



Institutional distance among country influences and environmental performance standardization in multinational enterprises[☆]



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ABSTRACT

This research compares and contrasts the findings in Aguilera-Caracuel et al. (2013) with the outcomes of applying fuzzy-set qualitative comparative analysis (fsQCA) – a methodological strategy that gathers quantitative and qualitative information to explain complexity at the case level and generality across cases. Using the same sample of 128 multinational enterprises (MNEs) with headquarters and subsidiaries based in the USA, Canada, France, and Spain, we identify a set of relevant configurations of causes and conditions to explain environmental performance standardization. By avoiding separate treatments for each variable, which is typical in multiple regression analysis (MRA), we overcome prior limitations and propose a new way of understanding this phenomenon. In summary, our results significantly reinforce and complement the previous results.

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1. Introduction to the research question

Multinational enterprises (MNEs) characteristics include having different units (headquarters and subsidiaries) based in countries with their own institutional profiles (Kostova & Roth, 2002). As a result, MNEs may face challenges in strategically deciding whether their approaches in each country should be similar given the diversity of the countries and regions in which they operate (Christmann, 2004; Kostova et al., 2008). Other researchers propose that environmental differences between countries may generate incentives for maintaining differentiated approaches to reduce costs where possible, adopting a reactive posture based on complying with regulations to avoid sanctions and legal penalties (e.g., Chang & Rosenzweig, 2001; King & Shaver, 2001; Stewart, 1993; Surroca et al., 2013; Vernon, 1992). In contrast, other studies indicate that firms may prefer a standardized approach to reinforce credibility, legitimacy and transparency within their internal network (e.g., Christmann, 2004; Delmas & Montes-Sancho, 2011; Orlitzky et al., 2011; Rivera & deLeon, 2008).

These contradictory results may be because research pays special attention to the influence of national and international regulations (formal dimension) on MNEs' environmental strategies (e.g., Bansal, 2005; Christmann, 2004; Darnall, 2006; Delmas & Montes-Sancho, 2011; Henriques & Sadosky, 2008; King & Shaver, 2001; Rugman & Verbeke, 1998a, 1998b). In this vein, informal aspects may complement national institutional profiles (Aguilera-Caracuel et al., 2013; North, 1990). The informal dimension of national institutions includes values, beliefs, customs, traditions, and codes of conduct in each home country (Arslan & Larimo, 2010; North, 1990; Salomon & Wu, 2012). Salomon and Wu (2012) refer to informal institutions as cultural institutions. Other scholars explicitly account for the differences between normative and cognitive institutions (e.g., Kostova & Roth, 2002; Xu & Shenkar, 2002; Yiu & Makino, 2002). Thus, this dimension clearly captures the attributes of national culture (Hanges & Dickson, 2006).

In summary, few studies account for informal institutional elements at the country level as they relate to environmental issues (e.g., Aguilera-Caracuel et al., 2012; Darnall, 2006; Delmas & Montes-Sancho, 2011; Hoffman, 1999). In this sense, Aguilera-Caracuel et al. (2013) analyze the differentiated effects of the formal and informal institutional distances between home and host countries on the environmental performance of MNEs. By using multiple regression analysis (MRA), they report that a high informal environmental distance between home and host countries encourages the MNEs to standardize their environmental performance, whereas a high formal environmental distance drives the MNEs to adapt their environmental performance according to each country's institutional requirements.

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Through the use of the same sample and the same set of variables described in Aguilera-Caracuel et al. (2013), the aim of this research is to contrast the results of a fuzzy-set qualitative comparative analysis (fsQCA) with the results of previous studies. This innovative technique allows the researcher to generalize beyond the individual case while still identifying individual cases in specific models that are relevant to his/her investigation (Woodside, 2013; Woodside & Zhang, 2013). This technique provides the opportunity to detect the relevant configurations that guarantee a high performance in the outcome condition. We can then reinforce our results for some specific cases by demonstrating how the selected variables may explain environmental performance standardization within a MNE.

The article is organized as follows. The next section reviews the sample and variables. Section 3 states the main drawbacks that are derived from using MRA and focuses on explaining and applying the fsQCA to our data set. Section 4 summarizes the fsQCA results. Finally, the last two sections highlight the main conclusions and discuss the new results, comparing them with those previously obtained using MRA.

2. Data set

The sample and variables used in Aguilera-Caracuel et al. (2013) were also used in this study to better compare MRA results with the new results obtained from fsQCA. Although fsQCA is based on cases instead of variables, the information incorporated into the model may come from quantitative (or even qualitative) variables that have to be translated in terms of “belonging” or “membership”, a crucial concept in set theory. Note that some of the considered variables are dichotomous – which is not desirable when applying either technique – but this fact cannot be avoided in this study because of the definition of the measured characteristics and the availability of useful data.

2.1. Sample

MNEs that have headquarters based in the USA, Canada or France and subsidiaries in the USA, Canada, France, and Spain are the focus of this study. Public data from national environmental registries and private information from Standard & Poor's *Capital IQ* were used in this study (2009). In relation to the national environmental registries, the USA has free access to the Toxic Release Inventory (TRI), Canada has the National Pollution Release Inventory (NPRI), and Spain and France have the European Pollutant Emission Register (EPER).

The study examines three industries: chemical (SIC Code 28), industrial machinery (SIC Code 37), and energy and petroleum (SIC Code 29). The MNEs were selected using three criteria. First, the MNEs had to have at least one subsidiary based in one of the four countries analyzed. Second, those subsidiaries had to belong to the same industry and conduct the same activities as the headquarters. Third, the study excluded the facilities of the headquarters and subsidiaries (identified by using each national environmental registry) that do not focus on the core industrial activity (i.e., local sales, distribution centers, or centers with diverse activities).

The population of MNEs that comply with all of the requisites mentioned above consists of 191 MNEs, 285 cases and 2165 facilities. Because of missing data, the final sample was reduced to 170 cases that included 128 different MNEs and 1790 facilities. Among the headquarters, 73 are based in the USA, 35 are based in France, and 20 are based in Canada. Additionally, the sample includes 18 subsidiaries that are based in the USA, 69 that are based in Canada, 66 that are based in France, and 17 that are based in Spain. With respect to the industrial activities of the MNEs, 82 cases corresponded to the chemical industry, 58 corresponded to industrial machinery, and 30 corresponded to the energy and petroleum industry.

2.2. Variable description

By utilizing the variables that were used in Aguilera-Caracuel et al. (2013), we could incorporate reliable information into an fsQCA model. To use these variables, a calibration process was necessary (this step is described in Section 3.2.2).

2.2.1. Environmental performance standardization within the MNE (outcome)

To compute the variable that was the dependent variable in the prior MRA, the degree of similarity between headquarters' and subsidiaries' environmental performance was considered (the proxy refers to air releases). Similar to other studies that assessed the environmental performance of facilities and firms (e.g., King & Lenox, 2000, 2002; King & Shaver, 2001), the coefficient between the headquarters' and subsidiaries' air releases and their total revenues in 2005 (*Capital IQ*, 2009) was used to obtain a value that showed the environmental impact of each of the MNEs' organizational units (headquarters and subsidiaries), considering both sales during that year and the environmental impact associated with those sales. Environmental performance standardization within MNEs was calculated by subtracting the headquarter ratios from the subsidiary ratios, and the absolute values were considered for the analysis. Values that are close to zero imply that the MNEs standardize their environmental performance to the different areas where they operate.

2.2.2. Formal environmental distance between home and host countries

The “rule of law” variable (*World Economic Forum*, 2004) shows information that addresses aspects of environmental regulation: air pollution regulations, chemical waste regulations, clarity and stability of regulations, flexibility of regulations, environmental regulatory innovation, leadership in environmental policy, consistency of regulation enforcement, environmental regulatory stringency, toxic waste disposal regulations, and water pollution regulations. Using principal components of all survey questions included in the analysis, this dimension aggregated all of the aspects of environmental regulation that are mentioned above. The formal environmental distance between the countries in which the headquarters and the subsidiaries are located was calculated based on the absolute value of the differences between the scores of the two countries. In addition, the values of this variable were normalized.

2.2.3. Informal environmental distance between home and host countries

A multi-item indicator including secondary data was used to create a selection of four different environmental domestic variables: “waste recycling” (*Organization for Economic Cooperation & Development*, 2004; *United Nations Human Settlements Programme*, 2004), “practices related to the reduction of ecological footprint per capita” (*Ecological Footprint of Nations*, 2004), “private sector environmental innovation”, and “energy subsidy use” (*World Economic Forum*, 2004). The informal environmental distance between the countries was calculated based on the absolute values of the differences between the final score of this dimension in each country. The values of this variable were also normalized.

2.2.4. Headquarters and subsidiary size

According to King and Shaver (2001), the size of MNEs is measured using the Neperian logarithm of the number of employees in 2005. Because MNEs have a set of different organizational units (headquarters and subsidiaries), we considered two different variables for each MNE of our sample: headquarters size and subsidiary size.

2.2.5. Industry

To consider the possible effects of the three different industries in the sample, two dummy variables were created: chemical industry and energy and petroleum industries (*Christmann & Taylor*, 2001).

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