



Implementing environmental with other standardized management systems: Scope, sequence, time and integration[☆]

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ABSTRACT

The aim of this article is to analyze how the implementation of the environmental management system (EMS) in accordance with the ISO 14001: 2004 standard has been carried out in organizations having more than one standardized Management System (MSs). In particular, four implementation aspects will be discussed, namely the different management system standards (MSSs) used for registration, for example ISO 14001, ISO 9001, OHSAS 18001, ISO 27001 and SA 8000, the order in which they were implemented, the time required for each implementation, as well as the scope of integration of these MSSs into a single Integrated Management System (IMS).

In order to do so, some of the results of a survey carried out in 176 organizations registered to, at a minimum, both ISO 14001: 2004 and ISO 9001: 2000 standards for environmental and quality management, respectively, are presented. As one of the few existing empirical studies regarding the integration of multiple MSs, this research reveals the importance of the different possibilities which organizations can opt for when considering EMS implementation. For example, while most respondents implemented ISO 9001 before ISO 14001, others did so simultaneously or even applied ISO 14001 first. Furthermore, although a large majority of organizations integrated their EMS with additional standardized MSs, a small percentage did not. Apart from illustrating the survey outcomes, the article contains a detailed case analysis of four specific organizations with high environmental awareness that have implemented quality and other standardized MSs.

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1. Introduction

As is now commonly known, in 1996, the International Organization for Standardization (ISO) introduced the ISO 14001 Environmental Management System (EMS) requirement standard, which then led to the ISO 14000 family of generic environmental management standards. In its current version, published in 2004, ISO 14001 already had more than 129,000 registered organizations in 145 different countries at the end of 2006 [1].

However, ISO 14001-based EMS has not been the only standardized Management System (MS) that organizations with environmental responsibilities have implemented. For example, quality management systems (QMSs), also mainly based on ISO standards,

such as ISO 9001 or ISO/TS 16949, have also been successful in terms of their world-wide diffusion (see Ref. [2]). At the end of 2006, there were already more than a million organizations registered to QMS standards [1], and that number is still growing. Other standardized MSs, focused on various functions and stakeholders of the organization, for instance the Health and Safety MS (HSMS), the Corporate Social Responsibility MS (CSRMS), the Information Security MS (ISMS), and the Supply Chain Security MS (SCSMS), or applied in specific industry sectors, for example the Food Safety MS (FSMS), are being added to QMSs and EMSs.

Therefore, there are many organizations which, either because of the demands of the market itself or because of other internal motivations, have implemented different MSs alongside their EMS. In fact, although no reliable references on this matter have been found, it is quite plausible to think that the great majority of ISO 14001 – registered companies are also certified in accordance with the ISO 9001 standard. Consequently, a new need has emerged in organizations, namely to integrate these systems in a single, and therefore “integrated management system” (IMS).

The specialized literature contains many contributions to the analysis of the impact of EMSs [3–6]. However, for the time being, although the existence of synergies and the related effects among

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standardized MSs appear to be obvious, their integration has been analyzed very little. On the theoretical level, different models and theories for the integration of standardized MSs have been developed (e.g., Refs. [7–13]) and some countries have even created their own models of management systems integration, such as, for example, the case of Australia [14], Denmark [15] or Spain [16]. In July 2008, ISO published “The Integrated Use of Management System Standards” handbook [17]. However, on the empirical level, only three studies of specific cases have been found [18–20], in addition to three surveys carried out by Zeng et al. [13] in 104 Chinese organizations, Salomone [21] in 103 Italian companies, and Douglas and Glen [22] in 28 small to medium enterprises in the United Kingdom. To sum up, Zeng et al. [13] focused their research on major problems for companies to operate multiple parallel MSs, and the internal and external factors that affect the implementation of IMS, in order to propose what they called a “synergetic model for implementing an IMS”. For his part, Salomone [21] studied, in particular, the motivations, driving forces and external pressures that companies meet when implementing different MSs. Douglas and Glen [22] concentrated on, among other IMS topics presented in their work, the sequence of MSSs implementation and the extent of MSs integration in organizations with both the ISO 9001 and ISO 14001 certificates.

Through a joint quantitative and qualitative analysis, this article intends to study which additional MSSs the ISO 14001 – registered companies comply with, and based on that study, further examine their implementation or integration processes. To do so, the specific aims of the research are considered in Section 2 of the article. The research is based on two fundamental pillars, namely a survey carried out in 176 organizations and a study of four case organizations considered especially interesting for their different approaches to MSSs implementation and MSs integration. Therefore, while the survey is described in Section 3 and the related results are presented in section 4 of the article, section 5 illustrates the case studies. In the last chapter, conclusions and limitations of the work are discussed, based on the results of the survey and the analyzed cases.

2. Objectives and methodology

The aim of this exploratory article is to analyze how organizations with several standardized MSs, one of them being an EMS in accordance with the ISO 14001: 2004 standard, have actually carried out such multiple MSS implementations. In order to accomplish this objective, we tried to analyze four important implementation questions, which have not been discussed to a great depth in previous empirical studies. Namely, we studied:

- *The scope of standardization* – MSSs today cover a broad spectrum of areas within an organization, and are aimed at providing confidence to different internal and external stakeholders. Therefore, organizations looking to address a particular organizational function or satisfy a specific group of stakeholders by way of a MSS have a good choice that is only going to widen in the future. For example, ISO has recently announced the initiation of the development of MSSs for road safety and energy MSs (see Refs. [23,24], respectively). Karapetrovic and Willborn [25,26] and Karapetrovic [8] address a number of factors that influence decisions on the implementation of specific MSSs, ranging from the availability of internationally-accepted MSSs to stakeholder pressures. For example, while an energy company may not need ISO 9001 registration due to the general lack of pressures to standardize a QMS, it may require a formalized ISO 14001 EMS [26]. On the other hand, a company in the automotive sector is likely to have both a standardized QMS and a standardized EMS,

together with an ISO/TS 16949 extension for quality management. Overall, the three most popular standardized functions and the respective MSSs are quality with ISO 9001: 2000, environment with ISO 14001: 2004 and safety with OHSAS 18001: 2008 (see, for example Refs. [7,8,27]), although it may be expected that newly published or planned standards regarding information technology (e.g., ISO 20000: 2005 for services and ISO 27001: 2005 for security), corporate social responsibility (the upcoming ISO 26000) and other areas will not lag too far behind.

- *The sequence of implementation* – Due to the differing needs of organizations in terms of the scope of application, as well as the sequential development of MSSs themselves, it can be expected that the order in which standardized MSs are implemented also varies among industry sectors and individual organizations themselves [10,26]. In most cases, the sequence of implementation will trail the publication of standards, namely ISO 9001-based QMS would be introduced first, followed by an ISO 14001-compliant EMS (see, for instance, Refs. [22,26–28]). Subsequently, other functions would be standardized, for instance HSMS in accordance with OHSAS 18001 [10,27]. Other organizations, albeit in a minority would use ISO 14001 before ISO 9001 [26]. In addition, the diversity of available MSSs makes it possible to simultaneously apply several standards covering different organizational functions or stakeholders, for example ISO 14001 and OHSAS 18001 [8]. This manner of implementation, especially if supported by good integration models and methodologies [11], could be used often in the future [26].
- *The time required for implementation* – The question of how much time organizations require to implement multiple MSSs across functions is particularly interesting as it relates to both the efficiency in the use of resources and the effectiveness of the application of standards. Since MSSs contain a number of common characteristics, in addition to their identical nature and sharing of the underlying concepts, a company with one standardized MS in place would already follow most, if not all, of the fundamental principles, models and requirements of any new standard it is implementing (see, for example, Refs. [10,25,28]). Therefore, additional standards should take less time to implement compared to their predecessors (see Refs. [25,29,30], for instance). Furthermore, due to synergy effects, if a company is applying two or more MSSs at the same time [26], the lead time for such an implementation should be shorter than the sum of the times required for the sequential implementation.
- *The scope of integration* – One of the most interesting questions in the field of IMSs based on standards is how pervasive the actual integration is among the organizations that have implemented multiple MSs. Since integration makes much more sense than disintegration, in other words leaving the internal standardized management systems as separate, it can be hypothesized that a larger portion of organizations would choose integration over separation (see, for example, Refs. [7,10,22,25,26]). What is also important to note is that integration in this sense refers to the amalgamation of MSs that cover different functions or stakeholders, rather than the systems that were designed to meet different standards in the same organizational area. For example, cross-functional integration would imply the melding of environmental and quality MSs, but not the integration of an EMS to meet both the requirements of ISO 14001 and the Eco-Management and Audit Scheme (EMAS), or a QMS for ISO 9001, ISO/TS 16949 and additional such standards.

To tackle these four questions, an empirical study had been designed that, by means of a mail survey, revealed a wide range of

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