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Environmental management control systems: The role of contextual and strategic factors



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ABSTRACT

This study examines the role of contextual and strategic factors in the development of environmental management control systems in manufacturing companies. In particular, the authors test the roles of perceived ecological environmental uncertainty, perceived stakeholder pressures, and the degree of corporate environmental proactivity on the development of environmental management control systems. The main results from a survey of 256 manufacturing companies suggest that companies that perceive greater ecological environmental uncertainty are less inclined to develop a proactive environmental strategy, environmental information system, or formal environmental management control system. Market, community, and organizational stakeholders motivate environmental proactivity, as well as the development of different environmental management control systems. Regulatory stakeholders only encourage the development of an environmental information system.

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1. Introduction

Corporate environmental responsibility has achieved a high profile as a strategic notion for business and a prominent topic for academia. The diffusion of environmental practices among corporations has resulted notably from pressures from traditional interest groups (Brammer and Milligton, 2003) but also from the emergence of the market for virtue, which gives firms commercial incentives to adopt environmental policies (Vogel, 2005). More companies also recognize the seriousness of environmental threats and accordingly develop strategies and programs to achieve more environmentally friendly products and production processes.

Growing interest in turn has expanded environmental management and environmental accounting research.

For example, extensive research explores the principles of environmental accounting and reporting (e.g., Cho and Patten, 2007; Crowther, 2000; Gray et al., 2001; Owen, 2008; Schaltegger et al., 2006; Unerman et al., 2007), as well as current practices (e.g., Bartolomeo et al., 2000; Burritt, 2004; Rikhardsson et al., 2005) and the link between environmental and organizational performance (e.g., Henri and Journeault, 2010; McWilliams and Siegel, 2001; Porter and van der Linde, 1995; Russo and Fouts, 1997). Yet little research addresses environmental strategies, corporate environmental management controls (Capron and Quairel, 1998; Epstein and Wisner, 2005; Henri and Journeault, 2010; Jansson et al., 2000), or the antecedents of implementing environmental strategies and management control systems (cf. Perego and Hartmann, 2009).

This study investigates contextual and strategic factors associated with the development of environmental management control systems by manufacturing companies. We test the role of perceived ecological environmental uncertainty, perceived stakeholder pressures, and the degree of

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corporate proactivity in the development of environmental management control systems (EMCS). Using survey data from 256 Belgian manufacturing firms, we confirm a link between environmental strategy and EMCS. More proactive companies develop EMCS. However, companies that perceive more ecological environmental uncertainty are less likely to develop an environmental proactive strategy, an environmental information system, or a formal EMCS. Perceptions of pressures from specific stakeholders can motivate such developments; in particular, managers' perceptions of pressures from regulatory stakeholders influence the development of an environmental information system directly.

This study thus bridges two research domains—environmental management and management control—and accordingly reveals some key managerial implications of integrating environmental factors into organizational management, which can ensure better control over corporate environmental objectives. This study contributes to management control literature by empirically addressing the factors associated with the development of management control systems in an environmental management context. We further advance environmental management literature by illustrating how and in which conditions a manufacturing company can develop and implement an environmental strategy throughout the organization. In summary, our research develops knowledge of what is happening within organizations in the manufacturing industry, including which factors lead companies to be more environmentally proactive and to develop EMCS, which is a necessary condition for societal transformation (Bebbington and Thomson, 2010).

In the following section, we present a research framework that describes the conceptual model and a set of testable hypotheses. In our discussion of the research methodology, we detail the sample and construct measurements. Next, we summarize the results of a partial least squares (PLS) graph analysis, before we identify our study's contributions, derive managerial implications and limitations, and suggest some avenues for further research.

2. Research framework and hypotheses

To investigate the role of contextual and strategic factors in the development of EMCS in manufacturing companies, we begin by defining EMCS.

2.1. Environmental management control systems (EMCS)

Adapting the definition of management control systems proposed by Simons (1995) and following the suggestion of Perego (2005, p. 8), we define EMCS as “a package of formal, information-based routines and procedures that managers use to maintain or alter patterns in organizational activities, specifically concerning the environmental aspects of organizational performance”. An EMCS includes formalized procedures based on environmental information that designate the firm's corporate environmental strategy. However, noting the best practices of environmentally proactive firms, environmental management

literature also recommends using informal control systems (Henriques and Sadorsky, 1996; Hunt and Auster, 1990; Newman and Breeden, 1992). Research into environmental management control remains under development (Journeault, 2011; Perego and Hartmann, 2009), so we examine all systems related to environmental management control.

2.1.1. Formal environmental management control systems

Formal management control systems are the most visible and objective components of a control system; they feature rules, standard operating procedures, and result controls (Langfield-Smith, 1997). Environmental procedures and rules are common integrative mechanisms that can promote environmental performance (Fryxell and Vryza, 1999), such as to ensure that environmental staff participate in the capital budgeting process (Bartolomeo et al., 2000) or that environmental criteria are integrated into corporate investment decision-making (Capron and Quairel, 2004). Managers might establish environmental rules and procedures to link expected results to decisions and attain environmental objectives that way (Capron and Quairel, 1998). Other formal controls include the integration of environmental objectives into planning systems, the inclusion of environmental performance indicators in reward systems, and comparisons of results to environmental objectives through environmental auditing (Henriques and Sadorsky, 1996; Hunt and Auster, 1990; Jose and Lee, 2007; Newman and Breeden, 1992).

2.1.2. Informal environmental management control systems

Together with formal controls, informal control systems can provide an efficient means to follow-up on environmental management. They are implemented to ensure the support of managers and employees. Thus an informal EMCS relies on employees' participation, managers' involvement, and teamwork to solve environmental problems (Capron and Quairel, 1998). Analyses of best practices in the environmental field often cite the importance of such informal EMCS, because employees get involved and participate in environmental decisions; they are part of a continuous environmental performance improvement process (Florida, 1996; Sharma and Vredenburg, 1998; Van Wassenhove and Corbett, 1991). Managers also promote the idea that environmental performance is a key responsibility of employees (Berry and Rondinelli, 1998), and top management involvement demonstrates the importance the company places on environmental issues (Boiral, 2000; Hunt and Auster, 1990) while influencing the development of action related to different environmental issues (Aragon-Correa et al., 2004). In proactive companies, teamwork offers an interesting means to solve environmental issues and coordinate work. It helps control the results in a less conventional way than formal controls do (Fryxell and Vryza, 1999).

2.1.3. Environmental information system

Information systems constitute the heart of any organizational control system; information is the raw material

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