

Operations management practices linked to the adoption of ISO 14001: An empirical analysis of Spanish manufacturers[☆]

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Accepted 20 February 2007
Available online 6 January 2008

Abstract

This paper explores the linkages between the practices and behaviour developed in the operations function of a company and the implementation of the ISO 14001 standard by that company. Specifically, it is argued that (1) those companies with a more proactive operations function are also the companies more inclined to develop capabilities that facilitate the development of an environmental management system in compliance with the standard and (2) the adoption of such a system is associated with the generalized implementation and development of diverse environmental management practices in the operations function. The analysis of empirical data provided by 184 Spanish manufacturers gives support to these propositions.

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Keywords: ISO 14001 certification; Manufacturing proactivity; Environmental practices; Operations management

1. Introduction

The ISO 14001 standard specifies a series of requirements that must be met by the environmental management system (EMS) of a company, that is, by the system used to organize and coordinate all the environmental activities and initiatives that the company develops. This standard is intended to be useful to those companies that wish to become

involved with a more proactive environmental management, and its implementation allows the company to obtain a certificate of compliance that recognizes that the EMS meets the established requirements. The ISO 14001 certification has reached high levels of popularity and the number of certified companies has grown very sharply since its appearance in 1996 (Corbett and Kirsch, 2001; Viadiu et al., 2006), Europe and Japan being the geographical areas concentrating the highest number of certifications (ISO, 2003).

This phenomenon has aroused academic interest in analysing the contingencies that explain the adoption of the ISO 14001 standard and the consequences derived from it (e.g. Christmann and Taylor, 2001; Delmas, 2001, 2002; King and Lenox, 2001a, b; King et al., 2005; González-Benito and

[☆]The authors gratefully acknowledge the financial support of the Spanish Ministry of Science and Technology (Research Projects SEC 2001-1756 and SEJ 2004-03888/ECON).

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González-Benito, 2005; Melnyk et al., 2003a,b; Nakamura et al., 2001; Quazi et al., 2001). Within this line of research, this paper attempts to explore the linkages between those practices and behaviour developed in the operations function of a company and the implementation of the ISO 14001 standard by that company.² The study of these linkages becomes important according to the following issues:

- The development of an EMS in compliance with the ISO 14001 standard and its subsequent certification require the interest as well as the effort of the organization. Thus, it makes sense to think both that all companies are not equally prepared for initiating this process and that the achievement of the certification depends on the company's capabilities to deal with new challenges. It is therefore relevant to identify the organizational characteristics related to the adoption of the standard. Since the operations function is responsible for or at least concerned with a great deal of the activities with environmental implications (Angell and Klassen, 1999), it is important to identify which attributes of this function are associated with the implementation of the ISO 14001 standard. In particular, it is important to analyse the role played by manufacturing proactivity, it being understood as the tendency of an organization to implement all those practices, tools or management systems considered the most advanced, modern and promising within its production and operations function.
- The ISO 14001 certification and, in general, setting in motion an EMS is often presented as an initial step on which diverse environmental practices and programmes can be set and developed (e.g. Kitazawa and Sarkis, 2000). In fact, it is considered as a central element of the ISO 14000 family of standards³ that establish the

basis on which the rest of the standards must be implemented (ISO, 2002, p. 1). However, it is reasonable to think that some companies might limit themselves to exploiting the commercial advantages of this initial step without actually developing environmental initiatives to transform the operational processes or to keeping the diversity and intensity of such initiatives to a minimum. Inversely, companies developing a wide range of environmental initiatives might not find it helpful to adopt the ISO 14001 standard to coordinate and systematically organize all these initiatives. In other words, it is worth wondering to what extent the adoption of ISO 14001 is related to an environmental transformation of production operations and processes.

With the purpose of contributing to each of these concerns, two objectives are posed in this paper:

- (1) To analyse the linkage between the company's manufacturing proactivity and the decision to adopt the ISO 14001 standard.
- (2) To analyse the relationship between the adoption of ISO 14001 and the implementation of environmental practices in the management of product design and production processes.

The analysis of these linkages can be useful for managers, governments and consumers. Managers will receive some idea of the extent to which production capabilities and the role played by the operations function in the company are relevant for the achievement of ISO 14001. Governments will obtain information about the extent to which supporting and promoting the use of ISO 14001 can be a way of fostering a real and deep environmental transformation of companies. Consumers will be more able to assess whether the ISO 14001 certification represents a higher commitment of a company to the preservation of the environment or whether it is just a commercial label.

The paper is structured in four more sections. Two research hypotheses about the relationship of

²Since the ISO 14001 standard has been conceived to be implemented and certified at the facility level, when we say that a company or an organization develops an EMS in compliance with this standard, it should be understood that the company does so at its facilities. In the empirical part, we say that a company has the ISO 14001 certification when its main facility is certified.

³The ISO 14000 family of environmental standards seeks "to provide a practical toolbox to assist in the implementation of actions supportive to sustainable development" (ISO, 2002, p. 3) and contains a set of guides and standards with suggestions, guidelines and specifications for developing diverse practices

(footnote continued)

related to the environmental management of a company (e.g. environmental auditing, environmental labelling or life cycle assessment). ISO 14001 is the only standard of the family against which the company can be assessed and certified. See Von Zahren (1996) for a detailed description of the ISO 14001 standard and some other standards of the ISO 14000 family.

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