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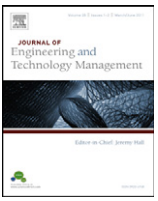

Learning and innovation in the context of process-focused management practices: The case of an environmental management system

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ABSTRACT

Adoption of process-focused management practices has been associated with inertia and rigidity in adopting firms. By drawing on the literature on routines and using survey data from 192 ISO 14001 certified facilities in the United States, I find that change catalysis or a deep form of learning which presents the opportunity for innovation can happen in this context. I also examine the internal and external determinants of change catalysis. By doing so I contribute to a better understanding of how process-focused management practices can be a source of innovation within firms.

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Introduction

Process-focused management practices like total quality management (TQM), the ISO 9000 quality management system and ISO 14001 environmental management system focus on improving an organization's efficiency by rationalizing, coordinating, and repeating organizational processes. It has been suggested that the implementation of such practices increase resistance to change and decrease firms' ability to adapt (Benner and Tushman, 2003). In general, exploration and innovation are not seen as resulting from the implementation of such management practices (Benner and Tushman, 2002, 2003).

Recent studies of the implementation of a quality management practice, ISO 9000, suggest that it is possible for such practices to act as catalysts for change, which involves an organization being able to go beyond what a practice literally demands (Naveh and Marcus, 2004, 2005; Naveh et al., 2006). Change catalysis is a deep form of learning or second-order learning and involves using an

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implemented practice as a springboard for the introduction of innovations and as a catalyst for rethinking the way the organization does business (Naveh and Marcus, 2004; Naveh et al., 2006). These studies found that such exploring, branching out and innovating in new directions (Eisenhardt and Tabrizi, 1995) based on the rules of ISO 9000 allow implementing firms to derive both operational and performance benefits. Other research on exploration and exploitation has also found explorative activities to be related to long-term performance (Auh and Menguc, 2005).

Because of its positive impacts on both operational and business performance of organizations, change catalysis is important and scholars have called for more research on this phenomenon in the context of practices and standards (Naveh and Marcus, 2005). We know little about change catalysis in other contexts and also the factors that affect it. In this study, I seek to fill these gaps by examining whether change catalysis exists in a novel context, the ISO 14001 environmental management system (EMS) and then studying the determinants of change catalysis in this context. This international certifiable management standard is intended to reduce and manage the environmental impacts of organizations of any size and type across the world. I seek to extend the literature on implementation by investigating whether ISO 14001 can really be the basis for further innovation and what factors affect this outcome. I base my hypotheses on the literature on routines (e.g., Feldman and Pentland, 2003; Howard-Grenville, 2005) and the literature on implementation of management practices (e.g., Naveh and Marcus, 2004; Naveh et al., 2006).

My findings suggest that in the context of the ISO 14001 environmental EMS, change catalysis can happen and that both the organizational context and external factors affect it. Specifically, I find that benefits of the practice, importance of environmental issues in the firm, focus on process innovation, and customer evaluation and feedback of environmental performance are positively related to this variable in the context of ISO 14001 EMS. I conclude that under the right conditions, implementation of ISO 14001 can be the basis for additional innovation. I also discuss the academic and managerial implications of the study.

ISO 14001 environmental management system

ISO 14001 was developed and introduced in 1996 by the International Organization for Standardization (ISO), a non-governmental organization based in Geneva, Switzerland. ISO 14001 codifies a set of standard practices to manage the environmental aspects of firms' operations and compliance with its requirements can be certified by independent third-party auditors. It is a generic international standard for environmental management systems and is the backbone of the ISO 14000 family of standards. The ISO 14000 family is primarily concerned with activities that minimize the harmful effects on the environment and achieving continual improvement in environmental performance (ISO, 2004). It provides a framework that is intended to integrate environmental management practices into the daily work routines of firms. 250,972 facilities in 155 countries have ISO 14001 certification as of December 2010 (http://www.iso.org/iso/iso-survey2010.pdf, accessed January 2012), making it the most widely adopted environmental management standard in the world (Marimon et al., 2011).

An organization that seeks to get certification to the ISO 14001 standard should first have an environmental management system in place that conforms to the ISO 14001 requirements. In order to achieve certification, a firm has to identify all its environmental impacts, develop an environmental policy, set goals and targets to reduce the environmental impacts of its activities, communicate the EMS to its employees, train and empower them, document relevant procedures, identify its actual environmental impacts and address any non-conformances. The firm then has to assess its EMS through a management review process and make any necessary changes. To achieve certification, the firm must pass an audit by an accredited independent third-party auditor which assesses the extent to which the firm complies with the ISO requirements. Re-certifications are done once every 3 years.

With respect to consequences of adopting ISO 14001, some studies have found certification to be linked to environmental performance (Melnyk et al., 2003; Russo, 2001). However, other studies have not found this effect (e.g., Darnall and Sides, 2008; King et al., 2005). More recent studies suggest that implementation, as opposed to certification, is what affects environmental performance and have found that the extent of implementation does have an effect on the environmental performance benefits that can be derived out of the system (Aravind and Christmann, 2011; Yin and Schmeidler,

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