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Assessing the impact of environmental management systems on corporate and environmental performance

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Abstract

There has been an increase in interest towards corporate activities aimed at reducing or eliminating the waste created during the production, use and/or disposal of the firm's products. Prior research has focused on the need for such activities, while current research tries to identify those components that encourage or discourage such activities. As a result of the introduction of ISO 14001, attention has turned to corporate environmental management systems (EMS). The underlying assumption is that such a system is critical to a firm's ability to reduce waste and pollution while simultaneously improving overall performance. This study evaluates this assumption. Drawing on data provided by a survey of North American managers, their attitudes toward EMS and ISO 14001, this study assesses the relative effects of having a formal but uncertified EMS compared to having a formal, certified system. The results strongly demonstrate that firms in possession of a formal EMS perceive impacts well beyond pollution abatement and see a critical positive impact on many dimensions of operations performance. The results also show that firms having gone through EMS certification experience a greater impact on performance than do firms that have not certified their EMS. Additionally, experience with these systems over time has a greater impact on the selection and use of environmental options. These results demonstrate the need for further investigation into EMS, the environmental options a firm chooses, and the direct and indirect relationships between these systems and performance.

Keywords: Environmental management systems; ISO 14001; Decision analysis; Regression; Empirical research; Survey

1. Introduction

Two areas of uncertainty are proving to be major obstacles to the widespread adoption of environmental practices by manufacturing firms and to the efforts of such firms to achieve ISO 14001 certification. The first stems from the ambiguity of the relationship between pollution reduction and profitability. The second arises from the lack of reliable information about the differences in tangible benefits derived from formal, certified environmental management systems (EMS) versus those from an informal or less rigorous set of environmentally focused activities. Consequently, the following question should be answered to help managers make sound decisions about the pollution reduction policies and practices of their firms: Do

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efforts aimed at reducing pollution impact operations performance and, if so, then does it matter whether the efforts meet ISO 14001 certification standards? The purpose of this study is to answer this pressing question.

A decade ago, there was virtually no debate in scholarly or manufacturing circles over the relationship between environmental practices and corporate performance. It was simply taken as a fact that pursuing environmental goals was antithetical to sound business strategy and, quite possible, a violation of the fiduciary duty of managers to shareholders. Conventional wisdom, in fact, held that any investment in improved environmental performance would contribute to penalties such as increased lead times, reduced quality or increased costs—all of which reduced profits and decreased returns to stockholders. In 1991, however, Porter challenged these entrenched beliefs and sparked a debate, which not only increased theoretical and practical interest in the possibility that profitability and pollution reduction were not mutually exclusive goals but, ultimately, brought about a dramatic shift in manufacturers' attitudes toward environmental responsibility (Porter, 1991).

According to Porter, pollution was simply waste, regardless of its source, which diminished value and was symptomatic of problems in products and/or processes. Therefore, contrary to received opinion, reducing or eliminating pollution/waste would not weaken but strengthen corporate competitiveness. Tradition dies hard, however, and Porter engendered criticism (Walley and Whitehead, 1994; Jaffee et al., 1993) as well as supportive efforts to expand upon his original position (Porter and Van der Linde (1995a,b) and several others (Bonifant and Ratcliff, 1994; Curkovic et al., 2000; Klassen and McLaughlin, 1996; Rothenberg et al., 2001; Montabon et al., 2000; Tibor and Feldman, 1996). In short, the debate continues, but not without positive effect. In the last 10 years, a radical change has come about in management's views on pollution, the need for pollution reduction and better environmental management. While the bastions of conventional thinking remain, they are decreasing in number, persuasiveness and political clout.

Into this continued questioning of the fundamental relationship between dollars and diminution of environmental destruction comes a new and virtually unresearched variable: ISO 14001 certification. In 1996, the ISO 14001 certification standards for environmental performance were adopted, with their acceptance predicated on the promise of certain benefits. First, ISO 14001 was argued to be the next logical step forward given the successes of the quality standard ISO 9000 and its automotive industry variant QS 9000 (Miles and Russel, 1997; Block, 1999; Caillibot, 1999; Reid, 1999; Corbett and Kirsch, 2001). Second, ISO 14001 was promoted as the standard that would replace the numerous and often conflicting sets of criteria found in various countries. Third, this new standard did not focus on outcomes such as reduced pollution. Instead, the focus of the standard is on the processes involved in the creation, management, and elimination of pollution. Basically, ISO 14001 was set forth as an effective tool to guide managers in their efforts to capitalize on the cost reduction potential of waste reduction (BSI, 1996). Fourth, supporters' lauded ISO 14001's stress on the crucial role played by an EMS in overall corporate performance (Sayre, 1996; Tibor and Feldman, 1996; Corbett and Kirsch, 2001). The impact on corporate performance is said to be an advantage of implementing a formal, certified environmental management system over those of pursuing a less stringent package of pollution-sensitive activities. This study assesses the impact of three types of EMS: (1) an informal system; (2) a formal system that does not meet ISO 1400 standards; and (3) a formal system that does meet ISO 14001 standards.

Since ISO 14001 has been in effect for 5 years, over 250,000 firms have been certified internationally (ISO World, 2000; ISO, 1999). The rate of certification is growing at least 50,000 per year (Corbett and Kirsch, 2001) and we even see large multinational Original Equipment Manufacturers (OEM) demanding certification of their supply base (Anonymous, 1999). Opportunities for research are now apparent through addressing the following questions: has ISO 14001 lived up to the promises made on its behalf and to those promises made on behalf of the adoption of a formal certified EMS? Until this study, little systematic research has been devoted to finding the answers to these questions. Other research questions involve the extent to which pollution reduction contributes to operations performance and the need to understand impacts of a formal, certified environmental management system, this study addresses three basic questions: