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Title: Financial Performance, Production Costs, Transaction Costs, Capabilities and the Adoption of Environmental Sustainability Practices

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ABSTRACT

Since the 1990s, scholars and business managers have devoted significant attention towards determining whether firms' environmental sustainability practices (ESPs) are related to profitability (Klassen & McLaughlin, 1996; Konar & Cohen, 1997; Laplante & Lanoie, 1994; Lanoie, Laplante & Roy, 1998; Russo & Fouts, 1997; Sharma & Vredenburg, 1998). These studies have shown that ESPs can improve internal efficiencies and drive down operating costs (Hart & Ahuja, 1996; Shrivastava, 1995), gain first mover advantage (Nehrt, 1996), and expand market prospects through innovation (Hart & Milstein, 1999). When taken together, ESPs can create enhanced pathways for competitive advantage (Hart, 1995; Hart & Milstein, 2003). As a consequence, there many are compelling reasons for firms to adopt ESPs.

However, there are at least three gaps in the research literature examining the relationship between firms' ESPs and profitability. First, we know little about which types of ESPs are associated with varying degrees of financial gain. Such knowledge is important to business managers since they are more likely to adopt specific sustainability activities if they are to be associated with greater financial advantages (Margolis & Walsh, 2003).

A second research gap relates to the fact that in spite of the benefits associated with adopting ESPs, many facilities forgo implementation due to costs (Nordhaus, 1992; Walley & Whitehead, 1994). Facilities adopting ESPs are expected to incur two types of costs: production costs and transaction costs (Alchain & Demsetz, 1972; Langlois & Foss, 1999; Walker & Weber, 1984; Williamson, 1979). As such, firms that face high costs when adopting ESPs are less likely to follow through. However, as of yet, this relationship has not been assessed empirically. Moreover, we have little understanding about how different types of costs relate to ESP adoption.

The third gap in the literature relates to the fact that we have little understanding of the moderating role that capabilities have on the relationship between business' perceived economic costs and ESP adoption. Conventional literature suggests that costs will limit firms' ESP (Nordhaus, 1992; Rienhardt, 1999; Walley & Whitehead, 1994). However, prior research has shown firms' capabilities can facilitate the adoption of ESPs by lowering costs (Hart, 1995; Hart & Ahuja, 1996; Sharma & Vredenburg, 1998). For instance, businesses that have previously adopted quality management systems are more

likely to adopt sustainability practices such as environmental management systems, since both systems require similar knowledge, cross-functional communication and other tacit capabilities (Hersey, 1998; Scrimshire, 1996; Zutshi & Sohal, 2004). I posit that capabilities *moderate* the relationship between business' perceived costs and ESP adoption, such that in their presence businesses may choose to adopt ESPs regardless of high costs.

I address each of these concerns in three essays. In the first essay, I examine which types of ESPs are associated with varying degrees of financial gain. This paper assesses the economic relationship between two types of ESPs—lower- and higher-order—derived from Hart & Milstein's (2003) sustainability value framework using data as reported by 48 firms on the Dow Jones' Sustainability Indexes (DJSI). My results suggest that both types of ESPs are associated with firms' financial performance. However, the financial benefits associated with firms' higher-order ESPs exceed the financial benefits related to firms' lower-order ESPs. These findings offer an important initial piece of information to managers about the conditions in which it pays for firms to be green. Moreover, they represent some of the first empirical findings suggesting that the various ESPs specified by Hart & Milstein (2003) are related to firm financials in different ways.

In the second essay, I examine the relationship between production costs, transaction costs and ESP adoption using survey data from 65 U.S. manufacturing facilities. The data contain detailed information about the direct relationship between facilities' adoption of ESPs and the production costs and transaction costs they accrued along the way. To examine this relationship I used a negative binomial regression analysis. The results of my analysis reveal that anticipated production and transaction costs are associated with facilities' ESP adoption in that they follow a similar direction and trend. However, anticipated production costs are more closely associated with ESP adoption than higher anticipated transaction costs.

In the third essay, I will examine the moderating effect of capabilities on the relationship between perceived economic costs and ESP adoption. I will examine these relationships using bivariate probit analysis and survey data for 4,013 manufacturing facilities operating in Canada, France, Germany, Hungary, Japan, Norway and the U.S. The results of my analysis indicate that complementary capabilities moderate the relationship between perceived economic costs and facilities' ESP adoption even after controlling for self-selection effects related to ESP adoption decisions.

The results of this research are anticipated to inform management strategy by expanding on accepted views about the relationship between green strategy and business performance. It will offer evidence about which different types of ESPs are more closely related to those payoffs. By exploring how production costs and transaction costs are related to business' green strategy, this study will offer a more in-depth and nuanced view of how anticipated costs are related to business' implementation of ESPs. Additionally, this research offers evidence of the moderating effect of complementary capabilities on perceived economic costs, such that facilities may still choose to adopt ESPs even if doing so is costly. Combined, this research offers inferences for why businesses might forgo the adoption of green strategies, even though implementation of these strategies might benefit them financially.