



## Influence of energy alternatives and carbon emissions on an institution's green reputation



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### ABSTRACT

Institutions' reputation for being environmentally friendly or 'green' can come from many sources. This paper examines how the attributes of alternative energy management plans impact an institutions' 'green' reputation by focusing on the interaction between 'external' and 'internal' influences. Some 'external' influences on environmental reputation we studied include the institution's mix of fuels, energy conservation effort, carbon emissions targets, investment time-frame, and program cost. The 'internal' influences on institutions' green reputation we examined include altruism (respondents' concern for the welfare of others) and environmentalism (respondents' concern for the environment). Using a stated-preference conjoint survey, we empirically examine how attributes of alternative energy management plans influence a large, research university's 'green' reputation. Our results show that constituents benefit from their institution's green reputation and that the energy management choices of the institution can significantly influence its perceived green reputation. Furthermore, integrating internal and external influences on reputation can create more informative models and better decision-making.

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Firms, institutions, and government entities, like individuals, have begun to identify themselves along with their products as "environmentally friendly." For example, colleges, universities, and businesses increasingly highlight the construction and use of 'gold' and 'platinum' LEED Certified buildings.<sup>4</sup> Similarly, corporations voluntarily purchase green electricity as part of their corporate 'greening' initiatives (Berkhout and Rowlands, 2007). Green branding and a reputation for being environmentally friendly can provide benefits to both firms and consumers. Green branding can serve as a signal or measure of product or service differentiation to attract increasingly segmented consumer groups. For example, automobile manufacturers advertise hybrid vehicles by touting financial savings at the gas pump, low carbon emissions, and an

environmentally friendly image. These advertisements do not typically mention the vehicles' total cost of purchase or the break-even point in time when the cost savings for fuel equals the price premium paid for the hybrid version of the automobile. However, the environmentally friendly image is an important attribute for both the parent corporation as well as the consuming public.

Such moves toward 'green' behavior and branding fit generally into the category of voluntary pro-environmental behavior. When carried out by a firm or institution it has also been labeled corporate environmentalism and can be thought of (along with economic and social) as one of the three bottom lines of corporate social responsibility activities (Elkington, 1997). There are a wide variety of motivations for firms adopting voluntary, pro-environmental practices. For example, Porter and Kramer (2006) argue that activities associated with corporate social responsibility can be an important source of competitive advantage for firms.

Furthermore, the strategic management literature has also suggested that corporate reputation is an important competitive advantage for firms and can benefit firm financial performance (Brammer and Pavelin, 2006; Carlisle and Faulkner, 2005; Roberts and Dowling, 2002; Waddock and Graves, 1997). Additionally, Tang et al. (2012) empirically show a link between corporate

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<sup>4</sup> See the U.S. Green Building Council <<http://www.usgbc.org>> for a complete list of LEED certified buildings.

reputation and green reputation. The authors find benefits to a firm's economic performance as a result of increased corporate reputation from having a positive green reputation. Fryxell et al. (2004) report that enhancing a firm's reputation is an important driver for Chinese firms seeking ISO 14001 environmental management certification. Another line of inquiry examines the role of a firm's environmental reputation on current employees and recruitment efforts (Behrend et al., 2009; Bauer and Aiman-Smith, 1996). Thus, previous research suggests that reputation is a competitive advantage for firms and pro-environmental behavior can be a key driver to achieving it.

For example, Fombrun and Shanely (1990) argue that firms compete for reputational status as well as for customers. The authors consider a model where firms attempt to influence stakeholder's perception of reputation by signaling their salient advantages. In this framework firms can signal their level of corporate social responsibility by displaying observable pro-environmental behavior. A firm's pro-environmental behavior can take the form of donating to charities, developing environmentally friendly products and producing public goods.

However, regardless of the rationale for seeking to improve green reputations, quantifying a firm's gain from improving its environmental reputation can be challenging. Some researchers have tried to measure impacts on environmental reputation by examining changes in stock exchange share prices/values corresponding to corporate environmental disclosures (e.g., Khanna et al., 1998; Curran and Moran, 2007). Another approach that researchers have tried is to estimate a model of corporate reputation based on data from managerial assessments and market analysis (e.g., Brammer and Pavelin, 2006). All of these approaches appear to treat a firm's green reputation as a function of external mechanisms and feedback to the firm.

The academic literature has focused on determinants of pro-environmental behavior, rather than the reputational benefits a firm might receive from corporate social responsibility. For example, several studies empirically examine the determinants of pro-environmental consumption of energy related products and services. Welsch and Kuhling (2009) highlight the importance of demographics, income, price premiums and consumption patterns for participating in a green electricity program or installing residential solar equipment. On the other hand, Moon and deLeon (2007) focus on the strategic responses of firms to market pressures and the institutional context for participating in EPA's Green Lights Program for energy efficient lighting. The stated preference literature has examined the price premium consumers are willing to pay to mitigate the effects of global warming (Layton and Brown, 2000), for renewable energy technology (Bergmann et al., 2006; Bollino, 2009; Roe et al., 2001), energy efficiency (Sammer and Wüstenhagen, 2006; Shen and Saijo, 2009) and for environmental attributes of energy policy (Alvarez-Farizo and Hanley, 2002). For the purpose of this inquiry, we will consider "external" influences on an institution's green reputation from pro-environmental behavior to include such factors as cost, attributes of a product or service and socio-economic characteristics of consumers.

Furthermore, Fombrun and Shanely (1990) also note that stakeholder groups are heterogenous and have differing expectations regarding firm behavior. Therefore, we expect that "internal" influences will also affect perceptions of an institutions reputation. Research on "internal" influences, typically based in psychology, has tended to examine the adoption of pro-environmental behavior. Such research suggests that pro-environmental behavior by individuals originates in their underlying values, beliefs and attitudes. For example, Fransson and Garling (1999) review the link between individuals' attitudes and psychological factors with their level of environmental concern along with the influence of individuals'

environmental concern on their pro-environmental behavior. Papagiannakis and Lioukas (2012) find that manager values toward the environment as well as stakeholder expectations influence corporate environmental responsiveness. Gerpott and Mahmudova (2009) highlight the importance of attitudes toward environmental issues and perceptions of green energy by an individual's social reference groups on patterns of participating in a green electricity programs. Jansson (2010) indicates that adopters and non-adopters of alternative fuel vehicles differ on norms and attitudes, and rank product attributes differently. Social science scholars have called for research that considers both external (e.g., attributes, competition, cost) and internal (e.g., values, attitudes, beliefs) influences on adoption of pro-environmental behavior (e.g., Van Liere and Dunlap, 1980). Furthermore, Guagnano, et al. (1995) suggests that analyses that integrate the relationship between external and internal influences on behavioral change may yield more informative environmental policy analysis.

Two studies have begun to integrate the inquiry of both internal and external influences on firms' decision making. Wisner et al. (2001) surveyed 464 firms about their purchase of green power, and they report empirical results suggesting that altruism and employee morale were important motivating factors in firms' renewable energy purchases. Clark et al. (2003) used elements from psychology on pro-environmental behavior and economic models of the private provision of a public good to identify key internal and external variables that may explain voluntary participation of households in a green electricity program. Their study indicates that internal factors such as individuals' altruism and environmental attitudes as well as external variables like household income and household size may be predictors of pro-environmental behavior. However, there is nothing in the literature that relates to institutions' green reputation and how institutional decisions to adopt pro-environmental behavior are influenced by, and in turn influence, their constituents' perception of the institution's "green" reputation.

The interaction between external influences (i.e., energy production and consumption policy attributes), internal influences (i.e., environmentalism and individual altruism), and institutional pro-environmental behavior (i.e. promoting 'green' reputation) has received little attention. This paper undertakes such an examination in the context of constituencies' preferences for energy management programs at their institution. Universities, like corporations, range comparably in size and are comprised of a variety of constituents: administration (upper management); faculty (lower management); staff (workers); and graduate and undergraduate students (customers/shareholders). Furthermore, institutions can use pro-environmental behavior or green branding to attract students and staff and retain the latter. While there has been extensive study in the contingent valuation literature on attributes of renewable energy policy (e.g., Alvarez-Farizo and Hanley, 2002; Bergmann et al., 2006; Johnson and Desvousges, 1997; Layton and Moeltner, 2005; Komarek et al., 2011), the role that energy generation and management attributes play in shaping an institutions' green reputation has yet to be empirically examined. Our analysis uses a stated-preference conjoint survey approach that asks internal stakeholders (students and employees) at a tier-1 research university to rate the contribution to green reputation of various energy management scenarios. The study examines 'external' influences of the attributes of energy management plans (e.g., mix of fuels, energy conservation effort, carbon emissions targets, etc.) as well as the role of 'internal' influences (e.g., individual altruism and environmentalism) on an institution's green reputation.

The reported research examines an institution's green reputation and image from within the institution, along with exploring how the attributes of its decisions influence the institution's green

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