

Why do Firms Implement Voluntary Environmental Actions and How Are These Activities Evaluated? An Empirical Investigation in Mexico

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Abstract

Since green sustainability is obviously challenging to all companies, a clearer understanding of the perceptions of industry practitioners will assist those actors—government, industrial and civil associations and non-governmental organizations—interested in supporting green actions to inspire new ways of improving compromise and participation of private firms in the solution of the environmental problem. The objective of this work was to identify specific drivers and potential barriers to green actions perceived by firms operating in a developing economy like Mexico. Multinationals, Mexican firms with international operations, and Mexican firms with local operations were considered for this study in order to contrast their motivations, inhibitors, and indicators of environmental performance. A qualitative approach was used to collect information about 34 firms. The main driver of green practices was social responsibility for the environment while the principal inhibitor was the low environmental consciousness of the market. Differences between the distinct types of firms are discussed.

Keywords: voluntary environmental practices, drivers, barriers, environmental performance indicators, ecological responsibility, Mexico

1. Introduction

Corporate environmental practices have evolved from conformance with environmental regulations and mandated responsibilities to cooperative and proactive actions to improve the firm's environmental and business performance (Moon & Leon, 2007). According to Darnall and Carmin (2005), the implementation of voluntary environmental (VE) actions sends a "signal" to consumers, business partners, and authorities that a company is doing something to prevent the deterioration of the environment. This signal not only provides information about the firm's ecological activities but also contributes to reinforce its reputation. However, the realization of VE activities does not necessarily have a significant environmental impact. Even well-structured voluntary environmental programs (VEPs) may be weak in terms of environmental performance; and, in some extreme cases, may create opportunities to block stronger regulations (Lyon & Maxwell, 1999).

Environmental protection in developing economies is a significant challenge for several reasons. Among these reasons, Rao et al. (2009) identified the following: (1) lack of environmental awareness among individuals and enterprises, (2) continuous pressure for economic growth, and (3) lack of resources (financial and technical) to implement pro-environment programs. Despite the fact research on environmental management has resulted in a meaningful body of knowledge, several research questions still require a deeper understanding. Among them is why private firms decide to implement ecological strategies? This question is relevant for the design of policies and voluntary programs that protect the environment and are in alignment with the organization's drivers (Bansal & Roth, 2000; Leonidou & Leonidou, 2011).

The serious pollution registered in several Mexican regions -Mexico City was a critical case- during the 1990s, along with strong pressure from green organizations and civil society, led to several changes. The most significant ones were: the formulation of federal laws (General Law of Ecological Equilibrium and Environmental Protection published in 1988), the creation of national institutes to support environmental policy (National Institute of Ecology, INE in 1992, and the Ministry of Environment, Natural Resources and Fishing SEMARNAP in 1994), the participation of state and municipal governments in the establishment of regulations, and the emergence of environmentalist groups (Micheli, 2002; Barkin, 2004). These elements created the basis of a cooperative model of sustainable development where government, society, and private enterprises support and participate in critical decisions about the environment. Even though these actions have contributed to cooperation between public and private organizations and the implementation of available technologies to reduce industrial pollution, their environmental impact is questionable (Barkin, 2004). However, there is still too much work to do in terms of environmental policies and use of clean technologies. The particular cases of generation of energy and protection of ecosystems require particular attention.

Energy (electricity) generated in Mexico mainly comes from fossil-fueled power plants (Secretaría de Energía, 2013; US Energy Information Administration, 2014), less than 4% of the energy is produced from non-hydro renewable plants (geothermal and biomass) or comes from solar and wind sources (see table 1). Industries are major consumers of energy, the industrial sector consumes 59% of the energy, 37% of this percentage is used by medium-size companies and 22% by large industries (Secretaría de Energía, 2013). Given this information, an increase in the use of renewable energies plus a reduction in the energy consumption by the industrial sector, may contribute to decrease the pressure on the use of natural resources.

Table 1. Energy production in Mexico per source

| Source of energy | % |
|-----------------------------|----|
| Natural gas | 50 |
| Fuel Oil | 18 |
| Coal | 13 |
| Hydarulics | 12 |
| Other (nonhydro renewables) | 4 |
| Uranium | 3 |

Source: Secretaría de Energía (2013).

In the case of ecosystems, Mexico is considered among the twelve countries with the highest biological diversity; the country contributes with 10-15% of the world diversity. Unfortunately, Mexico faces severe degradation of its ecosystems due to large urban developments, pollution, inefficient agricultural practices and over-exploitation of natural areas. In 2002, the Ministry of Environment (Secretaría del Medio Ambiente, 2002) reported 15 species of plants and 32 of vertebrates have extinct in Mexico, representing 5.2% of the total extinctions in the world in the last 400 years. This loss of biological resources has not been properly recognized by the society; citizens and private firms have a relatively low consciousness about the importance of ecosystems to human subsistence and have done little to contribute to its conservation.

The objective of this study was to explore (a) the current motivators (and inhibitors) of firms operating in a developing context like Mexico to adopt voluntary environmental practices and (b) how they self-evaluate their results. Understanding what motivates/inhibits progress toward more effective green practices is relevant in attempts to outline actions that encourage private firms to make a more significant contribution to environmental protection. Researchers in other developing regions (Krnjakovic, 2003; Lee, 2009; Zhou, 2009; Liu et al., 2012) have addressed these research objectives, but in this study firms with different degrees of market coverage were considered: multinationals (MNS) operating in Mexico that serve the global market, Mexican firms with international operations, and Mexican firms with only a local presence. The comparison among these different types of firms represents an opportunity to categorize the ecological motivations of firms that depend on their international presence and need to comply with international regulations.

This paper starts with a discussion of theories used to explain environmental actions; followed by a section addressing the factors that influence voluntary green practices and the metrics used to evaluate environmental performance. The third section describes the methodology used to collect and analyze information from multiple firms with different profiles that are currently operating in Mexico. The next section presents results and

discusses the main findings, and the final section provides conclusions, managerial implications, study limitations, and suggestions for future research.

2. Theoretical Background

Three main theories have been applied to explain the voluntary deployment of environmental actions: stakeholder theory, resource-based theory, and institutional theory. Stakeholder theory has been used to explain why firms implement corporate social responsibility (CSR) policies (Jamali, 2008) that include green actions (Polonski et al., 1998; Defee et al., 2009). The core of this theory is that firms respond to the interests of multiple stakeholders: consumers, government, investors, supply chain partners, non-governmental organizations (NGOs), employees, and society. Consequently, organizations must balance the economic, social, and environmental objectives of these actors, whose values and expectations influence the organization's decisions regarding the creation of value (Moir, 2001). Environmental protection is a fundamental constituent of CSR that promotes voluntary green practices to satisfy shareholder expectations and contribute to the firm's reputation, making it more appealing to employees, customers, suppliers, and communities (Williamson et al., 2006). Ecological responsibility as a component of CSR may be viewed as a compromise with social welfare that drives green actions based more on ethical and social criteria than on economic principles or self-interest (Bansal & Roth, 2000).

Resource-based theory identifies green strategies as a means to improve long-term profitability, promote competitiveness, and deal with the inefficient use of resources. Given the increasing concern about environmental deterioration, those firms with the ability to facilitate sustainable economic activity will develop unique capabilities that improve their environmental performance, resulting in better business performance and sustained advantage (Sharma & Vredenburg, 1998; Moon & Leon, 2007; Rao et al., 2009). Voluntary environmental activities can help firms to achieve not only waste/efficiency cost savings in the short term but also to sustain or acquire a green reputation. This last point is especially important for those firms with closer contact with the final consumer, increased market scrutiny, and a global presence (Moon & Leon, 2007; Mollenkopf et al., 2010).

Institutional theory, on the other hand, states that organizations are susceptible to institutionalize values and expectations; their stability and legitimacy depend on the extent to which they conform to current institutional norms (Moon & Leon, 2007). The firm's decisions and choices are constrained and influenced by social behaviors, norms, and values. According to institutional theory, organizations need to respond to three pressures, classified by Lee et al. (2013) as internal or external. Normative pressure is an internal driver that results from the influence that environmental education, beliefs, and values of managers and employees have on the adoption of green practices. Coercive and mimetic pressures are external drivers. Coercive pressures are the result of legal standards; under this pressure, environmental actions are deployed to avoid fines and penalties, minimize environmental risks, and assure preservation of revenues and reputation (Bansal & Roth, 2000; Dangelico & Pujari, 2010). The second external driver, mimetic pressure, refers to the imitation of green actions carried out by competitors. When the business environment is uncertain, firms tend to use benchmarks and implement general green practices without considering their potential benefits, but rather as a response to the competitiveness of their markets (Jennings & Zandbergen, 1995).

The influence of multiple stakeholders on a policy of environmental responsibility, the attainment of a competitive market position, and the interest to obtain legitimacy with multiple institutions comprise a set of internal and external drivers whose influence has been studied by several authors, as described in the following section.

2.1 Drivers

Drivers are those factors that motivate firms to engage in green activities; Langerak et al. (1998) classified them as internal or external to the firm. External drivers include:

(a) The pressure of consumers. Consumers with a higher environmental consciousness expect private firms to implement voluntary green actions to satisfy their demands (Kleindorfer et al., 2005, cited in Cronin et al., 2011). These consumers exert social power and coerce firms to adopt green practices (Lee et al., 2013). However, this consumer pressure does not necessarily have a significant impact on environmental performance, as demonstrated in the case of Malaysian firms (Zailani et al., 2012).

(b) The competitive intensity of the business sector that encourages firms to differentiate their products to serve the green market (Dangelico & Pujari, 2010) and/or build a green image (Chen, 2010). Environmental protection may be viewed as an opportunity to redefine the current strategy according to the sustainable development

concept. Competitively driven firms will adopt more pro-active green practices and attain a series of benefits as outcomes of their actions: technology innovation, cost efficiency, improved image, and market extension. Sharma and Vredenburg (1998) provided empirical evidence that firms with a proactive green strategy develop unique valuable capabilities that put them in a better position to effectively compete in their markets.

(c) The regulatory intensity of environmental norms. The influence of governmental regulations in promoting the adoption of green initiatives has been studied in several settings. In the case of developing countries, Zhou (2009) argued that Chinese central government legislation influences in the environmental behavior of small and medium-sized enterprises (SMEs). Another study in China, conducted by Liu et al. (2012), concluded that the main motivation for green practices among industries in the building sector is regulation because this let firms “obtain countenance and incentives from the government.” The influence of stricter environmental laws in developed countries has also been studied. For example, Canning (2006) concluded that European legislation on management of electronic waste (WEEE, Waste Electrical and Electronic Equipment) influenced the recovery of cellular phones in the United Kingdom. Even though legislation has an external coercive influence on a firm’s environmental behavior its effectiveness may be moderated by the organization’s resistance, drivers, and inhibitors. Some firms will limit their efforts to satisfy local regulations, avoid negative effects, or gain access to benefits (e.g., tax reductions) (McDaniel & Rylander, 1993; Williamson et al., 2006).

(d) The greening of the supply chain. The pressure of supply chain partners is a main driver for the greening of SMEs in developing regions like China (Zhou, 2009), the Philippines (Rao, 2007), and South Korea (Lee, 2008). Firms in developing regions are required to improve their environmental performance to be considered as potential suppliers by large MNS committed to green sourcing (Rao, 2007; Rao et al., 2009). The pressure of critical buyers can even result in more proactive environment-friendly practices than regulations (Zhou, 2009). The implementation of green practices with key suppliers is recognized as a good starting alternative to generate environmental awareness across the chain (Turner and Houston, 2009; Mollenkopf et al., 2010).

(e) The environmental activism of non-governmental organizations (NGOs) and civil associations. The intervention of ecological groups is relevant in promoting innovation and adoption of clean technologies, the rational use of resources, and the implementation of green certifications monitored by third parties (Gereffi et al., 2001). Krnjakovic (2003) studied the influence of media, public opinion, and green organizations on the environmental actions of Croatian firms. Those firms that have incorporated ecological elements into their strategy think all these groups have significantly influenced their strategies; these firms maintain collaborative and trusting relations with ecologist groups and local communities. In contrast, reactive firms think environmentalist groups block their business operations and affect their revenues; such a “bad” attitude results in opposition and low credibility (Sharma & Vredenburg, 1998).

Langerak et al. (1998) and other authors have identified the following internal motivators:

(a) The environmental consciousness of critical internal stakeholders (owners, management, and employees). Stakeholders with environmental education and expertise exert a normative pressure to initiate an ecofriendly process that results in increased environmental awareness among employees (Moon & Leon, 2007). These internal stakeholders can support the firm in its development of more ecologically sensitive products and the implementation of internal actions; however, their influence on ecological decisions is low (Bansal & Roth, 2000; Rivera-Camino, 2007).

(b) Cost reduction and profitability improvement through resource reduction or substitution of materials and inefficient technologies (Bansal & Roth, 2000). Firms driven exclusively by cost and profitability will attempt to improve economic business performance over environmental performance by adopting only those practices that result in visible paybacks. This driver seems to be particularly relevant to SMEs, which, given their tight economic resources, circumscribe their environmental response to a cost-based framework (Williamson et al., 2006; Dahlmann et al., 2008). Economic motivations are a dominant driver of VE practices even among firms operating in a developed context, resulting in a short-term perspective of ecological policies and non-innovative solutions with limited environmental impact (Dahlmann et al., 2008).

(c) Demonstration of ecological responsibility by subscribing to a triple-bottom model based on economic, social, and environmental objectives (Rashid, Rahman & Khalid, 2014; Kleindorfer et al., 2005, cited in Cronin et al., 2011). Ecological responsibility is a self-enforcing mechanism oriented towards business sustainability and the construction of a social reputation; then, only those firms with well-established CSR policies and concerns about their market image will embrace green practices because they think doing so is their obligation as social citizens.

2.2 Barriers

Firms that decide to implement green actions can face several barriers. For example, Zhou (2009) reported that Chinese SMEs require more financial and technological assistance from supply chain partners and international organizations to improve current ecological practices. Liu (2012) reported the cost of modifying and controlling manufacturing operations to reduce their impact on the environment as the main barrier for green practices among firms in the building sector. The other two obstacles identified within this sector were difficult in meeting the criteria for environmental certification and lack of experience with green activities. The limited resources (economic, human, information, and experience) available to SMEs represent a pervasive critical barrier for the management of environmental actions in different countries, even for those with higher environmental awareness (Dahlmann et al., 2008; Lewis and Cassells, 2010; Chkanikova & Mont, 2011).

Setthasakko (2009) used a qualitative approach to gain an understanding of the primary barriers to environmental responsibility among Thai companies in the frozen seafood industry. Three primary barriers were identified: lack of a system perspective on sustainability, absence of top management commitment, and cultural diversity. System perspective refers to an outlook that emphasizes economic performance over environmental performance and sustainable development. The last barrier, cultural diversity, points out the problem of employee involvement in the midst of different beliefs, concerns, and values about environmental issues, circumstances that can lead to information distortion, misinterpretation, and low internal support for the firm's greening actions. Cultural issues at the country level have also been identified as barriers for greening actions among European food retailers. The cultural background and limited environmental consciousness of the country in which the firm operates hinder environmental practices and result in low demand for ecological products (Chkanikova & Mont, 2011). This situation is worsened when economic conditions push firms and consumers to put economic objectives over environmental protection (Lewis & Cassells, 2010).

2.3 Evaluation of Voluntary Environmental Practices

The effect of VE practices on the environment is questionable given the difficulty of measuring their actual contribution. Some of the benefits reported are ambiguous and hard to evaluate; for example, UK companies surveyed by Dahlmann et al. (2008) cited as benefits the incremental improvement in employee awareness and motivation on environmental issues. Korhonen (2003) suggested the integration of non-financial measures to evaluate environmental efforts. This author recognized the importance of using an approach based on the consumption and waste of physical materials and energy along the whole life cycle of a product. This approach is a valuable tool to support decisions about how to reduce the environmental impact. Krnjakovic (2004) proposed compliance with technical environmental standards—either legal or established by green certifications such as ISO 14000—as a basic measurement of environmental execution. Certification standards include control and reduction of pollutants, efficiency in the use of resources, cleaning and treating of waste, and recycling and by-product reuse. These indicators may be complemented with investments and research on environmental protection.

Rao's (2009) study is one of the few that developed a detailed metric for evaluating and monitoring VE practices. The proposed metric is designed after the framework of the Federal Environmental Ministry in Bonn and the Federal Environmental Agency in Berlin. Environmental performance indicators correspond to two classes: input indicators and output indicators. Input indicators refer to the consumption and cost of materials, water, and energy while output indicators consider the total waste, recycling, and reuse rates of resources as well as the amount of air emissions and hazardous materials. The original indicators were grouped into four factors associated with environmental outcomes (cleaner production, greening of suppliers, green marketing, and outbound logistics) and implementation of advanced ecological initiatives. Structural equation modeling showed that environment management decisions lead to specific green initiatives that significantly affect environmental performance. Superior ecological results contribute significantly to business performance, which in turn influences competitive advantage.

3. Method

3.1 Research Design

A qualitative approach based on multiple case studies was adopted as the method of empirical inquiry for two reasons: (1) The purpose of the research was to obtain an in-depth understanding of what drives or inhibits the adoption of voluntary environmental practices among firms operating in Mexico, and (2) the phenomenon under study is embedded in the organizational context (Yin, 2003). The use of the case method allows the researcher to answer "what" and "how" questions: What are the drivers/barriers for the implementation of green practices?

How are these practices assessed? Comparative case studies of organizations with different market coverage facilitate the identification of patterns among firms with different profiles.

3.2 Selection of the Unit of Analysis

The study was carried out among firms operating in the State of Mexico. The interest in this particular region is due to the outstanding size of its population and industrial activity. The state is the first one in terms of number of industrial areas, 63 industrial parks or areas are located in the state corresponding to 18% of the total industrial zones of Mexico. The manufacturing industry of the state contributes with near 16% of the national industrial production; the most relevant industrial sectors include automotive, foods, textiles and clothes, chemical and pharmaceutical products (Gobierno del Estado de México, s.f.). This high industrial activity results in higher pollution levels in comparison with other states of the country. The State of Mexico is among the five states with the highest proportions of air emissions and number of sites with polluted soils (Querétaro, 2o. estado más contaminado del país, December 30, 2013).

In-depth interviews with executives and managers of 34 companies allowed the collection of extensive and detailed information to guarantee a rich accumulation of data from which draw meaningful inferences. The choice of companies was mainly based on their commitment to the environment; only firms with a current green program announced on its Web page or open documents were considered. Secondary sources of information, Web sites and public environmental reports describing the environmental activities of the companies, were also analyzed. In some cases (eight), two executives were interviewed. The use of diverse information sources allows researchers to triangulate information to increase the validity of results. Multinationals and Mexican organizations with foreign and local operations were selected to make comparisons: (1) between firms responding to global regulations (MNS and Mexican firms with international operations) versus firms that only attend to local expectations and (2) among firms with different corporate cultures (MNS and Mexican). The final selection of companies was made after checking that firms were of different sizes and from different sectors.

A general description of the companies in the study is provided in Table 2; specific company names were omitted to maintain the companies' confidentiality. The size of the company was established in terms of Mexican standards based on the number of employees; 22 of the companies are in the consumer market, 5 in the industrial market, and the remaining 7 serve both: the business-to-business (B2B) and business-to-consumer (B2C) markets.

Table 2. Profile of the companies studied

| Company, origin of capital | Sector of activity | Size (number of employees) | Role of interviewee |
|-----------------------------|---|----------------------------|------------------------------------|
| A1 Mexican local | Service, recycling of electronic waste | Small | Owner |
| A2 Mexican local | Service, restaurant franchise | Large | Customer service and sales manager |
| A3 Mexican local | Service, solar thermal and electricity provider | Small | Customer service and sales manager |
| A4 Mexican local | Service, restaurant | Small | Owner |
| A5 Mexican local | Commerce, pet products | Large | Sales manager |
| A6 Mexican local | Service, technical services | Small | Sales manager |
| A7 Mexican local | Commerce, garden products | Small | Project manager |
| A8 Mexican local | Industry, manufacturer of green products | Small | Sales manager |
| A9 Mexican local | Service, expo and conference coordinator | Small | Director |
| A10 Mexican local | Industry, manufacturer of disposable containers | Small | Operations and logistics manager |
| A11 Mexican local | Service, communication | Large | Communication manager |
| B1 Mexican international | Commerce, sustainable energy systems | Large | Environmental/marketing advisor |

| | | | |
|-----------------------------------|---|-------|---|
| B2 | Industry, beverage manufacturer | Large | Social responsibility manager |
| Mexican international | | | |
| B3 | Industry, beverage manufacturer | Large | Social responsibility manager |
| Mexico international | | | |
| B4 | Industry, food manufacturer | Large | Marketing manager |
| Mexico international | | | |
| B5 | Industry, building materials manufacturer | Large | Human resources manager |
| Mexico international | | | |
| B6 | Industry, poultry producer | Large | Sales manager |
| Mexico international | | | |
| B7 | Industry, auto parts manufacturer | Large | Operations manager |
| Mexico international | | | |
| C1 | Industry, manufacturer of chemical products | Large | Public relations manager; Operations manager |
| Germany | | | |
| C2 | Service, restaurant franchise | Large | Sales manager |
| USA | | | |
| C3 | Industry, auto parts manufacturer | Large | Production systems manager |
| France | | | |
| C4 | Industry, personal care products manufacturer | Large | Corporate analyst; Managing director |
| Brazil | | | |
| C5 | Industry, manufacturer of electronic products | Large | Sales manager |
| USA | | | |
| C6 | Industry, automaker | Large | Technical trainer |
| Germany | | | |
| C7 | Industry, food and beverage manufacturer | Large | Brand manager; Chief executive officer |
| USA | | | |
| C8 | Industry, software manufacturer | Large | Learning and development manager; Latin America marketing director |
| USA | | | |
| C9 | Industry, manufacturer of consumer goods | Large | Operations manager |
| USA | | | |
| C10 | Industry, pharmaceutical | Large | Marketing manager |
| USA | | | |
| C11 | Industry, manufacturer of consumer goods | Large | Corporate affairs director |
| United Kingdom and Netherlands | | | |
| C12 | Industry, electronic products | Large | Social responsibility manager; Environmental program executive |
| USA | | | |
| C13 | Commerce, retailing | Large | Sustainability manager |
| USA | | | |
| C14 | Service, transportation | Large | Customer service manager |
| Netherlands | | | |
| C15 | Industry, manufacturer of consumer goods | Large | Project manager |
| USA | | | |
| C16 | Industry, food and beverage manufacturer | Large | Marketing brand executive |
| USA | | | |

Interview transcripts were analyzed through the categorization and analysis of emergent concepts and ideas (Boyatzis, 1998), followed by the assignation of these concepts into three general motivators identified in the literature: economic, legitimacy, and social responsibility. These major motivators are closely linked to the theories used to explain why firms implement voluntary green practices -the resource-based view, institutional theory, and stakeholder theory- as the basis for CSR. Within each motivator, specific codes were derived after an exhaustive analysis of the interview contents. These codes were matched with the drivers reported in the literature, looking for differences between types of firms: multinational, Mexican with international operations, and Mexican local.

4. Analysis and Discussion of Results

4.1 Motivators and Barriers of Green Practices

The motivations enterprises have to implement different green activities are summarized in Table 3.

Table 3. Motivations and drivers of voluntary environmental actions

| Motivation | Drivers | Exemplary Quotes |
|-----------------------|---|--|
| Economic | Consumer environmental demands (development of the green market) | Our segment of consumers [green consumers] has grown and diversified, therefore our enterprise is customizing each product to serve the unique needs of the segment (A3, Mexican local) First of all there is [consumer] consciousness, at this time we prefer biodegradable, in other words this consciousness lead to demand (A5, Mexican local) |
| | Cost reduction or profitability increase | Through the efficient use of natural resources, the reduction of the emissions to the atmosphere and the minimization in the residual generation we get both benefits, ecological and economic (C1, multinational) It's a main issue to improve the productivity... [the investment in sewage treatment] solved some environmental problems but also represented important water savings and reduction in solid-waste treatment (B6, Mexican international) |
| | Improvement of competitive position through differentiation | This enterprise wants to be recognized each time as a greener firm and [distinguished] from others by developing products more ecological (C11, multinational) Being a green enterprise is very important and is taking into account by the consumer at the time to choose among options (C2, multinational) |
| Legitimation | Environmental regulations | The risk of penalties of course! Mainly is a question of government regulations. I know there are specific laws... very strict ecological regulations that force us to take the environment into consideration (B6, Mexican international) The new laws and norms, for example the use of land requires a study of ecological impact. But we also meet additional criteria to get the certifications of Social Responsible Enterprise and Ecological Enterprise which are important to lead firms (B5, Mexican international) |
| | Pressure of environmentalist organizations (NGOs, industrial/commercial/civil associations) | Society itself is forcing enterprises to be ecological (A1, Mexican local) I think that the influence of some social groups is critical and is something good because they trust us and even promote our products (A3, Mexican local) |
| Social responsibility | Ecological responsibility | We have adopted a triple bottom line model: being economically viable, socially responsible and environmentally right... [Our firm] is convinced that only those organizations able to understand the current challenges and implement a sustainable administration will make the difference in the future (C4, multinational) The government proposes initiatives and laws but our group goes further. We recognize individuals have an increased concern about the environment and support our [environmental] compromise ... we also have the support of universities and look for certifications that go beyond what is required in our industrial sector (B3, Mexican foreign) |
| | Influence of internal stakeholders | It's something that comes from the initial owners... they had a strong sense of social responsibility and the interest to preserve the environment (C12, multinational) The main motivation is the compromise of the members of the Board of Directors... return something to the environment in exchange of what we receive, then is a matter of a compromise with the society and the environment (B4, Mexican foreign) |

The most frequently cited motivator was ecological responsibility; this result contrasts with the findings of other studies that reported economic objectives as the main motivator. Almost all Mexican foreign and MNS enterprises mentioned that protection of the environment is part of their CSR policies. The second most important general driver was economic, in particular cost reduction and increased profitability. This second driver was more frequently cited by large firms with an international presence. Some MNS even declared that

green practices are adopted only if they represent an opportunity to reduce costs, as illustrated in the following statement:

We are a large multinational and [some] time ago [our corporative] began with green practices, then in some way we are obligated to implement that kind of practices, but ... only if they are profitable... there is a win-win situation [environment and enterprise] (C3, multinational)

These findings suggest that large corporations have been working more extensively to identify alternatives to link environmental and business performance while local Mexican firms are more motivated by legitimacy. The green practices of this last type of firm are driven by environmental regulations and social pressure, particularly the certification of governmental and non-governmental organizations. The influence of non-governmental environmentalist organizations is not exclusive to Mexican firms; multinationals also care about legitimacy in the eyes of social groups and industrial associations, as demonstrated in the following quotation:

Observance of the objectives of the International Air Transportation Industry, the pressure of the competitors, the pressure of NGOs, governments... (C14, multinational).

However, the fulfillment of Mexican laws does not seem to be a major driver for MNS. Some of these firms state that they are guided by global regulations, as in the following quotation:

Being a multinational requires fulfilling the regulations of several countries; we take them in account and go ahead Mexican rules (C8, multinational).

In the case of local Mexican firms, the second external motivator after legitimacy was economic; the specific driver was to serve the emerging market of ecological consumers. The relevance of this driver is attributed to the majority of these firms (7 of 11) being recent creations and being green represents an opportunity to serve a particular market niche. Improved competitive position was not cited as a specific driver because these are first-entrance companies in the markets of ecological/recycled products or alternative energy sources and services.

With respect to barriers to the implementation of green initiatives, Table 4 summarizes the main findings. Listed barriers correspond to those identified in the literature review.

Table 4. Barriers to green practices

| Type of firm | Barriers | Exemplary Quotes |
|-----------------|-----------------------------------|--|
| Multinationals | Financial | The economical investment, the price of R&D about green technologies (C14) |
| | Market environmental culture | It is difficult to get the participation and compromise of the consumers, to gain their interest in our green products and promotions (C2) |
| | Technical | Our team is working in understanding what is the best technology to use to maximize the cost/environmental benefit ratio (C7) |
| Mexican foreign | Financial | The money... there is a need to invest and maintain the [green] technologies adopted (B6) |
| | Market environmental culture | The perception of the people because they think green products are too expensive (B1) |
| | Technical | There are no clean packing technologies in the market that work for us (B4) |
| | Limited environmental perspective | The priority of this firms is to reduce costs then... our logistics efforts are mainly oriented to consolidation, selection of equipment, use of gasoline but we also include reduction of pollutants (B5) |
| | Management and employee support | Inside the firm there was too much apathy among employees... but eventually all areas are involved and proposing actions (B3) |
| Mexican local | Financial | The main barrier is capital availability...small firms have limited economical resources (A7) |
| | Market environmental culture | The challenge is to convince the customer to make the investment because it represents an environmental benefit (A6) |

Among multinationals (7 of 16), the most common barrier was the lack of an environmental culture in the market. Limited consciousness about environmental problems represents an inhibitor to the purchase of green products, the response to green promotions, and the participation in a firm's pro-environment activities like recycling. The

next barrier was technical (3 of 16 companies); for example, several multinationals recognize that more research on clean technologies is required.

In the case of Mexican firms, the two main barriers for those with international operations were financial and a poor environmental culture (three of seven in both cases). Investments in clean technologies and development of green products were judged high. Among Mexican firms with local market coverage, the main barriers to green practices were the low environmental culture of the market (5 of 11) followed by limited financial resources (2 of 11). Small new ventures particularly mentioned this last barrier.

Results indicate that the most relevant barrier for ecological practices, cited by all types of firms, was the poor environmental awareness of the Mexican market, which discourages ecological efforts and reduces the probability of deriving economic benefits.

4.2 Assessment of the Benefits of Green Practices

How firms determine the success of their green actions is relevant to (1) benchmark environmental activities' results against standards, (2) monitor and control environmental performance, and (3) identify areas needing improvement (Rao et al., 2009). In addition, evaluation is important to ensure that green practices have an actual impact on environmental protection. Table 4 describes the performance indicators used by Mexican firms classified in terms of main motivations for the implementation of green practices. Table 5 also identifies specific practices linked to each motivator and the strategy that, according to Rivera-Camino (2007), may be supported by such practices. These strategies are defined in terms of the management level that decided on the implementation of green practice and the functional span (specific area or process, several functional areas or facilities, the whole organization) of the practice.

Table 5. Environmental performance indicators for green practices

| | Motivations | | |
|------------------|---|---|--|
| | Economical | Legitimacy | Ecological responsibility |
| Green practices | Resource savings and waste reduction Use of alternate sources of energy Adoption of green technologies Process efficiency Development of the green market | Compliance with norms and regulations Green certifications Diffusion of green practices | A CSR policy which considers environmental protection Development of the environmental consciousness of the market R&D in ecological technologies |
| General strategy | Functional or tactical Quasi-strategic | Quasi-strategic | Quasi-strategic Strategic |
| Metrics | -Energy/water consumption (cost, amount) -Consumption/output ratio -Recyclable of materials ratio -Recycled waste ratio -Air emissions -Growth of the green market (% , number of customers, sales) -Return on investment | -International standards and indicators (example Water foot print) -Adoption of indicators stated in green certifications (example ISO 14000) -Activity in social networks (number of tweets, likes, etc.) | -Number and objectives of specific projects at the corporative level focused on environmental protection -Number of green products marketed -Number of products at the end of life cycle returned to the manufacturer for re-work or disposal |
| Quotations | -We have measured [our green actions] through the reduction in energy and water consumption... our new systems resulted in a 30% cost reduction (A4, Mexican local) -The firm uses several indicators... emissions of greenhouse gases, raw materials efficiency and disposal of packages. Several methodologies have been adopted to do the measurement (C4, multinational) -[With our green products] we are entering new markets like Guadalajara and Monterrey... we are also increasing our participation in the children market (A8, Mexican local) | -In 2011 in Mexico, 23 enterprises adopted a sustainability index. There is an external audit to qualify [how green] is an enterprise. We adhere to that index (B3, Mexican international) - [Use] of social networks is and indicator people are interested in green products. [The indicator] is the number of likes, tweets and answers sent (A10, Mexican local) | -Each year we develop and commercialize more green products with the purpose to attain the objective of our corporative Sustainable Plan. An example is the reduction in the packages of our deodorants which represents a 2000 tons reduction in plastic and also an economical saving (C11, multinational) -With the analysis of how many products are sold and then returned, this helps us to measure the results of our [global recycling] program (C5, multinational) |

Most of the indicators reported are economic (18 of 27). Mexican firms particularly use consumption rates and monetary indicators. Several of the firms did not report the use of environmental performance indicators; this circumstance was more frequent among Mexican organizations (36% of local and 29% of international firms). Indicators related to legitimacy motivators were the second most frequently used type, especially among multinationals (7 of 15 respondents). With respect to metrics linked to ecological responsibility, only multinationals reported the use of indicators aligned with the objectives of their corporation's strategic plans and CSR policies. The observed general poor alignment between indicators and motivators suggests that green practices are not well integrated into the firm's strategy but only implemented as an imitative (need to follow the environmental trend) or compliance (avoidance of legal penalties and negative public opinion) response.

5. Conclusions

The most common driver for the adoption of voluntary green practices identified in this study was ecological responsibility, followed by economic motivations. Economic reasons were most frequently cited by large corporations (multinationals and Mexican firms with international operations). Compliance with current regulations was more relevant for Mexican firms, especially those that only serve the national market. These results make evident firms' interests in satisfying the expectations of several stakeholders, including the government.

Even though ecological responsibility was cited as the major motivator, the indicators used by the majority of the firms to assess the results of environmental practices are economically oriented and mainly measured at the business unit level. Such indicators reveal that green practices are more oriented to business performance than to environmental performance, which should be the main interest from the perspective of ecological responsibility. Only those organizations with an explicit CSR policy reported the use of environmental indicators established in green certifications to evaluate their VE practices. Some of the multinationals interviewed have corporate ecological projects and the objectives and outcomes of such programs are used as environmental performance indicators.

Financial investment is perceived as an important barrier for the implementation of ecological projects in the case of Mexican firms, especially small local firms, but not for large firms (multinationals and some Mexican internationals). However, larger firms require a favorable cost/benefit ratio to justify their VE actions. For all interviewed firms, a major barrier to green practices is the poor environmental culture of the Mexican market. Environmental efforts and products are under-appreciated by consumers; therefore, green practices are more oriented to the eco-efficiency of internal business processes and the search for legitimacy. Despite the low ecological consciousness of the Mexican market, large enterprises communicate their green actions and provide ecological information and tips (social media are important tools) to individuals.

5.1 Practical Implications

Two managerial implications were unveiled by this study. First, Mexican environmental regulations, even though they are not as advanced as those in developed countries, are an important driver to engage in environmental practices. The regulations established by the Mexican General Law of Ecological Equilibrium and Environment Protection resulted in the implementation of anti-pollution measures by large firms, but smaller firms expressed great concern about the associated costs. These antecedents are consistent with the results of this research: Firms respond to environmental regulations, but the cost of anti-pollution and ecological projects is a relevant barrier for the implementation of actions that go beyond compliance. Policy makers should take this into account and offer support for the acquisition and development of cleaner technologies.

Second, the low environmental consciousness of the Mexican market is a major barrier for the implementation of green practices. Private, governmental, and non-governmental organizations should join forces to increase the environmental consciousness of the population so as to increase participation in ecological programs and to foster green purchases. An increase in public pressure will motivate industries to implement more innovative ecological practices and develop the green market.

5.2 Extension of Industrial Environmental Actions

The green practices of firms operating in the State of Mexico represent a limited benefit to the conservation and protection of the environment. Currently, the green practice with the most valuable benefit is the reduction of energy. The State of Mexico has the highest demand of electricity, and over 50% of this demand is generated by industries (Secretaría de Energía, 2013). However, additional actions may be deployed to reduce the impact of business activities on the environment.

For example, terrestrial and aquatic ecosystems suffer important transformations due to demographic, social, political, economical and industrial factors. The State of Mexico has a high biological diversity despite its area is only 1.1% of the national territory. To protect this diversity, several zones of the state have been declared Natural Protected Areas (NPA). The registered 84 NPA represent 922,300.17 ha and correspond to 42% of the total territory (Comisión Estatal de Parques Naturales y de la Fauna, 2014). The Ministry of Environment of the state has estimated the total number of species between 3 428 and 3 735. By 2001 two of these species were considered extinct, 17 in danger of extinction, 68 were classified as endangered and 97 have especial protection, for example, those living in NPA. The number of endangered species increased by 6.7% after 2001 resulting in an estimated total of 184 endangered species, from which nearly 10% are in danger of extinction (Secretaría del Medio Ambiente del Estado de México, 2002). While Pineda-Jaimes et al. (2008) observe a deforestation process in the State of Mexico that represents a potential risk for those areas with ecological fragility. There is a need to reduce the pressure that population and industries exert over natural resources to prevent further deterioration of ecosystems.

Several governmental actions have been implemented to attend the environmental problem. For example, the Ministry of Environment reports 24 programs of Conservation and Management of NPA. The goal of these programs is to protect and promote a rational use of the natural resources of all the NPA as well as to manage recreational services (includes the payment of ecosystem services) and prevent the establishment of human settlements in protected areas. Other governmental actions include the close observation of urban and industrial development plans and a cautious supervision of the territorial and ecological regulations. Industries need to actively support these governmental actions but also enhance their corporate environmental responsibility by developing a cooperation framework with other community actors (citizen groups, public organizations, local research institutions and consumers) in order to define a common regional environmental program based on the identification of weak points of current activities according to the four ecosystem principles suggested by Korhonen (2001).

5.3 Limitations and Future Research

This study is of an exploratory nature; therefore, the results cannot be generalized to the total population of enterprises operating in Mexico or to other developing economies. However, the study generated rich qualitative information that provides significant insights into why firms engage in green practices and how they assess their outcomes. Future quantitative research based on representative samples will be relevant to confirm these initial findings and to provide empirical evidence of the relationship between advanced green practices for environmental preservation and firms' competitiveness.

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