

# ***External Determinants and Financial Outcomes of an Eco-friendly Orientation in Smaller Manufacturing Firms\****

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*With the significant growth of problems relating to the natural environment, an increasing number of firms are engaged in environmentally friendly activities. This paper reports the results of a study conducted among 153 small-sized manufacturing units located in Cyprus, focusing on the external drivers and financial outcomes of their eco-friendly orientation. The findings confirmed the instrumental role of environmental regulations, environmental public concern, competitive intensity, and market dynamism in harnessing an eco-friendly orientation within the small firm. They also underline the critical role of this orientation in enhancing the firm's financial results, although this link was found to be stronger when the firm possesses adequate resources and capabilities committed to environmental activities. Our study contributes to the literature by putting together, in a theoretically anchored, integrative, and causal fashion, concepts and ideas that touch upon important aspects of small firms' environmental behavior that have been only tangentially studied in the past, namely the role of external forces in stimulating sensitivity to green issues, the dynamics of forming an ecological orientation within the organization, the positive link between eco-friendly thinking and financial performance, and the importance of supporting ecological actions with appropriate organizational resources/capabilities. Critical implications for small business managers and public policymakers are also derived from the study findings.*

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## ***Introduction***

The rapid pace of industrialization in recent decades has been responsible for the significant growth of problems associated with the natural environment, such as global warming, water pollution, soil erosion, ozone depletion,

and declining biodiversity (Banerjee 2002; Gadenne, Kennedy, and McKeiver 2009; Shrivastava 1995). Although the individual effect of small manufacturing firms on harming the environment is negligible, their collective impact is substantial, estimated at approximately two-thirds of total industrial pollution

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(Hillary 2000). However, there are indications that small firms are unaware of their own environmental impact, have low eco-literacy levels and limited understanding of the benefits accrued from eco-friendly actions, consider green practices as too costly and risky to implement, are inadequately informed of the prevailing environmental legislation and its repercussions, and resist voluntary initiatives aiming to promote environmental self-regulation within their specific industrial sector (Revell and Rutherford 2003).

Various obstacles are responsible for preventing small firms from engaging in environmentally friendly business practices, such as (1) the absence of an appropriate organizational structure, culture, and policy that will support green approaches (del Brio and Junquera 2003; Masurel 2007); (2) the possession of limited financial, human, technological, informational, and allied resources that are vital in supporting ecological operations (Tilley 1999); (3) the adoption of a short-term business perspective, which does not allow for the anticipation of new trends in the industry, such as future environmental regulations, new clean technologies, and innovative green products/services (Verheul 1999); (4) reliance on a single owner/manager who is confined by preexisting values that, in many cases, are guided by profit rather than sensitivity to environmental issues (Schaper 2002); and (5) heavy dependency on external organizations and/or associations to implement environmental initiatives, especially when these involve a significant amount of investment (Verheul 1999).

Despite these obstacles, several compelling reasons are pressing small firms to adopt a strategic orientation toward environmental activities. First, legislation regulating environmental practices is increasingly becoming more strict, and in many cases imposing severe penalties on firms not abiding by the law (Patton and Worthington 2003). The emergence of a growing segment of consumers who reward companies that undertake green imperatives, but punish those that harm the natural environment, is another key stimulating factor (Langerak, Peelen, and van der Veen 1998).

The intensification of competition is also an important driver of organizational eco-orientation, since many firms capitalize on green issues to achieve positional competitive advantages (Simpson, Taylor, and Barker 2004). Lastly, but not least, is the fact that rapidly changing market conditions concerning green issues provide opportunities for small firms to exploit, because of their more flexible and less formalized structure compared with their larger counterparts (Lefebvre, Lefebvre, and Talbot 2003).<sup>1</sup>

An eco-friendly orientation is a core organizational value that denotes (1) respect and responsibility for the environment, as well as recognition that the firm has to reduce any harmful effects on it; (2) setting standards of ethical behavior and long-lasting commitment to protecting the environment; (3) understanding and responding to the needs of external stakeholders (e.g., regulators, communities, buyers) with regard to the environment; and (4) acting as a good corporate citizen with the responsibility to sustain the environment for future generations and care about the well-being of society at large (Banerjee 2002). Although the issue of eco-orientation has been extensively studied within the context of larger firms (e.g., Menon and Menon 1997; Miles and Munilla 1993; Stone and Wakefield 2000), it has been only peripherally tackled in the case of small business units, probably because of the misconception that the latter are less aware of the negative effects of their operations and the concomitant lack of interest in pursuing eco-friendly activities (Patton and Worthington 2003). However, there are indications that the adoption of such an orientation is expected to yield significant gains for the small firm, such as those pertaining to cost savings, improved reputation, and customer attraction/retention (Gadenne, Kennedy, and McKeiver 2009; Lee 2009).

The intention of our study is to shed light on this important issue by developing and testing a model of the external drivers of small-firm environmental orientation and how this, in turn, affects financial performance. Specifically, our aim is to investigate (1) the effect of key

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<sup>1</sup>Some authors (e.g., Aragón-Correa et al. 2008; Lefebvre, Lefebvre, and Talbot 2003; Walley and Taylor 2002) conceive green market opportunities as corresponding to “niche” markets, which are particularly suitable for small firms because of their ability to have a more focused and/or flexible approach in their business activities.

external forces, namely regulatory framework, environmental public concern, competitive intensity, and market dynamism, in determining eco-friendly orientation within the small firm; (2) the extent to which this environmental orientation has a favorable effect on the firm's financial outcomes; and (3) the role of both organizational resources and capabilities in moderating the relationship between environmental orientation and financial performance.

The article is organized into seven sections. Following this introductory section, we review the literature on small-firm environmental behavior. We then illustrate the conceptual model of the study and develop the research hypotheses. This is followed by an explanation of the research methodology used to carry out the study. In the next section, we present the results with regard to testing our hypotheses. Finally, the key findings of the study are summarized and conclusions drawn for company and public policymakers.

### ***Literature on Small-Firm Environmental Issues***

Research on environmental issues relating to small firms has taken a number of different directions. The *first* stream focused on *environmental awareness*, which, although found to be relatively high among small firms, was rarely translated into real commitment to environmental issues (Williamson and Lynch-Wood 2001; Worthington and Patton 2005). Among the most frequent sources of environmental information reported by small firms were members of the supply chain (Williamson and Lynch-Wood 2001), trade associations (Worthington and Patton 2005), and regulatory agencies (Gadenne, Kennedy, and McKeiver 2009). However, there was a great disparity in the degree of awareness with regard to specific environmental aspects. For example, whereas most small firms were found to be well aware of environmental legislation (especially that relating to packaging, duty of care, and integrated pollution prevention/control) (Simpson, Taylor, and Barker 2004), the opposite was true with regard to other dimensions of environmental friendly practices, such as possible cost savings (Gadenne, Kennedy, and McKeiver 2009) and performance measurement (Rowe and Hollingsworth 1996).

The *second* group of studies attempted to shed light on the *environmental attitudes of managers* in small firms. Although a number of

studies (e.g., Revell and Blackburn 2007; Revell, Stokes, and Chen 2010; Simpson, Taylor, and Barker 2004; Worthington and Patton 2005) highlight the fact that managers/owners do indeed recognize that their companies could be harmful to the environment and for this reason are willing to take the responsibility of solving environmental problems, at the same time they show that these managers are not convinced that, by taking environmental initiatives, they will win customers and/or reduce their costs. This implies that a "green managerial attitude" does not necessarily lead to actual environmentally friendly behavior (Schaper 2002). Because of this discrepancy, adjustments in structures, policies and strategies to accommodate environmental issues were found in only a low proportion of small firms (Lee 2009; Williamson and Lynch-Wood 2001). Schaper (2002) tries to explore whether the demographic profile of the owner/manager in small business units (namely, age, gender, educational level) could be responsible for shaping green attitudes and yielding high environmental performance, but no significant results were revealed.

The *third* line of research dealt with factors that *drive/stimulate environmentally friendly* behavior in small firms. Revell, Stokes, and Chen (2010) distinguish between "push" motives (e.g., environmental legislation, technical standards, local community rules) and "pull" motives (e.g., cost savings, new customers, good publicity). The most common forces driving eco-friendly response were environmental legislation (McKeiver and Gadenne 2005; Revell, Stokes, and Chen 2010; Rowe and Hollingsworth 1996; Worthington and Patton 2005), cost reductions (Revell, Stokes, and Chen 2010; Rowe and Hollingsworth 1996), customer demand (Revell, Stokes, and Chen 2010; Rowe and Hollingsworth 1996; Worthington and Patton 2005), and better employee motivation/performance (Masurel 2007; Revell, Stokes, and Chen 2010). Cleaner environmental conditions, improved local environment, and safer working conditions were also mentioned in some studies (e.g., McKeiver and Gadenne 2005) but at a low frequency rate.

The *fourth* stream of studies focused on the factors *obstructing the adoption of environmental initiatives* by small firms, such as increased costs (e.g., Revell, Stokes, and Chen 2010; Worthington and Patton 2005), loss of market competitiveness (e.g., Revell, Stokes, and Chen

2010; Verheul 1999), and lack of staff time (e.g., Revell, Stokes, and Chen 2010). A number of studies (e.g., Dean, Brown, and Stango 2000; Petts et al. 1999; Williamson and Lynch-Wood 2001) also point to the fact that environmental regulations may pose a problem for small firms, in the sense that (1) it is not very clear and/or obvious what one is actually required to do, especially as regards what constitutes a compliant versus a noncompliant state; (2) there is some disparity between owner/manager's concerns about the environment and the perceived role played by legislation to protect the environment; and (3) the high costs incurred because of environmental regulations (especially as regards health and safety and waste management), which put the firm in a disadvantageous position.

The *fifth* group of studies dealt with external/internal drivers influencing the green strategic behavior of small firms. With regard to external forces, some researchers stressed the role of legislation, suppliers, customers, and institutions in adjusting organizational procedures, developing environmental policies, using environmental audits, and seeking accreditation from external environmental standards (Gadenne, Kennedy, and McKeiver 2009; Tilley 1999; Williamson and Lynch-Wood 2001). In the case of internal forces, these focused mainly on the availability of time and information resources of small firms (Schaper 2002), as well the managerial risk-taking behavior, which is vital in positively responding to ecological intelligence (Stone and Wakefield 2000). Moreover, a study conducted by Aragón-Correa et al. (2008) confirmed the role of certain organizational capabilities, namely shared vision (i.e., the owners-founder's vision and his or her close interaction and communication with other employees), strategic proactivity (i.e., the firm's entrepreneurial orientation and innovativeness), and stakeholder management (i.e., organizational flexibility in managing inter-firm and external relationships), in developing proactive environmental strategies.

The *sixth* stream of research referred to *environmental management system/practices*, which in the majority of cases were not in place

in small firms (McKeiver and Gadenne 2005). In those cases where they did exist, they were mainly of an informal (e.g., changing processes to reduce waste) than a formal (e.g., ensuring compliance with all environmental laws and regulations) nature (McKeiver and Gadenne 2005). Some of the most common environmental management systems/practices found to be adopted by small firms included recycling activities (Cordano, Marshall, and Silverman 2010; Revell, Stokes, and Chen 2010), energy conservation (Cordano, Marshall, and Silverman 2010; Revell, Stokes, and Chen 2010), and carbon emission reduction (Revell, Stokes, and Chen 2010). In Rutherford, Blackburn, and Spence's (2000) study, it was found that the environmental practices of small firms are influenced by national stereotypes and that countries adopt different approaches (e.g., when appealing to their social responsibility role) to mobilize firms to engage in environmentally beneficial activities.

The *seventh* group of studies focused on the formal environmental certification program of ISO 14000 and particularly its ISO 14001 variant.<sup>2</sup> The convergence of the findings of empirical studies on the subject revealed that the overwhelming majority of small firms have both a low awareness (Lee 2009; Revell, Stokes, and Chen 2010; Worthington and Patton 2005) and limited adoption (Cordano, Marshall, and Silverman 2010; Hillary 2004; Lefebvre, Lefebvre, and Talbot 2003; McKeiver and Gadenne 2005; Revell, Stokes, and Chen 2010) of this type of environmental management system. Although smaller firms were found to acknowledge the existence of both internal (e.g., quality improvement, cost savings, boosting employee motivation and morale) and external (e.g., gaining a competitive advantage, improved environmental performance, creating a positive public image) benefits from the use of this program, a number of obstacles (e.g., resource constraints, lack of market rewards, implementation complexities) are often responsible for inhibiting its adoption (Heras and Arana 2010; Hillary 2004). In light of this, several studies (e.g., Ammenberg and Hjelm 2003; Halila 2007; Halila and Tell 2013)

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<sup>2</sup>The ISO 1400 consists of a series of standards that focus on environmental management systems, environmental auditing, eco-labeling, environmental product specifications, and environmental performance evaluation (Miles, Munilla, and McClurg 1999). The ISO 1401 provides a specific standard within this category, because it is intended for registration by a nongovernmental third party (Cordano, Marshall, and Silverman 2010).



explored the feasibility of using an existing network of small firms to jointly initiate and implement an ISO 14001 certification project, revealing that, although possible and beneficial for improving relationships with various stakeholders (e.g., customers), it is very difficult to keep the firms in the network working together as a homogeneous group.

The *eighth* set of studies examined the *environmental behavior and performance* of small firms. For instance, Williamson and Lynch-Wood (2001) found that very few of these firms have an environmental manager in place, most do not have environmental policies, and they do not produce environmental reports/audits. Bianchi and Noci (1998) also showed that small firms have a greater tendency to adopt reactive rather than proactive environmental behavior, because, on the one hand, they lack the necessary financial means, technological equipment, and personnel skills required to develop green initiatives, and, on the other, they are less committed to environmental activities on the grounds that these will not yield adequate returns in the short term. Finally, with regard to the environmental performance of small firms, the following observations were made: (1) the actual measurement of environmental performance is limited and/or not properly conducted (Williamson and Lynch-Wood 2001); (2) there is a disparity between perceived and actual environmental performance levels (Rowe and Hollingsworth 1996); and (3) the outcome of most green activities is measured in terms of business performance (Williamson and Lynch-Wood 2001).

The *final* group of studies dealt with various *specialized green topics* pertaining to small firms. For example, Paton (1994) focused on environmental auditing in small firms and revealed that environmental audits were rare, because they were considered either irrelevant to the running of the business or required excessive amounts of cost and time, whereas the cases in which audits were undertaken were more prevalent in industries harmful to the environment, such as minerals and energy. Noci and Verganti (1999) explored green product innovation and found that this was not a marginal issue for most small firms (even for those not directly affected by environmental regulations), thereby stressing the need to select a proper research and development strategy that would explicitly account for the eco-efficiency of product technologies. Finally,

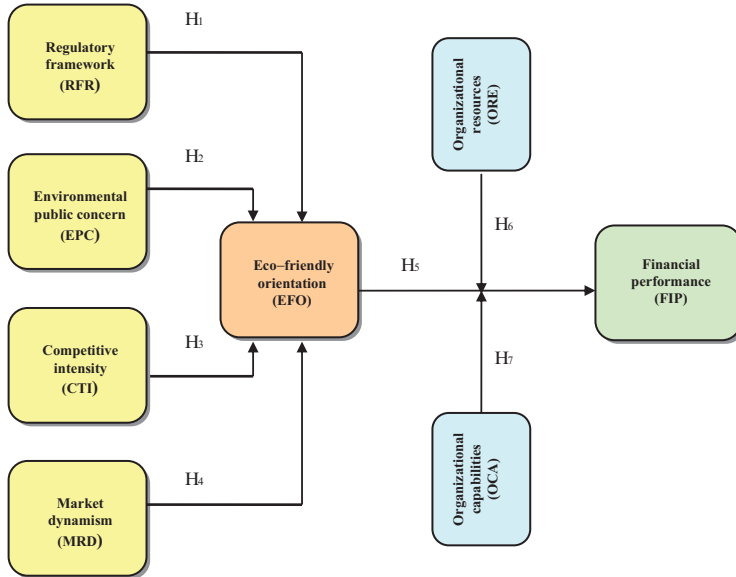
Tilley (2000) investigated the ethical aspects of small firms and found that (1) they are mostly driven by a value system that stresses economic prosperity as a goal; (2) they are characterized by non-responsible behavior and, therefore, external regulations are critical to constrain this behavior; (3) they regard the environmental challenge from a shallow ecology perspective, because they are operating within the conventional ethical discourse system.

A number of observations can be made with regard to the previous review of the literature on the green activities of small firms: *first*, it is very fragmented, taking many different directions, which, however, cover environmental issues in a rather shallow way; *second*, it is relatively descriptive in nature, with only a few studies trying to establish and test causal associations between the environmental behavior of small firms and its antecedents and outcomes; *third*, with a few exceptions, the analysis of the various environmental issues did not rely on sophisticated quantitative methods but was rather simplistic; *fourth*, it is relatively atheoretic in nature, with most studies lacking a sound theoretical foundation and conceptual development; *finally*, important issues that have been widely studied in the broader environmental business literature, such as the role of external influences, internal resources/capabilities, the firm's eco-friendly orientation, and financial implications of environmental initiatives, have only been tangentially tackled.

## ***Research Model and Hypotheses***

To fill some of the gaps identified from the previous review of the literature on the environmental-related aspects of small firms, we have developed a conceptual model particularly focusing on external forces, eco-friendly orientation, financial performance, and organizational resources/capabilities (see Figure 1). Specifically, our model indicates that external forces (i.e., environmental regulations, environmental public concern, competitive intensity, market dynamism) have a positive impact on the development of an eco-friendly orientation in the small firm, which, in turn, has a positive effect on its financial performance. It also shows that the eco-orientation → financial performance path is moderated by the existence of appropriate organizational resources and capabilities. In total, there are five main

**Figure 1**  
**The Conceptual Model**



hypothesized associations and two moderating hypotheses, which are elaborated in the following sections.

### Main Hypotheses

The *environmental regulatory framework* has been considered in many studies (e.g., Baylis, Connell, and Flynn 1998; Rutherford, Blackburn, and Spence 2000; Williamson and Lynch-Wood 2001) as a major stimulus for the adoption by small firms of an eco-friendly approach to their business. Environmental regulations may cover a wide array of issues, ranging from clean technologies and technical standards to package recycling and waste management (Banerjee, Iyer, and Kashyap 2003). Most of these regulations aim to increase social and economic benefits through, for example, the lowering of illness and mortality, reduction of damage to vegetation, improvement of aesthetics, and enhancement of recreational opportunities (Carlton and Perloff 1990). Environmental regulations stimulate eco-friendly orientation in smaller firms in three ways: (1) they generate awareness of environmental protection issues, such as packaging recycling, energy efficiency, and reduction in carbon emissions; (2) they help toward establishing formalized procedures with regard to environ-

mental management systems; and (3) they are often associated with fines and penalties that in many cases are excessively high compared with the limited financial means of small firms (McKeiver and Gadenne 2005; Revell, Stokes, and Chen 2010; Simpson, Taylor, and Barker 2004). Thus, we may hypothesize that

*H1: High levels of environmental regulatory intensity will lead to the adoption of an eco-friendly orientation by the small firm.*

Increasing *environmental public concern* has been a major driving force behind the adoption of ecological thinking by many firms. Such public concern can be of either an economic (e.g., customers) or political (e.g., local community) nature (Banerjee, Iyer, and Kashyap 2003). Irrespective of its origin, to be able to generate an eco-friendly orientation within the organization, the public has to fulfill the following preconditions: (1) to express awareness, sensitivity, and commitment to environmental issues; (2) to develop a certain level of expectation about company environmental activities; and (3) to exert influence on the firm should it not conform to their environmental expectations (Langerak, Peelen, and van der Veen 1998; Menon et al.

1999). Although the ecological behavior of large firms is more likely to attract the attention of the public because of greater exposure, higher visibility, and wider impact of their actions, smaller firms can also be affected, especially when they operate in industries harmful to the environment (Peretz, Bohm, and Jasienczyk 1997). Based on the previous discussion, we may hypothesize that

*H2: High levels of environmental public concern will lead to the adoption of an eco-friendly orientation by the small firm.*

The competitive environment has often been described as a key stimulus for the firm's environmental actions (Menon et al. 1999). Specifically, under conditions of high *competitive intensity*, small firms try to find ways to differentiate their offerings from rival firms, and one way to achieve this is through the adoption of eco-friendly activities, such as recyclable procedures, use of clean technologies, and waste management protocols (Menon and Menon 1997). Although such an environmental orientation will help large firms to stay ahead of competitors by establishing new sets of environmental norms (especially when following voluntary/proactive programs), in the case of small firms it will ensure that they reach the minimum environmental requirements set by the industry (Arora and Cason 1995). Small firms that take competitive movements into consideration seriously are more likely to perceive green issues as an opportunity they can exploit and be in a position to anticipate future environmental pressures more quickly (Perez-Sanchez, Barton, and Bower 2003). Hence, we can posit that

*H3: High levels of competitive intensity will lead to the adoption of an eco-friendly orientation by the small firm.*

Another important external determinant of ecological orientation refers to *market dynamism*, that is, the rate at which market forces in the firm's operating environment (e.g., consumer preferences, demand levels, product characteristics) are changing (Achrol and Stern 1988). Under conditions of high market dynamism, firms have to better understand buyers' needs, absorb market information faster, and realign their competitive strategies (Jaworski and Kohli 1993). The cultivation of favorable

consumer attitudes toward eco-friendly firms, buyer shifts toward purchasing and using ecological products, and the increasing power of the consumerism movement are some of the elements characterizing today's markets in many parts of the world, which are responsible for instilling eco-friendly thinking in an ever greater number of firms (Menon and Menon 1997). The flexible and flat organization structure of small firms allows them to grasp ecological trends in the market quickly, although resource constraints may prevent them from fully adopting and implementing eco-friendly initiatives (Aragón-Correa et al. 2008). The existence of dynamic conditions in the market can facilitate first mover advantage for those small firms that first conceive and swiftly respond to green market changes (Baker and Sinkula 2005). The following hypothesis can, therefore, be made:

*H4: High levels of market dynamism will lead to the adoption of an eco-friendly orientation by the small firm.*

An *eco-friendly orientation* is an important prerequisite for formulating and implementing environmentally friendly business practices (e.g., product stewardship, waste management, pollution prevention) within the organization (Menon and Menon 1997; Miles and Munilla 1993). Environmentally oriented organizations are characterized, inter alia, by (1) objectives, focusing on producing high-value eco-friendly products that will create consumer brand preference; (2) systems, monitoring corporate sensitivity toward ecological market trends, especially as regards the green market segment; (3) values, that are centering on providing customer satisfaction by offering green products and other eco-friendly business activities; and (4) behavior, such as tracking ecological intelligence, sharing environmental information across functional areas, and responding to consumer green needs (Miles and Munilla 1993; Stone, Joseph, and Blodgett 2004). Obviously, top management has a decisive role to play in instilling such an orientation within the organization, since their ideas, values, and beliefs determine to a great extent the nature and scope of the firm's social responsibility (Menon et al. 1999). This is more evident in the case of small firms, whereby the owner/manager is usually the single decision-maker and the driving force behind any strategic initiative within the

organization (Schaper 2002). Growing evidence in the literature (e.g., Aragón-Correa et al. 2008; Menon and Menon 1997; Stone and Wakefield 2000) indicates that acting in an ecologically oriented manner will yield better financial results for the company. This is because the firm's responsiveness to ecological issues helps, on the one hand, to reduce costs (e.g., recycling material waste, energy/water savings, avoiding green penalties) and, on the other, to increase benefits (e.g., increasing customer satisfaction, improving firm reputation, enhancing brand loyalty). This leads us to the following hypothesis:

*H5: High levels of company eco-friendly orientation will lead to high levels of financial performance.*

### **Moderation Hypotheses**

So far, we have seen the role of external factors in determining environmental orientation and how this, in turn, leads to superior financial performance. However, for eco-friendly orientation to produce financial results, it is important to understand the moderating effect of certain factors internal to the firm. Specifically, drawing on the resource-based theory, which adopts an inward-looking perspective regarding the firm (Barney 1991), we explore the role of organizational resources and capabilities on the association between the firm's eco-orientation and financial performance.<sup>3</sup>

*Organizational resources* are tangible (e.g., finance, equipment, installations) or intangible (e.g., technical know-how, reputation, experience) assets controlled by the firm that help to design and implement strategies that will improve business performance (Grant 1991). They are cumulative in nature, socially complex, and tacit (Barney 1991). However, to be useful, these resources must be valuable, rare, imperfectly imitable, and non-substitutable (Barney 1991; Bharadwaj, Varadarajan, and Fahy 1993). Organizational resources are crucial in supporting environmental orientation by, for example, covering the cost of green initiatives, seeking

new areas of ecological success based on previous experience, exploiting economies of scale in sharing environmental costs, and providing a sound technological basis for sustainable eco-friendly programs (Russo and Fouts 1997). Organizational resources can influence both strategic (e.g., green technology) and operating (e.g., reverse logistics) dimensions of the firm's ecological behavior, and their degree of use will depend on the specific problem that the firm has at hand (Barney 1991). Although small firms, by default, have limited organizational resources, those that are in a position to make wise use of appropriate resources for environmentally friendly purposes are very likely to achieve superior performance (Aragón-Correa et al. 2008). Hence, we may posit that

*H6: High levels of organizational resources associated with environmental activities will have a strong positive effect on the link between eco-friendly orientation and financial performance, and vice versa.*

*Organizational capabilities* assemble, integrate, and manage resources in order to address the challenges of the external business environment and meet changing market demands (Eisenhardt and Martin 2000). Such capabilities are essential in activating and coordinating resources to perform their function, update their current status, and preserve their existence (Tece et al. 1997). They are expressed in the form of inward (e.g., new product development), outward (e.g., market sensing), or spanning (e.g., relationship building) processes, that help to organize and get things done within the organization in an effective and efficient way (Day 1994). The pertinent literature points to specific capabilities, such as shared vision, cross-functional coordination, and technology sensing/response, that are crucial to the adoption and implementation of sustainable business programs (Hart 1995; Shrivastava 1995). Although small firms are usually less endowed with organizational capabilities compared with their larger counterparts, the literature shows that the proper use

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<sup>3</sup>This theoretical paradigm stresses the instrumental role of organizational resources (and capabilities) in achieving positional competitive advantage and superior performance (Barney 1991). It also stresses the mediating role of business strategy formulation and implementation, by exploiting environmental opportunities, accommodating external threats, capitalizing on internal strengths, and limiting the impact of company weaknesses (Bharadwaj, Varadarajan, and Fahy 1993).



of the right capabilities that are instrumental to eco-efficient practices will enhance business performance (Aragón-Correa et al. 2008). Thus, we can hypothesize that

*H7: High levels of organizational capabilities associated with environmental activities will have a strong positive effect on the link between the firm's eco-friendly orientation and financial performance, and vice versa.*

## **Methods**

To test our hypotheses, we conducted a study in Cyprus, which is characterized mainly by a light manufacturing sector dominated by firms of small size. The existence of numerous smaller-sized firms in the country can be attributed to the family nature of most businesses, the underdeveloped capital market system, and the limited size of the domestic market. Since it joined the European Union in 2004, the country has had to adopt stringent legislation relating to the protection of the environment, such as that concerning the recycling of packaging materials, clean production technologies, energy and water conservation mechanisms, and waste management processes.

The target population was firms listed in the most recent directory of manufacturers published by the Cyprus Chamber of Commerce and Industry (CCCI, 2011). These were screened out on several criteria, namely to have been in operation for at least three years, to be of a size greater than 10 employees but less than 250, to be of an indigenous character rather than branches of international firms, and to belong to the private, as opposed to the public, sector of the economy. Those firms that fulfilled our eligibility criteria were contacted by telephone to explore their interest in participating in the study, as well as to identify key informants. The outcome of this process was to secure 513 firms expressing an initial interest in participating in the study.

Constructs were operationalized based on scales established in the literature and were further refined after discussions with a panel of managers from small manufacturing units (see Appendix). Analytically, “regulatory frame-

work” and “environmental public concern” comprised six items, each taken from Banerjee, Iyer, and Kashyap (2003). Jaworski and Kohli’s (1993) study was the source of the four-item scale for “competitive intensity,” whereas the three-item scale for “market dynamism” was adopted from Baker and Sinkula (2005). “Eco-friendly orientation,” the central construct of our model, consisted of 11 items taken from Fraj-Andres, Martinez-Salinas, and Matute-Vallejo (2009). Seven items, derived mainly from Leonidou et al.’s (2013) study, were employed to measure the firm’s “financial performance.”<sup>4</sup> Finally, with regard to moderating factors, the scale of “organizational resources” comprised five items taken from Buysse and Verbeke 2003, whereas “organizational capabilities” was a six-item scale extracted from Sharma, Aragón-Correa, and Rueda-Manzanares (2007).

Scale items were measured on a seven-point Likert scale, ranging from strongly disagree (1) to strongly agree (7), whereas some of the items were reversed. The survey instrument contained additional questions referring to organizational demographics, such as establishment year, number of employees, and type of goods produced. The questionnaire was first developed in English and then translated into Greek, which is the official language of the country. A back-translation procedure revealed that the questionnaire did not suffer from any linguistic problems. To ensure the workability of the questionnaire, it was pretested with five managers of small companies, revealing no particular problems.

Those firms that showed a willingness to participate in the study were sent a mail questionnaire, accompanied by a covering letter stating the purpose of the study and explaining how to administer the questionnaire. In some cases, the questionnaire was hand-delivered to the firm’s premises, whereas in others the respondents were provided with an electronic version. A series of reminder letters, telephone contacts, and even personal visits was employed in order to increase participation in the study. The outcome of these efforts was to collect 161 questionnaires (31.4 percent response rate) within a period of three months.

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<sup>4</sup>Similar multiple scales of financial performance have also been used in key articles in the wider environmental business literature, such as those by Menon and Menon (1997) (which focused on market share and ROI), Judge and Douglas (1998) (which focused on profit growth, sales growth, market share change, and ROI), and Menguc and Ozanne (2005) (which focused on sales growth, market share, and profit).

Of these, only 153 were adequately completed for data analysis purposes. The existence of possible nonresponse bias was tested using Armstrong and Overton's (1977) procedures, whereby the answers given by early respondents were compared with those of late respondents, revealing no statistically significant differences.

## **Data Analysis and Findings**

Using structural equation modeling (SEM) based on EQS, we performed three major types of analysis with regard to our conceptual model, namely measurement model validation, structural model estimation, and moderating effects assessment.

### **Measurement Model Validation**

The psychometric properties of our constructs were evaluated using the iterative purification process recommended by Gerbing and Anderson (1988). First, we carried out an exploratory factor analysis on the scales employed and any items exhibiting low factors loadings, low item-to-total correlations, or heavy loadings on more than one factor were dropped. With the remaining items, a confirmatory factor analysis (CFA) was used to verify the hypothesized factor structure and assess convergent validity and discriminant validity. To perform this analysis, we used the elliptical re-weighted least square procedure, whereby each measurement item was restricted to load only on its a priori specified factor. The chi-square statistic of this model was found to be significant ( $\chi^2_{(362)} = 573.49$ ,  $p < .01$ ), which was expected, due to the sensitivity of this statistic to sample size (Bagozzi and Yi 1988). However, the ratio of chi-square to degrees of freedom ( $\chi^2/df = 1.58$ ), as well as the other alternative fit indices ( $NFI = .90$ ,  $NNFI = .94$ ,  $CFI = .94$ , and  $RMSEA = .06$ ) indicate a good fit to the data (see Table 1).

With regard to *convergent validity*, this was met because the  $t$ -value for each item was always significant, all standard errors of the estimated coefficients were very low, and the average variance extracted for each construct was above the threshold level of .50 (Hair et al. 2011). *Discriminant validity* was also observed because the confidence interval around the correlation estimate for each pair of constructs investigated never included 1.00 (Anderson and Gerbing 1988), whereas the squared correlation for each pair of constructs never exceeded their

average variance extracted (Fornell and Larcker 1981) (see Table 2). *Construct reliability* was also estimated, with all constructs satisfying recommended thresholds in terms of Cronbach's alpha coefficients ( $>.7$ ), composite reliability scores ( $>.69$ ), and average variance extracted ( $>.5$ ) (Bagozzi and Yi 1988; Fornell and Larcker 1981).

*Common method bias* was tested using Harman's one-factor test (Podsakoff and Organ 1986). First, a principal components analysis on all items examined in this study was performed. The unrotated solution resulted in six factors with eigenvalues greater than 1.0, accounting for 66.3 percent of the variance. Second, a CFA model was estimated, where the measurement items and the factors included in the structural model were restricted to load on a single factor. The results obtained from this analysis indicate a poor fit ( $\chi^2_{(324)} = 1868.72$ ,  $p < .001$ ,  $NFI = .53$ ,  $NNFI = .54$ ,  $CFI = .57$  and  $RMSEA = .18$ ), implying that common method bias does not pose a problem in our investigation.

### **Structural Model Estimation**

Table 3 presents the standardized path coefficients for each main hypothesis in the model, together with the corresponding  $t$ -values. The research hypotheses were tested by estimating the structural model based again on the elliptical re-weighted least-square method. Although the chi-square for this model was found to be statistically significant ( $\chi^2_{(372)} = 642.10$ ,  $p = .00$ ), the ratio between chi-square and degrees of freedom was satisfactory ( $\chi^2/df = 1.73$ ) and the values of all alternative fit indices were within acceptable levels ( $NFI = .90$ ,  $NNFI = .94$ ,  $CFI = .94$ ,  $RMSEA = .07$ ).

H1, which connects regulatory framework and eco-friendly orientation, was confirmed ( $\beta = .32$ ,  $t = 2.90$ ,  $p = .00$ ). This finding is in harmony with the findings of other studies (e.g., Banerjee, Iyer, and Kashyap 2003; Menon and Menon 1997), which also underline the instrumental role of environmental regulations in instilling green thinking within the organization. This finding is in line with that of Baylis, Connell, and Flynn (1998), who report environmental regulations as the most common source of environmental motivation of small firms. Although complying with such regulations has often been associated with a reactive approach to environmental business (Sharma and Vredenburg 1998), our study revealed that these can seriously stimulate awareness and interest

**Table 1**  
**Measurement Model Results**

Constructs	Scale Items	Standardized Loadings	t-Value	$\alpha$	$\rho$	AVE	Mean Score	Standard Deviation (S.D.)	Items Means	Items S.D.
Regulatory Framework	RFR1	.72	*	0.71	0.69	0.42	3.95	1.46	4.30	1.88
	RFR2	.69	5.75						3.60	2.02
	RFR3	.59	5.23						3.63	2.08
Environmental Public Concern	RFR6	.58	5.18						4.29	2.02
	EPC4	.66	*	0.81	0.76	0.54	4.44	1.39	4.37	1.53
	EPC5	.85	7.34						4.32	1.84
	EPC6	.81	7.20						4.59	1.82
	EPC9	.59	5.61						4.49	1.74
Competitive Intensity	GIN2	.59	*	0.74	0.72	0.66	5.75	1.23	5.51	1.50
	GIN3	.99	3.51						5.99	1.37
Market Dynamism	MDY2	.96	*	0.73	0.69	0.63	5.40	1.22	5.60	1.32
	MDY3	.59	3.62						5.20	1.54
Eco-friendly Orientation	EFO1	.67	*	0.91	0.89	0.52	5.02	1.24	4.66	1.87
	EFO2	.73	7.35						5.18	1.54
	EFO3	.81	8.10						5.05	1.49
	EFO4	.80	8.02						5.11	1.60
	EFO5	.89	8.76						5.16	1.50
	EFO6	.77	7.78						5.36	1.52
	EFO7	.55	5.68						4.49	1.98
	EFO9	.63	6.51						5.14	1.74
	EFO10	.60	6.14						4.44	1.81
	EFO11	.65	6.69						5.57	1.59
	Financial Performance	FIP1	.75	*	0.93	0.89	0.66	4.34	1.34	4.38
FIP2		.94	11.19						4.39	1.58
FIP3		.88	10.41						4.18	1.58
FIP4		.85	9.97						4.25	1.57
FIP5		.85	9.94						4.48	1.61
FIP6		.72	8.23						4.67	1.45
FIP7		.67	7.68						4.01	1.72

\*Item fixed to set the scale.

Fit statistics: chi-square ( $\chi^2$ ) = 573.49,  $p$  = .000;  $df$  = 362; ratio chi-square to d.f. ( $\chi^2/df$ ) = 1.58; Normed Fit Index (NFI) = .90; Non-normed Fit Index (NNFI) = .94; Comparative Fit Index (CFI) = .94; Root Mean Squared Error of Approximation (RMSEA) = .06; 90 percent confidence interval of RMSEA = (.05, .07).

**Table 2**  
**Correlation Matrix**

Constructs	1.	2.	3.	4.	5.	6.
1. Regulatory framework	1					
2. Environmental public concern	.26	1				
3. Competitive intensity	.30	.11	1			
4. Market dynamism	.22	.20	.40	1		
5. Eco-friendly orientation	.40	.42	.15	.17	1	
6. Financial performance	.11	.04	.02	.00	.15	1

Note: Correlations greater than  $|\pm 0.21|$  are significant at the .01 level.  
Correlations greater than  $|\pm 0.16|$  are significant at the .05 level.

**Table 3**  
**Structural Model Results**

Hypothesis	Hypothesized Association	Standardized Path Coefficient	t-Value	p-Value	Status
H1	Regulatory framework → eco-friendly orientation	.32	2.90	.00	Accepted
H2	Environmental public concern → eco-friendly orientation	.36	3.45	.00	Accepted
H3	Competitive intensity → eco-friendly orientation	.18	1.86	.06	Accepted
H4	Market dynamism → eco-friendly orientation	.20	2.11	.03	Accepted
H5	Eco-friendly orientation → financial performance	.19	2.05	.04	Accepted

Fit statistics: Chi-square ( $\chi^2$ ) = 642.10,  $p = .000$ ;  $df = 372$ ; ratio chi-square to d.f. ( $\chi^2/df$ ) = 1.73; Normed Fit Index (NFI) = .90; Non-normed Fit Index (NNFI) = .94; Comparative Fit Index (CFI) = .94; Root Mean Squared Error of Approximation (RMSEA) = .07; 90 percent confidence interval of RMSEA = (.06, .08).

among small firms toward taking a more strategic perspective in their green business activities. To some extent this can be attributed to the fact that sensitivity to green issues by smaller firms has increased dramatically in recent years, as a result of Cyprus' membership of the European Union and the concomitant introduction of a wide range of rules and regulations for protecting the environment.

With regard to H2, the positive impact of environmental public concern on green business orientation was also verified ( $\beta = .36$ ,  $t = 3.45$ ,  $p = .00$ ), stressing the importance of citizens, buyers, local communities, and other

groups in making organizations more sensitive to ecological issues (Kassinis and Vafeas 2006; Menon and Menon 1997). This is in accord with the findings of earlier research on eco-orientation conducted within the domain of large firms (e.g., Banerjee, Iyer, and Kashyap 2003; Langerak, Peelen, and van der Veen 1998; Stone, Joseph, and Blodgett 2004). Despite the relatively low individual impact of small firms on the environment, it seems that the views of the public about ecological protection are inextricably linked with their business operations (Peretz, Bohm, and Jasienczyk 1997). This is particularly evident in countries

characterized by high educational standards, as in the case of Cyprus, where people are more aware of environmental problems and, therefore, expect suppliers of goods to behave in a more socially responsible manner (Leonidou, Leonidou, and Kvasova 2010).

Significant results were also found in the case of H3, indicating that competitive intensity can indeed be responsible for cultivating a green orientation within the organization ( $\beta = .18$ ,  $t = 1.86$ ,  $p = .06$ ). This confirms the view that one way for the firm to cope with intensified competition is by adopting an ecological perspective in its business activities (Dechant and Altman 1994; Menon and Menon 1997). Although such an eco-friendly orientation will help the small firm to attain the minimum environmental standards set by the industry within which it operates, it can create a positive differentiation from its rival firms (Arora and Cason 1995; Langerak, Peelen, and van der Veen 1998). It would also help to create a more proactive stance toward green issues, with all the benefits that this may entail, such as taking the lead in a specific niche market, strategically handling competitors' movements, and capitalizing on ecological product innovations (Aragón-Correa 1998; Dechant and Altman 1994). This is of particular relevance for Cypriot manufacturing concerns, which are increasingly facing stiff competition not only from other local producers, but also from foreign firms (especially from Europe and Asia).

Support was also given to the hypothesis linking market dynamism with eco-friendly orientation (H4) ( $\beta = .20$ ,  $t = 2.11$ ,  $p = .03$ ). Indeed, in highly dynamic markets, small firms are bound to adapt quickly to changes relating to consumer habits/attitudes and competitors' movements, which to a great extent nowadays incorporate ecological elements (Baker and Sinkula 2005). Such changes have become more profound in the Cyprus market recently, as a result of growing consumer sophistication, involvement in European business practices, and exposure to worldwide financial problems (Leonidou, Leonidou, and Kvasova 2010). Despite unconvincing evidence to support the direct link between market turbulence and eco-orientation within the domain of large firms (Baker and Sinkula 2005), it seems that, within the context of small firms, market turbulence has an important role to play in harnessing eco-friendly commitment because of their inherent greater adaptive capability.

Finally, our study confirmed H5, which stated that the cultivation of an eco-friendly orientation could yield positive financial results for the firm ( $\beta = .19$ ,  $t = 2.05$ ,  $p = .04$ ). This implies that thinking (and subsequently acting) in an eco-friendly way helps to make significant cost savings for the small firm, while at the same time boosting sales and improving market share. Although this positive association between eco-orientation and business performance has been repeatedly cited in the literature with regard to large firms (e.g., Baker and Sinkula 2005, Menon and Menon 1997, Stone and Wakefield 2000), our study confirms that such a relationship is also plausible in the case of their smaller counterparts. This finding contradicts the negative predisposition expressed by some small business managers (not only in Cyprus, but also in other parts of the world) that eco-friendly initiatives are costly to adopt and take time to yield satisfactory results.

### **Moderating Effects**

Moderating effects were tested through multigroup analysis, where the initial sample was split into two groups based on the median (see Table 4). Specifically, for each moderator, we ran two different models: whereas in the first model all parameter estimates were free to vary between the two subsamples, in the second model an equality constraint was set on the hypothesized moderated link between the two groups.

With reference to H6, our results indicate that the possession of adequate organizational resources committed to environmental activities positively affects the association between eco-friendly orientation and financial performance ( $\Delta\chi^2_{(1)} = 2.80$ ,  $p < .10$ ). Analytically, when the firm deploys a higher amount of resources, the adoption of an eco-friendly orientation will have a statistically significant impact on financial performance ( $\beta = .25$ ,  $t = 2.25$ ,  $p = .02$ ), though this association becomes nonsignificant when there are resource constraints in the organization ( $\beta = .07$ ,  $t = .58$ ,  $p = .56$ ). This finding is in line with the resource-based view paradigm, which stresses the decisive role of resources in supporting the firm's initiatives to create sustainable competitive advantage (Barney 1991). It also dilutes the prevailing myth that small firms, because of their size constraints, are by default hesitant in deploying appropriate



**Table 4**  
**Moderating Effects Results**

**a. Organizational resources as a moderator**

Main effect	Hypothesized moderating effect	High organizational resources group	Low organizational resources group	$\Delta\chi^2$ ( $\Delta df = 1$ )
EFO → FIP	H6: Effect is stronger when committing more organizational resources	$\beta = 0.25$ $t = 2.25$	$\beta = 0.07$ $t = 0.58$	2.88 ( $p < .10$ )

**b. Organizational capabilities as a moderator**

Main effect	Hypothesized moderating effect	High organizational capabilities group	Low organizational capabilities group	$\Delta\chi^2$ ( $\Delta df = 1$ )
EFO → FIP	H7: Effect is stronger when committing more organizational capabilities	$\beta = 0.29$ $t = 2.66$	$\beta = 0.08$ $t = 0.77$	2.80 ( $p < .10$ )

resources to support environmentally friendly purposes (Aragón-Correa et al. 2008).

Our analysis also confirmed H7, since organizational capabilities associated with environmental activities were found to play a significant moderating role in the eco-friendly orientation → financial performance path ( $\Delta\chi^2_{(1)} = 2.88$ ;  $p < .10$ ). Specifically, although with the possession of lower organizational capabilities, the relationship between eco-orientation and financial performance is statistically nonsignificant ( $\beta = .08$ ,  $t = .77$ ,  $p = .56$ ), this relationship becomes significant when the firm possesses a higher amount of these capabilities ( $\beta = .29$ ,  $t = 2.66$ ,  $p = .01$ ). Again, this is in harmony with the resource-based view theory, which considers capabilities as vital in effectively and efficiently combining resources to support the implementation of the firm's strategies (Barney 1991). Our results are in accord with those of Aragón-Correa et al. (2008), who found that small firms possessing certain capabilities (e.g., shared vision, strategic proactivity, stakeholder management) are very likely to successfully implement environmental strategies.

**Summary and Conclusions**

Our study has shown that external environmental forces can be conducive to building

eco-friendly-oriented behavior within the small firm, which in turn can improve financial performance. It has also shown that the positive effect of environmentally friendly orientation on performance becomes stronger when the small firm commits adequate resources and capabilities to green initiatives. These findings suggest that (1) as in the case of larger firms, small units are also likely to cultivate green thinking, provided that these are properly stimulated by certain external forces, namely environmental regulations, environmental public concern, competitive intensity, and market dynamism; (2) although many small firms believe that taking environmental initiatives are prohibitively costly, such initiatives can enhance financial results (e.g., profits, sales, market share); and (3) despite the fact that eco-orientation can improve financial performance, the strength of this link will be contingent on the deployment of appropriate resources (e.g., financial) and capabilities (e.g., adaptability).

This study puts together, in a theoretically anchored, integrative, and causal fashion, concepts and ideas that touch upon important aspects of small firms' environmental behavior. It particularly adds to the small business discipline in four possible ways. *First*, it identifies a set of key external factors that have been

examined under different situations in prior research to stimulate the small firm's sensitivity to environmental issues. *Second*, it focuses on the dynamics of forming an ecological orientation within the small firm, an issue that has been tangentially tackled in the environmental business literature. *Third*, it associates environmental issues with financial performance, a link that, although studied within the context of large firms, has been virtually neglected by previous studies focusing on the green behavior of small firms. *Finally*, building on the resource-based theory, the study underscores the critical role of both organizational resources and capabilities in enhancing the impact of small firm eco-orientation on financial performance.

The study findings point to the need for small firms to adopt an ecological perspective in their business as one way to enhance financial performance. This is imperative nowadays due to a growing ecological sensitivity by both internal and external stakeholders. However, to enhance an eco-oriented spirit in the firm, it is essential to monitor changes in its external environment closely with regard to regulatory frameworks, environmental public concern, competitive intensity, and market dynamism. For this purpose, it is necessary, on the one hand, to implant policies (e.g., waste minimization) and procedures (e.g., environmental audits) for better understanding these forces and, on the other, to cultivate the right culture within the organization that is sensitive to ecological matters. Despite resource/capability constraints by small firms, it seems that directing some of them toward green activities and/or seeking their acquisition from external sources (e.g., trade associations, government agencies, consulting organizations) will facilitate the successful implementation of these activities. Since previous research has underlined the decisive role of the top manager in taking green initiatives, managers who are both sensitive to ecological issues and ready to commit adequate time and effort toward adopting and implementing environmental programs need to be appointed.

Governments, regulatory bodies, and other nongovernmental organizations have a role to play in harnessing an eco-friendly orientation among small business units. For instance, they could improve awareness of ecological issues, explain the monetary benefits from engaging in eco-friendly activities, provide financial, advi-

sory, educational and other support to firms involved in environmental initiatives, and recognize/reward companies that excel in their environmental actions. However, it is crucial to take into consideration the great heterogeneity that exists among small firms with regard to their information sources, barriers/stimuli, and attitude/behavior with regard to environmental issues. Most importantly, small firm managers/owners have to be convinced that engagement in environmental actions can enhance commercial benefits, reduce costs, and create positional advantages. Finally, it is vital to proceed with the necessary institutional reforms in educational systems, regulatory frameworks, and business infrastructure that will facilitate the smoother adoption of eco-friendly initiatives by small firms.

## References

- Achrol, R. S., and L. W. Stern (1988). "Environmental Determinants of Decision-Making in Marketing Channels," *Journal of Marketing Research* 25(1), 36–50.
- Ammenberg, J., and O. Hjelm (2003). "Tracing Business and Environmental Effects of Environmental Systems—A Study of Networking Small and Medium-sized Enterprises Using a Joint Environmental Management System," *Business Strategy and the Environment* 12, 163–174.
- Anderson, J. C., and D. W. Gerbing (1988). "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach," *Psychological Bulletin* 103(3), 411–423.
- Aragón-Correa, J. A. (1998). "Strategic Proactivity and Firm Approach to the Natural Environment," *Academy of Management Journal* 41(5), 556–566.
- Aragón-Correa, J. A., N. Hurtado-Torres, S. Sharma, and V. J. García-Morales (2008). "Environmental Strategy and Performance in Small Firms: A Resource-Based Perspective," *Journal of Environmental Management* 86(1), 88–103.
- Armstrong, J. S., and T. S. Overton (1977). "Estimating Nonresponse Bias in Mail Surveys," *Journal of Marketing Research* 14(3), 396–402.
- Arora, S., and T. N. Cason (1995). "An Experiment of Voluntary Environmental Regulation: Participation in EPA's 33/50 Program," *Journal of Environmental Economics and Management* 28(3), 271–286.

- Bagozzi, R. P., and Y. Yi (1988). "On the Evaluation of Structural Equation Models," *Journal of the Academy of Marketing Science* 16(1), 74–94.
- Baker, W. E., and J. M. Sinkula (2005). "Environmental Marketing Strategy and Firm Performance: Effect on New Product Performance and Market Share," *Journal of the Academy of Marketing Science* 33(4), 461–475.
- Banerjee, S. B. (2002). "Corporate Environmentalism: The Construct and Its Measurement," *Journal of Business Research* 55(3), 177–191.
- Banerjee, S. B., E. S. Iyer, and R. K. Kashyap (2003). "Corporate Environmentalism: Antecedents and Influence of Industry Type," *Journal of Marketing* 67(2), 106–122.
- Barney, J. (1991). "Firm Resources and Sustained Competitive Advantage," *Journal of Management* 17(1), 99–120.
- Baylis, R., L. Connell, and A. Flynn (1998). "Company Size, Environmental Regulation and Ecological Modernization: Further Analysis at the Level of the Firm," *Business Strategy and the Environment* 7, 285–296.
- Bharadwaj, S. G., R. P. Varadarajan, and J. Fahy (1993). "Sustainable Competitive Advantage in Service Industries: A Conceptual Model and Research Propositions," *Journal of Marketing* 57(4), 83–99.
- Bianchi, R., and G. Noci (1998). "'Greening' SMEs' Competitiveness," *Small Business Economics* 11, 269–281.
- Buyse, K. and A. Verbeke (2003). "Proactive Environmental Strategies: A Stakeholder Management Perspective," *Strategic Management Journal* 24, 453–470.
- Carlton, D. W., and J. M. Perloff (1990). *Modern Industrial Organization*. Glenview, IL: Scott Foresman/Little Brown Higher Education.
- Cordano, M., R. S. Marshall, and M. Silverman (2010). "How Do Small and Medium Enterprises Go 'Green'? A Study of Environmental Management in the U.S. Wine Industry," *Journal of Business Ethics* 92(3), 463–478.
- Cyprus Chamber of Commerce and Industry (2011). Directory of Manufacturers. Nicosia, Cyprus: CCCI.
- del Brio, J. A., and B. Junquera (2003). "A Review of the Literature on Environmental Innovation Management in SMEs: Implications for Public Policies," *Technovation* 23(12), 939–948.
- Day, G. S. (1994). "The Capabilities of Market-Driven Organizations," *Journal of Marketing* 58(3), 37–52.
- Dean, T. J., R. L. Brown, and V. Stango (2000). "Environmental Regulation as a Barrier to the Formation of Small Manufacturing Establishments: A Longitudinal Study," *Journal of Environmental Economics and Management* 40(2), 56–75.
- Dechant, K., and B. Altman (1994). "Environmental Leadership: From Compliance to Competitive Advantage," *Academy of Management Executive* 8(2), 7–20.
- Eisenhardt, K. M., and J. A. Martin (2000). "Dynamic Capabilities: What Are They?" *Strategic Management Journal* 21(10–11), 1105–1121.
- Fornell, C., and D. F. Larcker (1981). "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *Journal of Marketing Research* 28(1), 39–50.
- Fraj-Andres, E., E. Martinez-Salinas, and J. Matute-Vallejo (2009). "Factors Affecting Corporate Environmental Strategy in Spanish Industrial Firms," *Business Strategy and the Environment* 18(8), 500–514.
- Gadenne, D. L., J. Kennedy, and C. McKeiver (2009). "An Empirical Study of Environmental Awareness and Practices in SMEs," *Journal of Business Ethics* 84(1), 45–63.
- Gerbing, D. W., and J. C. Anderson (1988). "An Updated Paradigm for Scale Development Incorporating Unidimensionality and Its Assessment," *Journal of Marketing Research* 25(2), 186–192.
- Grant, R. M. (1991). "The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation," *California Management Review* 33(3), 114–135.
- Hair, J. F., W. C. Black, B. J. Babin, R. E. Anderson, and R. L. Tatham (2011). *Multivariate Data Analysis*. Englewood Cliffs, NJ: Pearson, Prentice-Hall.
- Halila, F. (2007). "Networks as a Means of Supporting the Adoption of Organizational Innovations in SMEs: The Case of Environmental Management Systems (EMSs) Based on ISO 14001," *Corporate Social Responsibility and Environmental Management* 14, 167–181.
- Halila, F., and J. Tell (2013). "Creating Synergies between SMEs and Universities for ISO 14001 Certification," *Journal of Cleaner Production* 48, 85–92.

- Hart, S. L. (1995). "A Natural-Resource-Based View of the Firm," *Academy of Management Review* 20(4), 986–1014.
- Heras, I., and G. Arana (2010). "Alternative Models of Environmental Management in SMEs: The Case of Ekoscan vs. ISO 14001," *Journal of Cleaner Production* 18, 726–735.
- Hillary, R. (2000). *Small and Medium-Sized Enterprises and the Environment: Business Imperatives*. Sheffield: Greenleaf Publishing.
- (2004). "Environmental Management Systems and the Smaller Enterprise," *Journal of Cleaner Production* 12, 561–569.
- Jaworski, B. J., and A. K. Kohli (1993). "Market Orientation: Antecedents and Consequences," *Journal of Marketing* 57(3), 53–70.
- Judge, W. Q., and T. J. Douglas (1998). "Performance Implications of Incorporating Natural Environmental Issues into the Strategic Planning Process: An Empirical Assessment," *Journal of Management Studies* 35(2), 241–262.
- Kassinis, G., and N. Vafeas (2006). "Stakeholder Pressures and Environmental Performance," *Academy of Management Journal* 49(1), 145–159.
- Langerak, F., E. Peelen, and M. van der Veen (1998). "Exploratory Results on the Antecedents and Consequences of Green Marketing," *Journal of the Market Research Society* 40(4), 323–335.
- Lee, K.-H. (2009). "Why and How to Adopt Green Management into Business Organizations? The Case Study of Korean SMEs in Manufacturing Industry," *Management Decision* 47(7), 1101–1121.
- Lefebvre, E., L. A. Lefebvre, and S. Talbot (2003). "Determinants and Impacts of Environmental Performance in SMEs," *R&D Management* 33(3), 263–283.
- Leonidou, L. C., C. N. Leonidou, and O. Kvasova (2010). "Antecedents and Outcomes of Consumer Environmentally-Friendly Attitudes and Behavior," *Journal of Marketing Management* 26(13–14), 1319–1344.
- Leonidou, L. C., C. N. Leonidou, T. A. Fotiadis, and A. Zeriti (2013). "Resources and Capabilities as Drivers of Hotel Environmental Marketing Strategy: Implications for Competitive Advantage and Performance," *Tourism Management* 35, 94–110.
- McKeiver, C., and D. Gadenne (2005). "Environmental Management Systems in Small and Medium Businesses," *International Small Business Journal* 23(5), 513–537.
- Masurel, E. (2007). "Why SMEs Invest in Environmental Measures: Sustainability Evidence from Small and Medium-Sized Printing Firms," *Business Strategy and the Environment* 16, 190–201.
- Menguc, B., and L. K. Ozanne (2005). "Challenges of the 'Green Imperative': A Natural Resources Based Approach to the Environmental Orientation-Financial Performance Relationship," *Journal of Business Research* 58(4), 430–438.
- Menon, A., and A. Menon (1997). "Enviropreneurial Marketing Strategy: The Emergence of Corporate Environmentalism as Marketing Strategy," *Journal of Marketing* 61(1), 51–67.
- Menon, A., A. Menon, J. Chowdhury, and J. Jankovich (1999). "Evolving Paradigm for Environmental Sensitivity in Marketing Programs: A Synthesis of Theory and Practice," *Journal of Marketing Theory and Practice* 7(2), 1–15.
- Miles, M. P., and L. S. Munilla (1993). "Eco-orientation: An Emerging Business Philosophy?" *Journal of Marketing Theory and Practice* 1(2), 43–50.
- Miles, M. P., L. S. Munilla, and T. McClurg (1999). "The Impact of ISO 14000 Environmental Management System on Small and Medium Sized Enterprises," *Journal of Quality Management* 4(1), 111–122.
- Noci, G., and R. Verganti (1999). "Managing 'Green' Product Innovation in Small Firms," *R&D Management* 29(1), 3–15.
- Paton, R. (1994). "Power in Organizations," in *Cases, Issues Concepts*. Eds. R. Arson and R. Paton. London: PCP, 194.
- Patton, D., and I. Worthington (2003). "SMEs and Environmental Regulations: A Study of the UK Screen-Printing Sector," *Environmental and Planning C: Government and Policy* 21(4), 549–566.
- Peretz, J. H., R. A. Bohm, and P. D. Jasienczyk (1997). "Environmental Policy and the Reduction of Hazardous Waste," *Journal of Policy Analysis and Management* 16(4), 556–574.
- Perez-Sanchez, D., J. R. Barton, and D. Bower (2003). "Implementing Environmental Management in SMEs," *Corporate Social Responsibility and Environmental Management* 10, 67–77.
- Petts, J., A. Herd, S. Gerrard, and C. Horne (1999). "The Climate and Culture of Environmental Compliance within SMEs," *Business*



- Strategy and the Environment* 8(1), 14–30.
- Podsakoff, P. M., and D. W. Organ (1986). “Self Reports in Organizational Research: Problems and Prospects,” *Journal of Management* 12(4), 531–544.
- Revell, A., and R. Blackburn (2007). “The Business Case for Sustainability? An Examination of Small Firms in the UK’s Construction and Restaurant Sectors,” *Business Strategy and the Environment* 16, 404–420.
- Revell, A., and R. Rutherford (2003). “UK Environmental Policy and the Small Firm: Broadening the Focus,” *Business Strategy and the Environment* 12, 26–35.
- Revell, A., D. Stokes, and H. Chen (2010). “Small Business and the Environment: Turning Over a New Leaf?” *Business Strategy and the Environment* 19(5), 273–288.
- Rowe, J., and D. Hollingsworth (1996). “Improving the Environmental Performance of Small- and Medium-Sized Enterprises: A Study in Avon,” *Eco-Management and Auditing* 3, 97–107.
- Russo, M. V., and P. A. Fouts (1997). “A Resource-Based Perspective on Corporate Environmental Performance and Profitability,” *Academy of Management Journal* 40(3), 534–559.
- Rutherford, R., R. A. Blackburn, and L. J. Spence (2000). “Environmental Management and the Small Firm: An International Comparison,” *International Journal of Entrepreneurial Behavior and Research* 6(6), 310–325.
- Sarin, S., and V. Mahajan (2001). “The Effect of Reward Structures on the Performance of Cross-Functional Product Development Teams,” *Journal of Marketing* 65(2), 35–53.
- Schaper, M. (2002). “Small Firms and Environmental Management,” *International Small Business Journal* 20(3), 235–249.
- Sharma, S., and H. Vredenburg (1998). “Proactive Corporate Environmental Strategy and the Development of Competitively Valuable Organizational Capabilities,” *Strategic Management Journal* 19(8), 729–753.
- Sharma, S., J. A. Aragón-Correa, and A. Rueda-Manzanares (2007). “The Contingent Influence of Organizational Capabilities on Proactive Environmental Strategy in the Service Sector: An Analysis of North American and European Ski Resorts,” *Canadian Journal of Administrative Sciences* 24(4), 268–283.
- Shrivastava, P. (1995). “The Role of Corporations in Achieving Ecological Sustainability,” *Academy of Management Review* 20(4), 936–960.
- Simpson, M., N. Taylor, and K. Barker (2004). “Environmental Responsibility in SMEs: Does It Deliver Competitive Advantage?” *Business Strategy and the Environment* 13(3), 156–171.
- Stone, G., M. Joseph, and J. Blodgett (2004). “Toward the Creation of an Eco-oriented Corporate Culture: A Proposed Model of Internal and External Antecedents Leading to Industrial Firm Eco-orientation,” *Journal of Business & Industrial Marketing* 19(1), 68–84.
- Stone, G. W., and K. L. Wakefield (2000). “Eco-orientation: An Extension of Market Orientation in an Environmental Context,” *Journal of Marketing Theory & Practice* 8(3), 21–31.
- Teece, D. J., G. Pisano, and A. Shuen (1997). “Dynamic Capabilities and Strategic Management,” *Strategic Management Journal* 18(7), 509–533.
- Tilley, F. (1999). “The Gap between the Environmental Attitudes and the Environmental Behavior of Small Firms,” *Business Strategy and the Environment* 8(4), 238–248.
- (2000). “Small Firm Environmental Ethics: How Deep Do They Go?” *Business Ethics: A European Review* 9(1), 31–41.
- Verheul, H. (1999). “How Social Networks Influence the Dissemination of Cleaner Technologies to SMEs,” *Journal of Cleaner Production* 7, 213–219.
- Walley, L., and D. Taylor (2002). “Opportunists, Champions, Mavericks? A Typology of Green Entrepreneurs,” *Greener Management International* 38, 31–35.
- Williamson, D., and G. Lynch-Wood (2001). “A New Paradigm for SME Environmental Practice,” *The TQM Magazine* 13(6), 424–432.
- Worthington, I., and D. Patton (2005). “Strategic Intent in the Management of the Green Environment within SMEs: An Analysis of the UK Screen-Printing Sector,” *Long Range Planning* 38, 197–212.



## *Appendix* Operationalization of Constructs

<b>Constructs</b>	<b>Item Code</b>	<b>Item Description</b>	<b>Source</b>
Regulatory Framework	RFR1	Government regulations have influenced very much our firm's environmental strategy.	Banerjee, Iyer, and Kashyap (2003)
	RFR2	Environmental legislation affects the growth of our firm.	
	RFR3	Strict environmental regulations is a major reason for our firm to worry about its impact on the environment.	
	RFR4	More strict regulations are required so that environmental responsible firms to be able to grow and survive.	
	RFR5	The environmental efforts of our firm can determine future environmental legislation for our industry.	
	RFR6	Our industry is influenced by strict environmental regulations.	
Environmental Public Concern	EPC1	The public worries too much about the destruction of the environment.	Banerjee, Iyer, and Kashyap (2003)
	EPC2	The public worries more about the economy rather than the protection of the environment (R).	
	EPC3	The public shows great concern for environmental issues.	
	EPC4	Our customers consider the protection of the environment as a critical issue facing the world nowadays.	
	EPC5	Our customers increasingly demand products and services that are friendly to the environment.	
	EPC6	Our customers expect our company to be friendly to the environment.	
	EPC7	Our stakeholder (e.g., banks, suppliers) consider environmental protection a critical issue facing the world.	
	EPC8	Our stakeholders are increasingly pressing our firm to produce goods friendly to the environment.	
	EPC9	Our stakeholders expect from our company to be friendly to the environment.	

## *Appendix Continued*

<b>Constructs</b>	<b>Item Code</b>	<b>Item Description</b>	<b>Source</b>
Competitive Intensity	CIN1	Firms in our industry spend a large part of their sales on marketing efforts because of growing competition.	Sarin and Mahajan (2001)
	CIN2	In our industry, companies firms compete fiercely in order to maintain their market share.	
	CIN3	The competition in our industry is intense.	
	CIN4	Firms in our industry follow a philosophy of peaceful coexistence (R).	
Market Dynamism	MDY1	The production technology in our market has changed in the last three years.	Baker and Sinkula (2005)
	MDY2	The level of competitive intensity in our industry is high.	
	MDY3	The rate of market change in our industry is high.	
Eco-friendly Orientation	EFO1	The environmental issues are very relevant to the basic function of our company.	Fraj-Andres, Martinez-Salinas, and Matute-Vallejo (2009)
	EFO2	In our firm, we put an effort in making each employee understand the meaning of environmental protection.	
	EFO3	We try to promote environmental protection as the objective of all departments in our company.	
	EFO4	Our firm has a clear policy to promote environmental conscious in all business areas.	
	EFO5	Environmental protection is a top priority issue in our company.	
	EFO6	The protection of the environment is a central value in our company.	
	EFO7	The natural environment has an impact on the business activity of our firm.	
	EFO8	The good financial situation of our firm depends on the condition of the natural environment.	
	EFO9	In our firm, the protection of the environment contributes to a great extent to maintain its good image.	
	EFO10	Environmental protection is of vital importance for the survival of our firm.	
	EFO11	Our firm tries to have the image of an environmentally responsible organization.	

## *Appendix Continued*

<b>Constructs</b>	<b>Item Code</b>	<b>Item Description</b>	<b>Source</b>
Financial performance	FIP1	Profits	Leonidou et al. (2013)
	FIP2	Profit growth	
	FIP3	Return on assets	
	FIP4	Return on investment	
	FIP5	Sales	
	FIP6	Sales growth	
	FIP7	Cash flow	
Organizational Resources	ORE1	Our firm has made investments in the production processes that are related to environmental skills.	Buyse and Verbeke (2003)
	ORE2	Our firm has made investments in the environmental abilities of its employees.	
	ORE3	Our firm has made investments in developing the environmental skills of the top management.	
	ORE4	Our firm has made investments in organizational abilities that are related to environmental issues.	
	ORE5	Our firm has made investments in research and development that are relevant to environmental issues.	
Organizational Capabilities	OCA1	Our firm has the ability to seek solutions for environmental issues from different angles.	Sharma, Aragón-Correa, and Rueda-Manzanares (2007)
	OCA2	Our firm pays great attention in satisfying customer demands.	
	OCA3	Our firm focuses on having at its disposal pioneering, flexible, and innovative technologies.	
	OCA4	In our firm, the managers and employees always agree to adopting the right environmental procedures.	
	OCA5	In our firm, there are formal/informal systems for better coordinating green issues among departments.	
	OCA6	Our firm always expands its knowledge regarding the interaction between business and physical environment.	

Note: The sign (R) indicates a reversed scale.

Measurement scales were based on a 7-point Likert scale, ranging from 1: strongly disagree to 7: strongly agree.