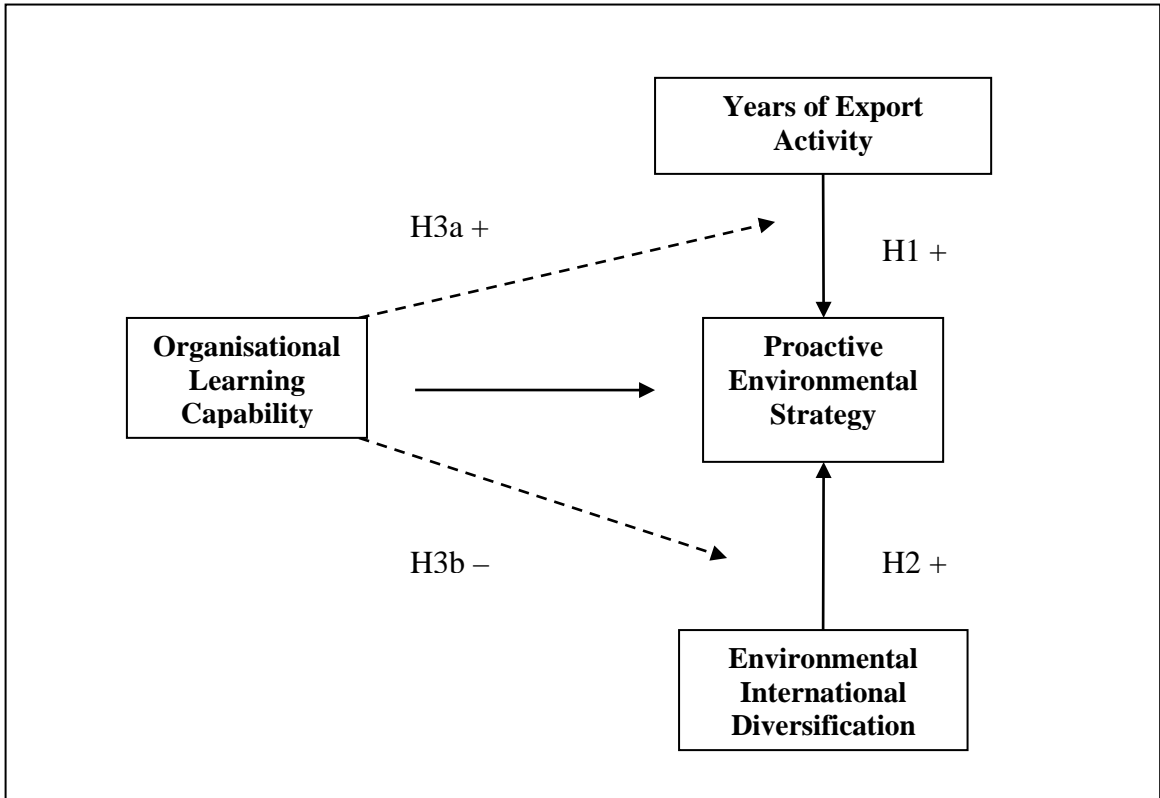


Fig.1. Proposed model

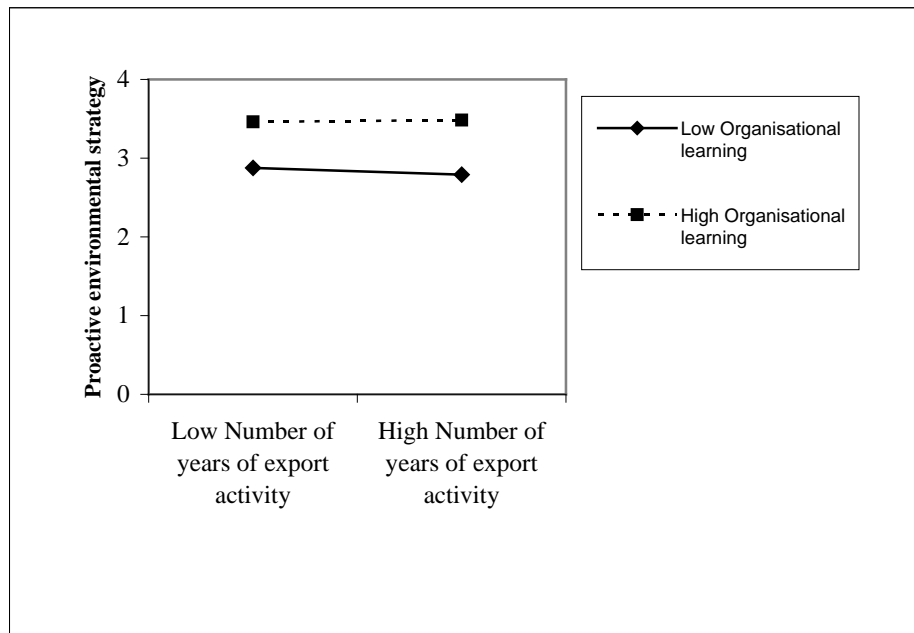


Fig. 2. The moderating effect of organisational learning capability on the relationship between number of years of export activity and proactive environmental strategy

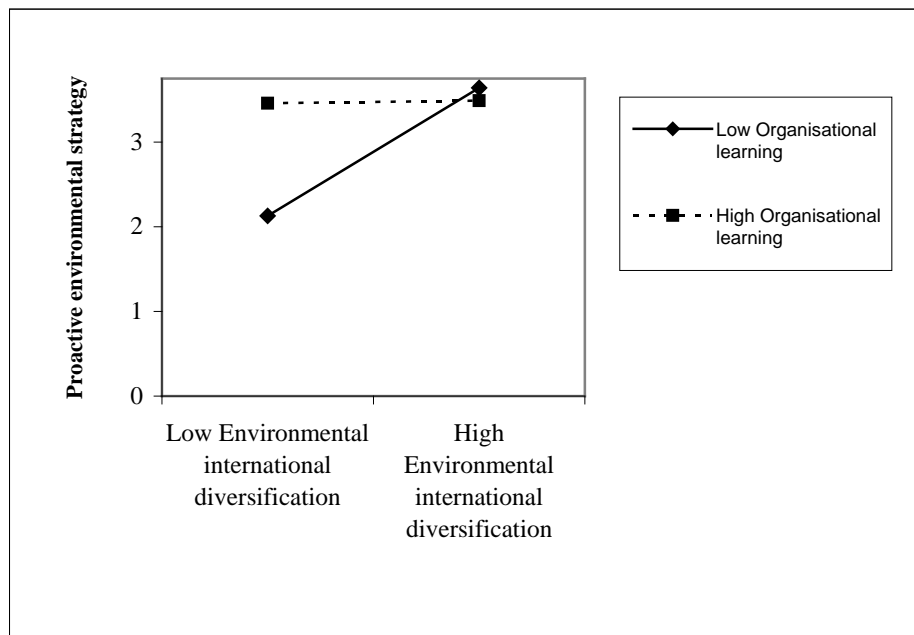


Fig. 3. The moderating effect of organisational learning capability on the relationship between environmental international diversification and proactive environmental strategy