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Stakeholder pressures, EMS implementation, and green innovation in MNC overseas subsidiaries

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ABSTRACT

In this paper, we address the issue of green innovation by the overseas subsidiaries of multinational corporations (MNCs). Drawing upon stakeholder theory and institutional theory, we propose a conceptual model to explain how stakeholder pressures in host countries prompt MNC subsidiaries to undertake green product and process innovations. Our findings indicate that MNC subsidiaries need to meet market stakeholders' pressures in order to achieve social legitimacy in host countries, and that the implementation of formal environmental management systems (EMS) is an important mechanism translating these pressures into green innovation initiatives. Furthermore, we find that the positive relationship between market stakeholder pressures and EMS implementation is reinforced by global 'green' institutional pressures in the different host countries.

1. Introduction

It is broadly acknowledged that MNCs must develop locally-designed green strategies in a timely manner to meet enhanced expectations in host country markets (Peng & Lin, 2008; Rugman & Verbeke, 1998; Tatoglu, Demirbag, Bayraktar, Sunil, & Glaister, 2014; Yang & Rivers, 2009). MNC leaders are increasingly devoting attention to their subsidiaries' greening initiatives for value creation and opportunity discovery (Watanabe, 2015), whilst also being mindful of the potential adverse effects of subsidiaries' environmental negligence on the reputation and image of the MNC as a whole[1] (Christmann, 2004; Zyglidopoulos, 2002). It has recently been observed that MNC subsidiaries help the local economy transform into a more environmentally sustainable society through their green investments. For example, the Chinese-based division of General Motors expands its involvement in green R&D activities relating to battery manufacturing for hybrid and electric vehicles (Noailly & Ryfisch, 2015). Ford engineers in Europe have been successful in inventing a cutting-edge green technology for the 1.0-l EcoBoost petrol engine (Ford Sustainability Report, 2016). To date, researchers anecdotally argue that MNC subsidiaries have become very essential for promoting the diffusion of green technologies to local firms (Li, Xue, Truong, & Xiong, 2017) and greening their regional and global value chain networks (Park, Song, Choe, Baik, 2015). Few studies, however, have considered the issue of green strategies pursued by overseas subsidiaries, and none to our knowledge have empirically analyzed the subsidiary-level green innovation process.

This paper focuses on the antecedents of green innovation in a sample of US and European subsidiaries of Japanese MNCs. Chen, Lai, and Wen (2006: 332) define green innovation "as hardware or software innovation that is related to green products or processes, including the innovation in technologies that are involved in energy-saving, pollution-prevention, waste recycling, green product designs, or corporate environmental management", and categorize green innovation as either green product innovation or green process innovation. Green product innovation represents sustainable innovations in products to enable firms to significantly reduce environmental damage and to achieve higher levels of efficiency in resource allocation over their entire product life cycles (Albino et al., 2009; Chen et al., 2006; Dangelico & Pujari, 2010). Green process innovations are those that constantly develop processes needed to facilitate the efficient use of natural resources and prevent pollution (Chen et al., 2006).

Green product and process innovations may potentially yield a range of benefits to the innovating firm. First, the firm has the opportunity to develop a positive image, differentiate itself from its rivals, and then pursue premium pricing (Hart, 1995; Porter & Van der Linde, 1995). Second, Chang (2011) argues that reinforcing the capacity of a firm to create new environmental products and processes results in improvements in product design and production methods. In a similar

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[1] Two major examples of these adverse reputation effects are Shell's confrontation with Greenpeace over the Brent Spar case in 1995 (Yang & Rivers, 2009), and the BP oil spill disaster in the Gulf of Mexico in 2010 (Freudenburg & Gramling, 2011).

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vein, Hart (1995) and Frondel, Horbach, and Rennings, (2008) suggest that green product and process innovations counterweigh the financial costs involved in overcoming environmental challenges. Third, Porter and Van der Linde (1995: 132) emphasize that pioneering green product and process innovations enables firms to mobilize their strategic and organizational resources more efficiently. They suggest that the early adoption of strict environmental standards may give the firm first-mover advantages, and lead to net benefits. In short, many commentators argue that integrating environmental considerations into corporate strategies may provide a source of sustained competitive advantage (Christmann, 2000).

But there are also costs/obstacles to green innovation. First, green innovations (like all innovations) are costly and the returns are uncertain, so positive net returns are not guaranteed (Walley & Whitehead, 1994). Second, green innovations will still face competition from existing (dirtier) products/processes which may enjoy an installed-base cost advantage at least in the short-term. Third, customers may be reluctant initially to accept the green products, and thus the innovating firms may experience significant additional marketing costs. Finally, and most importantly, many of the benefits from green innovation are public, and firms may be reluctant to engage in innovation when they are not able to appropriate fully the resultant benefits.

This consideration of the costs and benefits of green innovation highlights the fact that the social benefits often outweigh the private benefits to the innovating firm, and thus outside stakeholders have incentives to exert pressure on firms to undertake more innovation. Rugman and Verbeke (1998) note that, whilst many MNCs may diffuse environmental practices to their overseas subsidiaries, the subsidiaries must also respond to local pressures exerted by governments, consumers, and other stakeholders to develop local solutions.

The main thesis of this paper is to throw light on the sequential pathways through which these pressures stimulate green innovation within the MNC subsidiaries in a multilevel setting. We argue that foreign subsidiaries with proactive environmental approaches are more sensitive to stakeholder influences than foreign subsidiaries with reactive environmental approaches (Buysse & Verbeke, 2003). The adoption of advanced stakeholder issue identification techniques – such as regular monitoring, complaints screening, and dialogues with special interest groups – will lead to enhanced green innovation performance[2] (Driessen & Hillebrand, 2013). Hence, we hypothesize that the implementation of formal environmental management system (EMS)[3] will facilitate green innovation within MNC subsidiaries. EMS may be viewed as a standardized process of cross-functional transfer of knowledge about how to reduce environmental burdens (Florida & Davion, 2001) but also, independent of economic objectives, essential for getting ahead of changing environmental requirements (Morrow & Rondinelli, 2002) and obtaining greater social legitimacy (Berrone, Fosfuri, Gelabert, & Gomez-Mejia, 2013; Suchman, 1995). Such strategically-proactive firms that monitor stakeholder demands are more likely to devote their attention, capital, and time to formalizing and structuring their environmental practices, which will, in turn, create incentives for product and process innovations (Bocquet, Le Bas, Mothe, & Poussing, 2013). In short, we hypothesise that green innovation within MNC subsidiaries is stimulated by a range of local stakeholder pressures (regulatory, market and societal) but that these pressures are mediated by the implementation of local EMS initiatives. Furthermore, we argue that the impacts of these stakeholder pressures on EMS implementation are amplified in national institutional contexts which support global environmental norms.

This paper makes several contributions to the literature. First and foremost, we contribute to prior studies testing how stakeholder pressures affect green innovation (Berrone et al., 2013; Dangelico & Pujari, 2010). We hypothesise that EMS implementation is a mechanism by which MNC subsidiaries' respond to stakeholder pressures, and which in turn prompts them to introduce green product and green process innovations. This is the first study to disentangle the complexities of the relationships between stakeholder influences and green innovation by suggesting EMS implementation as a key mediator in such relationships. Second, we focus on the MNC subsidiary as an entity which responds to local stakeholder pressures, and which does not just take directions from its parent company. Focusing on the MNC subsidiary as a unit of analysis leads us to distinguish how green innovative capabilities vary according to individual units within the MNC network. Furthermore, the MNC subsidiaries in our empirical analysis are located in twenty-three different host countries, and are thus subject to different national institutional contexts with regard to global pro-environmental pressures. Our multilevel framework highlights both global institutional arrangements and local stakeholder demands, and thus allows us to consider different configurations of stakeholder pressures and institutional influences (Lee, 2011; Martínez, Fernández, & Fernández, 2016). Our framework throws light on the complexities inherent in the development of green innovation initiatives and helps subsidiary managers to align their environmental strategies with both global and local stakeholder influences at the same time. Third, we consider green process innovation and green product innovation as separate constructs, whereas most of the extant literature treats green innovation as a unitary concept.[4]

The paper is structured as follows. In the next section, we review the empirical literatures on the determinants of green innovation and on corporate environmental initiatives in MNC subsidiaries. Drawing upon institutional theory and stakeholder theory, we then develop various hypotheses related to EMS implementation and green innovation in MNC subsidiaries. Our empirical analysis is based upon primary data obtained from a questionnaire survey of Japanese MNC subsidiaries, and the following section contains information about the administration of the survey, the measurement of key variables, and the estimation methodology. We then present and discuss the empirical results. The final section discusses the implications of our findings, and suggests avenues for future work.

2. Literature review and hypothesis development

There is a sizeable empirical literature on the determinants of green innovation, though much of it focuses on domestic firms in single-country settings – see Egri and Ralston (2008) and Holtbrügge and Dögl (2012) for excellent reviews. The empirical literature on the relationship between stakeholder pressures and green innovation shows mixed results. Berrone et al. (2013) found that institutional pressures from regulatory bodies and normative actors were a crucial determinant of green innovation in US firms. Similarly, Frondel et al. (2008) showed that regulatory stakeholder pressures bolstered green innovation and abatement activities. In contrast, Lin et al. (2014) observed that stakeholder pressures from customers had a negative impact on green process innovation. According to Lin et al. (2014), one plausible

[2] Following Chen et al (2006: 333) we define green innovation performance as "the performance of hardware and software involved in the innovation that a company carries out in relations to green products or processes, including the innovation in technologies that are involved in energy saving, pollution-prevention, waste recycling, green product designs, or corporate environmental management."

[3] An EMS is composed of a bundle of internally-consistent environmental routines that enhance corporate environmental performance, including, for example, (1) environmental action plans with quantified target requirements, (2) written environmental documents, (3) full environmental cost accounting, (4) standardized environmental auditing and monitoring, and (5) environmental risk evaluations (Berry & Rondinelli, 1998; Sadorsky, 1996, 1999; ; Darnall et al., 2008, 2010).

[4] We distinguish between green product innovation and green process innovation for two reasons. First, the use of a unitary measure of green innovation might mask the differences in terms of the interplay of EMS implementation and the green product and process innovations. Second, green product and green process innovations are largely different in technical aspects and criteria, and types of practices (Abdullah, Zailani, Iranmanesh, & Jayaraman, 2016; Cuerva, Triguero-Cano, & Córcoles, 2014).