



EMS and sustainability: experiences with ISO 14001 and Eco-Lighthouse in Norwegian metal processing SMEs



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ABSTRACT

The aim of the presented study is to extend current knowledge on manufacturing small and medium-sized enterprises' (SMEs) experiences with the implementation of the alternative environmental management system (EMS) Eco-Lighthouse, and to compare this with that of ISO 14001 adoption. The study seeks a deeper understanding of the drivers, challenges and outcomes that are related to the implementation of EMS models through semi-structured, in-depth interviews with nine Norwegian manufacturing SMEs that are ISO 14001 or Eco-Lighthouse certified. The findings indicate that market benefits and cost reduction are the key drivers for the Eco-lighthouse, while customer pressure and improved environmental routines pull ISO 14001 certification. A higher level of customer pressure for EMS favours ISO 14001 adoption over Eco-Lighthouse adoption. While Eco-Lighthouse certification is challenged by a low realisation of market benefits, the challenges that relate to employee buy-in, competence and time are more prominent for ISO 14001 adoption. While similar sustainability practices were identified within all of the studied companies, the ISO 14001 certified companies were more systematic and formal in their identification and management of environmental improvements.

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1. Introduction

With more than 99% of the European companies defined as small and medium-sized enterprises (SMEs) (Stawinska, 2011), the need to engage SMEs in sustainability activities is widely recognised. Not only do SMEs employ more than 60% of the European workforce, they also contribute with almost 60% of the estimated added value and a high degree of the environmental impact (Hillary, 2000; Stawinska, 2011). For the SMEs themselves, engaging in environmentally and/or socially responsible practices may increase competitive advantage and financial performance (e.g., Clemens, 2006; Hart and Ahuja, 1996; Porter and Kramer, 2006; Porter and Van der Linde, 1995). Nevertheless, only a few SMEs have integrated sustainability measures into their organisational practices. The main reason for this is generally attributed to SMEs' limited financial and human resources and a lack of

awareness, competence and access to appropriate tools for corporate sustainability (European Commission, 2007; Hillary, 2000). In this regard, the implementation of environmental management systems (EMSs) in SMEs is an area which has been given increasing international interest. EMSs can promote the systematic identification, implementation and follow-up of environmental practices, and are seen as one of the most important voluntary tools for improving corporate environmental performance (European Commission, 2004). While considerable work has been conducted in the field of EMS development, the targeted outcomes have traditionally been attributed to large companies. Since SMEs differ from large organisations in terms of financial and human resources, business models and drivers for engaging in sustainability, several authors argue that the resulting tools are not tailored to engage and aid SMEs in sustainability practices (e.g., Bos-Brouwers, 2010; Jenkins, 2006; Loucks et al., 2010).

In response to the identified shortcomings of the internationally recognised EMSs ISO 14001 and the Eco-management and Audit Scheme (EMAS), alternative EMSs have been developed. The development has resulted in a great diversity of alternative models for EMS in SMEs, such as the Acorn method, e + 5, Ekoscan, and the Eco-Lighthouse. Useful introductory information on some of the more successful models may be found in the BEST project report (European Commission, 2004) and in Heras and Arana (2010).

Abbreviations: CSR, corporate social responsibility; EMS, environmental management system; EMAS, Eco-management and Audit Scheme; HSE, health safety and environment; ISO, International Organization for Standardization; QMS, quality management system; RQ, research question; SME, small and medium-sized enterprise.

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While the alternative EMSs tend to share the basic characteristics of formal EMS (e.g. implementation of an environmental policy, planning, implementation and operation, checking and corrective action, management review), they are often less bureaucratic and/or allow for a more staged implementation (European Commission, 2004). It has been proposed by the more theoretically-based literature that the alternative EMSs are better suited to the organisational characteristics of SMEs. However, little empirical research has been conducted on the experiences and outcomes of the adoption of such models in SMEs (Heras and Arana, 2010).

The present paper contributes to previous literature through the provision of Norwegian manufacturing SMEs experiences with ISO 14001 and Eco-Lighthouse. Information about the EMS models is provided in greater depth in Sections 2.6 and 2.7. As the Eco-Lighthouse has been highlighted as one of the more successful alternative models (European Commission, 2004; ISO, 2005; Heras and Arana, 2010), this may provide a contribution both to the academic discussion on alternative EMSs, and to developers of alternative EMSs. The presented findings may also be useful for managers in manufacturing SMEs who are considering implementing ISO 14001 or alternative models. The presented study focused on the following research questions;

- RQ1: What are the reported drivers for case companies that undertake ISO 14001 or Eco-Lighthouse certifications?
- RQ2: What are the case companies' experienced challenges and benefits of undertaking the certifications?
- RQ3: Are there differences between ISO 14001 and Eco-Lighthouse certified companies with respect to organisational governance, implemented actions to reduce environmental impact, labour practices and local community engagement?

This paper presents findings that are related to the research questions, using an approach that combines a literature study and a series of semi-structured interviews. The remaining of this article is structured in four main parts. In Section 2, the theoretical background is presented with a primary focus on what previous literature identifies as drivers, barriers, enablers and outcomes of EMS adoption in SMEs. Introduction to, and theoretical comparison of the ISO 14001 and Eco-Lighthouse are also provided. Section 3 is dedicated to the description of research methodology utilised. In Section 4, the article presents findings from a series of interviews with a primary focus on research questions RQs1–3 before summing up findings and providing suggestions for further research in Section 5.

2. Theoretical background

2.1. EMSs and SMEs

An environmental management system (EMS) is the part of an organisation's management system that is used to develop and implement its environmental policy and manage its environmental practices (ISO, 2004). Through a formal EMS, companies are guided in their efforts to systematically identify and manage environmental practices while communicating their environmental commitment to corporate stakeholders. EMSs are often implemented in larger enterprises, but the likelihood of having an EMS implemented decreases with reduced company size (Biondi et al., 1998; Burke and Gaughran, 2006; Hillary, 2004; Hudson and Orviska, 2012; Johnstone et al., 2004). A growing body of research investigates the reasons behind the low uptake of EMS in SMEs, and explores how more sustainable practices may be promoted within these enterprises. Traditionally, this research has treated the SMEs as one homogeneous group (Burke and Gaughran, 2006; Hillary,

2004). However, there is a growing recognition of the large variations between individual SMEs due to differences in sector and size (European Commission, 2004; Spence et al., 2003) and in terms of contextual differences related to the geographical location of the firms (Spence et al., 2000). To facilitate a broader understanding of the drivers, obstacles and outcomes of EMS adoption in SMEs, a review of the existing literature has been conducted and is summarised in Sections 2.2–2.5. The review mostly includes general literature, which is supplemented with sector-specific findings when identified. This is followed by background theory related to the ISO 14001 and the Eco-Lighthouse, and to the expected differences between the two considered approaches to EMSs in SMEs.

2.2. Drivers for EMS adoption

One often distinguishes between internal and external drivers of EMS adoption, and there is an ongoing debate as to how the different drivers create a variation of motives, and in turn, different effects from the adoption of EMS (see e.g. Heras-Saizarbitoria et al., 2013). According to Bansal and Roth (2000), motivations for environmental practices may be categorised into three main motives; competitiveness, legitimation, and environmental responsibility. While competitiveness relates to expected financial benefits of the EMS implementation, legitimation is directed towards compliance with institutional regulations and norms articulated by the company's stakeholders such as the local community, customers, and the government. Environmental responsibility is motivation that stems from the concerns that a firm has for its social obligations and values (Bansal and Roth, 2000), in which case the owner-managers personal values are seen as key drivers of sustainability practices (Aragón-Correa et al., 2008; Bos-Brouwers, 2010; Jenkins, 2006). There are indications that the drivers for EMS adoption change with the size of the company. Based on a questionnaire of more than 4000 manufacturing facilities in OECD countries, Johnstone and Labonne (2009) identified that while signalling regulators was a key driver within larger enterprises, they were not a significant driver in smaller companies. The data also indicated that there are different main drivers for the adopting of EMS and for the certification of EMS. Several studies indicate that the main driver for implementing a certified EMS scheme is stakeholder pressure (Hillary, 1999; Ilomäki and Melanen, 2001; Johnstone and Labonne, 2009). This pressure is exerted mainly by customers but it may also come from local government, local community, regulators, and employees (Hillary, 1999; Ilomäki and Melanen, 2001). Other identified drivers include ensuring regulatory compliance, preventing or controlling pollution, and improving corporate image (Heras and Arana, 2010; Johnstone and Labonne, 2009). However, cost savings and environmental protection were both seen as minor motivations for EMS adoption in industrial Finnish SMEs (Ilomäki and Melanen, 2001).

2.3. EMSs' potential benefits and disadvantages for SMEs

Potential benefits of EMS adoption include improved resource efficiency, improved environmental performance, assured legal compliance, cost savings, reduced waste and improved waste handling, improved image, improved motivation and awareness among company staff, improved organisational management and the attraction and retaining of customers (Babakri et al., 2004; Biondi et al., 1998; Burke and Gaughran, 2007; Heras and Arana, 2010; Hillary, 1999, 2004; Ilomäki and Melanen, 2001; McKeiver and Gadenne, 2005). Amongst these benefits, the foremost were identified as the attraction of new business and customers and the satisfaction of customer requirements followed by improved

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