



The impact of national culture on corporate adoption of environmental management practices and their effectiveness

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ABSTRACT

National culture matters in business as it affects managerial attitudes, values, behaviors, and efficacy in organizations. It contributes to our understanding of environmental management issues as well. Previous studies investigating the link between national culture and environmental performance had mixed findings as they overlooked the intervening mechanism between the two—firm environmental management practice (EMP) adoption. This paper considers the missing link, lays out a complete theoretical framework, and empirically tests the effects of national culture on firm EMP adoption and EMP effectiveness. The analysis uses data collected during the 5th round of the Global Manufacturing Research Group (GMRG) survey, Hofstede cultural dimensions, and World Bank Database. Hierarchical linear models (HLMs) using the Bayesian Markov chain Monte Carlo (MCMC) approach are employed to examine the cross-level relationships in the framework. The study finds out that certain cultural traits are significantly related to corporate EMP adoption and how effectively EMPs are implemented after adoption. The study provides meanings insights into the role of national culture in the context of environmental management.

1. Introduction

Globalization is a double-edged sword that has been credited with improving standards of living (Fuller and Geide-Stevenson, 2003; Lawrence et al., 1996; Park et al., 2007), but also has been blamed for environmental degradation (Figge et al., 2017). Questions like whether globalization and environmental sustainability can co-exist bewilder environmentalists and researchers (Grossman and Krueger, 1995). Globalization also poses new challenges to environmental management because of national cultural differences (McLaughlin and Fitzsimmons, 1996). The well-known examples of Nike and Apple (Guthrie, 2012) can be seen as a clash of national cultures with regard to how they view sustainability.

Concern for environmental issues by government policymakers, industrial associations, and consumers varies across countries as national culture shapes their environmental attitudes and values and influences how they desire natural resources to be utilized (Husted, 2005; Park et al., 2007). This causes differences by country in the rate sustainability is adopted. For example, the diffusion of ISO 14000 has

shown significant variation by country (Vastag et al., 2004). While the importance of the relationship between national culture and environmental management is appreciated by researchers, our understanding of how these two dynamics interact remains weak (Wu et al., 2014). As sustainability is becoming a factor in valuation (Koller and Bailey, 2017), companies are more active than ever in pursuing sustainability (Song et al., 2016; Bové, D'Herde and Swartz, 2017). It is thus time for companies to understand the substantial impact of national culture on environmental management so that they can better achieve their environmental goals.

In the extant literature, the findings with regard to the associations between national cultural dimensions and sustainability performance are often equivocal. For instance, power distance has been reported to have negative (Husted, 2005; Park et al., 2007), positive (Ho et al., 2012), and non-significant (Hackert et al., 2012) associations with firm sustainability performance. These equivocal findings in the literature likely indicate the presence of an important intervening mechanism that these studies have overlooked. National culture as a deep-rooted country-level force will assert itself in green decision making to

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influence the level of corporate environmental investments (Rungtusanatham et al., 2005; Wiengarten et al., 2011). The current study thus proposes that national culture does not influence firm environmental performance directly; instead, *the level of corporate EMP adoption* is a missing link that mediates between national culture and environmental performance.

As Jung et al. (2008) noted, as a multinational corporation implements a new innovation campaign at its worldwide operations, varying degrees of success can be reported because of the effect of national culture. Azadegan et al. (2018) also mentioned that implementation of world-class managerial practices is influenced by national context, of which national culture is an important component. National culture is therefore not only related to the decision to adopt EMPs, but also the implementation of EMPs. There is a large body of literature that studies organizational management practices and their effectiveness in different cultures (e.g., Jaeger, 1986; Newman and Nollen, 1996; Flynn and Saladin, 2006; Kull and Wacker, 2010; Kull et al., 2014; Wong et al., 2017). These studies provide consistent evidence that national culture affects not only organizational management practices adoption but also how effectively they are implemented in different cultures. Surprisingly, the impact of national culture on firm EMP effectiveness is still unknown in the literature. This paper thus sets out to answer the research question of how national culture is related to firm environmental management, in terms of EMP adoption and EMP effectiveness.

Methodologically, since the national cultural dimension measures are at a different level (country level) than the measures of firm EMP adoption and environmental performance (firm level), multilevel analysis should be performed to examine such cross-level relationships. Nevertheless, none of the current studies on the relationship between national culture and firm sustainability has used this more appropriate technique. This study adopts a multilevel approach to address its research question. Specifically, Bayesian MCMC estimation methods are used to estimate the multilevel models.

This study makes multiple contributions to the literature. First, it bridges the gap between national culture and corporate environmental performance by introducing the intervening mechanism—firm EMP adoption. Second, it furthers our understanding of the bearing of national culture on organizational effectiveness by investigating the role of national culture in a new context. Third, the appropriate statistical method adopted distinguishes this paper from earlier work on the role of national culture in environmental management.

2. Literature review and hypotheses development

2.1. The Hofstede national culture framework

Culture is typically viewed as an organization's or society's values, beliefs, and ideology (DiMaggio, 1997; Montabon et al., 2016). It is an important contextual factor in business research (Zhang and Cao, 2018). Socio-cultural obligations, norms and values play a significant role in people's livelihood strategies (Wu and Pullman, 2015) and national culture affects managerial attitudes, values, behaviors, and efficacy in organizations (Newman and Nollen, 1996). Consequently, the relationship between national culture and the functioning of social organizations has been a recurring theme in the business research. Hofstede's cultural dimensions (Hofstede, 1980, 1983a, 1983b, 1984a, 1984b, 2001) are the most commonly used framework in these studies. Hofstede (1980), in the seminal work on national culture, identified four major dimensions along which cultural values could be analyzed: power distance, uncertainty avoidance, individualism/collectivism, and masculinity/femininity. Two more dimensions were added to the original framework around 2010: long-term orientation/short-term orientation and indulgence/restraint (Minkov and Hofstede, 2011).

There are criticisms of the Hofstede cultural data (e.g., Osland and Bird, 2000). Nevertheless, Hofstede's framework does a good job capturing national cultural differences while focusing on universals of each

culture that connect society. The framework is simple and concise to use, which is one of the reasons why it has gained acceptance as a paradigm for explaining the impact of national culture on various research topics. The Hofstede cultural dimensions framework has been found to be highly robust (Murphy, 1999) and has largely been confirmed and validated in replications and extensions of the study (Flynn and Saladin, 2006; Hofstede, 2001; Søndergaard, 1994; Hoppe, 1990). The use of the Hofstede dimensions for this study makes its results comparable to those of previous studies.

Most if not all of the studies that have examined the bearing of national culture on environmental management using Hofstede's cultural dimensions included only the first four cultural dimensions (power distance, individualism, uncertainty avoidance, and masculinity) but not long-term orientation or indulgence. One exception to this is Hackert et al. (2012), which included long-term orientation but not indulgence. Our study uses Hofstede's framework to dimensionalize culture given its wide acceptance and applications. All of the six dimensions will be incorporated to enable a thorough investigation of the role of national culture in the context of environmental management.

2.2. National culture and management practice effectiveness

Both practitioners and academics have long recognized the impact of national culture on organizational management practices. There is abundant literature that suggests national culture as a factor influencing the effectiveness of management practices. For example, Newman and Nollen (1996) found that work unit financial performance is higher when management practices in the work unit are congruent with the national culture; Flynn and Saladin (2006) found that there are many interactions between dimensions of national culture and the Baldrige Award quality management practices; Kull and Wacker (2010) examined quality management effectiveness in different national cultures and found that specific cultural dimensions are statistically related to quality management effectiveness; and Kull et al. (2014) examined the effectiveness of lean manufacturing practices in plants from different countries and found that lean manufacturing is most effective in countries that have certain cultural traits. What is missing in the literature is research on the impact of national culture on EMP effectiveness.

2.3. National culture and sustainable management

Though the impact of national culture on management practice effectiveness has not been explored in the context of sustainable management, there are some studies that have investigated the relationship between national culture and environmental performance. A review of the literature reveals that generally two types of relations have been examined. The first type, which accounts for most of the studies, is interested in the bearing of national culture on firm or country level environmental or social performance (see Fig. 1). These studies posited a direct effect of national culture on sustainability performance and explored the statistical relationship between the two. National culture was modeled as a cultural antecedent to environmental sustainability (e.g., Calza et al., 2016; Ho et al., 2012; Husted, 2005; Ringov and Zollo, 2007). Different results have been generated by these studies (cf. Calza et al., 2016), likely due to the effect of confounding variables. One possibility is that national culture does not have a direct effect on environmental performance and there is an intervening mechanism that is missing.

Strategic decisions of executives are affected by profiles of national culture (Franke et al., 1991). Specifically, their ability to adopt and implement environmental programs and standards depends upon the national culture they are in (Husted, 2005). The environmental policies of a country are also significantly influenced by culture (Vogel and Kun, 1987) and government regulations in turn affect firm decisions with respect to the adoption of EMPs (Carter and Carter, 1998; González-

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