Journal of Cleaner Production 57 (2013) 124–133

Contents lists available at SciVerse ScienceDirect

Journal of Cleaner Production

journal homepage: www.elsevier.com/locate/jclepro

Guidelines for the integration of certifiable management systems in industrial companies

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ARTICLE INFO

Article history:
Received 2 December 2012
Received in revised form
3 June 2013
Accepted 10 June 2013
Available online 2 July 2013

Keywords:
Integrated Management System
ISO 9001
ISO 14001
OHSAS 18001
Industrial companies

ABSTRACT

Organizations often operate in turbulent environments characterized by intense competitiveness, constant technological progress, new market requirements, and scarce natural resources. This scenario imposes the constant need for change in the operation and companies' management. The integration of certifiable management systems is an effective alternative in this sense. The objective of the present study is to propose guidelines for the integration of the ISO 9001 Quality Management System (QMS), ISO 14001 Environmental Management System (EMS) and OHSAS 18001 Occupational Health and Safety Management System (OHSMS) in industrial companies. These guidelines were developed based on a theoretical framework and on the results from fourteen case studies performed in Brazilian industrial companies. The proposed guidelines were divided into three phases: a) integration planning, b) integration development, and c) integration control and improvement.

1. Introduction

Organizations often operate in turbulent environments characterized by intense competitiveness, constant technological progress, new consumer market requirements, and scarce natural resources. This scenario imposes the constant need for change in the operation and management of these companies in order for them to adapt themselves to these new conditions and become or remain competitive, which are consequently encouraged to engage in new projects such as the integration of certifiable management systems that allow a company to positively stand out in the market (Bayraktar et al., 2007; Raymond and Bergeron, 2008; López-Fresno, 2010).

In this context, Quality Management Systems (QMS), Environmental Management Systems (EMS) and Occupational Health and Safety Management Systems (OHSMS) have become increasingly important as clients begin to require high standards of quality and commitment to superior environmental practices and operations that protect workers from illegal or unsafe practices.

A growing number of organizations seek certification of their management systems. International standard entities have developed management models that provide a structure for certification and evaluation in various areas and functions. ISO 9001 QMS, ISO 14001 EMS and OHSAS 18001 OHSMS are the most widely used and universally accepted standards. There is a high degree of compatibility among these certifications, and their latest versions were developed with the purpose of achieving their integration (ISO, 2013).

According to ISO (2013), in 2011 there were 1,484,651 certifications of all kinds in the world guided by the International Organization for Standardization, of which 1,111,698 were related to ISO 9001 and 267.457 related to ISO 14001 and according to OHSAS Group Project (2009), there were 56.251 OHSAS 18001 certifications in 2009.

The certification of a system is the recognition that the system meets a specific normative standard. The certification is granted by a certifying agency accredited by a supervisory body. In Brazil, this function is exercised by the National Institute of Metrology, Standardization and Industrial Quality, also known as INMETRO (Oliveira and Grael, 2008).

Multiple certifiable management systems can function separately. However, they are counterproductive, difficult to manage, and involve collaborators which invariably lead to the question of whether they should prioritize either the productive processes or the excessive bureaucracy they generate. A collaboration of employees is easier to be accomplished for a single system than for two or more systems that are separately managed. Additionally, the synergy generated by integration has resulted in improved performance at a considerably lower cost for companies (Beckmerhagen et al., 2003; Oliveira and Grael, 2008; Bernardo et al., 2009).

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http://dx.doi.org/10.1016/j.jclepro.2013.06.037

The integration of certifiable management systems can occur from the development of an Integrated Management System (IMS), which is an approach that seeks to take advantage from the synergies and elements common to all systems, for them to work together which strengthens their results, reduces time, human effort, as well as their technical and financial resources. The IMS must be appropriate for the culture and structure of the company, be inserted into the company's strategy and align itself with other functions of the organization (López-Fresno, 2010).

For these reasons, the main objective of the present study is to propose guidelines for the integration of ISO 9001 QMS, ISO 14001 EMS, and OHSAS 18001 OHSMS which are based on the theoretical framework and on the results from fourteen case studies performed in Brazilian industrial companies.

The decision to integrate these three specific systems is derived from the fact that they have many common elements that are based on the PDCA cycle (Plan, Do, Check and Action), and were developed and/or reformulated by considering each of them.

As it will be seen throughout this text, there is a considerable number of quantitative scientific studies on these three management systems and their integration. However, due to the vast amount of information that these studies generate from mapping and from the identification of primary opportunities for improvement in the integration process, as well as to the need for studies that accurately systematize applicable guidelines for improvement, this work has a significant opportunity for both applicable and academic contribution.

2. Synthesis of the theoretical framework

2.1. ISO 9001 quality management system

In an organization, quality is directly related to the identification and satisfaction of the needs and expectations of customers, other stakeholders and the community in which the company operates. Quality management combines management techniques and models that strive for excellence in projects, processes, products, and services through continuous improvement (Sun, 2000; Mackau, 2003; Magd and Curry, 2003).

ISO 9001 (2008) is a certifiable standard that is accepted worldwide and composed of requirements that aim to guarantee the quality of products and services and, consequently, the most effective relationship between the supplier and the customer. The standard suggests an approach through processes based on the PDCA cycle (Karapetrovic, 2003; ISO 9001, 2008).

The principal objective of ISO 9001 is to assist companies, regardless of their size and sector, with the development and effective operation of a QMS by increasing their capacity to design, produce and deliver high-quality products and services (Wahid and Corner, 2009).

According to Williams (2004), the main motivating factors for the implementation of ISO 9001 include the following: demand from customers, improvement in the quality of processes and products, strategic vision, advertizing, regulatory requirements, increased market competitiveness, and external governments requirements.

Overall, the benefits of adopting the ISO 9001 standard include the following: increased sales and profits, fewer customer complaints, increased exports, reputation improvement, greater product reliability, fewer quality problems, less delivery time, reduction in process variation, lower manufacturing costs, fewer customer audits, an increase in competitive advantages, greater awareness by employees, access to new markets and improvements in customer relations, and internal communication (Yahya and Goh, 2001; Williams, 2004).

According to Gotzamani (2005), the main difficulties of ISO 9001 include the following: significant impact on organizational culture, excessive focus on certification but not on the system, low commitment by management, and the use of a conventional quality auditing process instead of a more complex approach.

2.2. ISO 14001 environmental management system

An EMS supports organizations in the control and in the continuous reduction of their environmental impacts. This type of system is composed of policies, processes and auditing protocols that aim to reduce material waste and pollutants emission. The objective of ISO 14001 is to empower companies with mechanisms that have the potential to reduce environmental damage, such as the benefits that offset the costs of their implementation (Fryxell and Szeto, 2002; Matthews, 2003; Kilbourne, 2004; Silva and Medeiros, 2004; Rowland-Jones et al., 2005; Darnall et al., 2008).

The ISO 14001 standard is an EMS that is frequently used throughout the world. Although this EMS does not establish specific performance criteria, development levels for environmental processes or values for control indicators, it provides requirements that are based on processes and the PDCA cycle which are mandatorily completed to obtain certification (Watson and Emery, 2004; Matthews, 2003; ISO 14001, 2004; Chavan, 2005; Ann et al., 2006).

It is possible to associate the main motivations for the implementation of ISO 14001 with the benefits of certification which include the following: opening of domestic and international markets; improvement in management; increase in consumer satisfaction; compliance with a country's specific environmental legislation; standardization of environmental management procedures; waste reduction; improvement in the image of a company; increase in environmental awareness; compliance with pressure from external groups; and an overall improvement in environmental performance (Fryxell and Szeto, 2002; Zeng et al., 2005; Sambasivan and Fei, 2008).

2.3. OHSAS 18001 occupational health and safety management system

Constant technological progress and intense competitiveness as a result of globalization brings a subsequent change in working conditions, processes, and organizations. Legislation does not always sustain the rapid pace of change which is reflected in working conditions, including the perception of new risks by the employee. Thus, the development of an efficient OHSMS is necessary to inform collaborators, motivate them to act in a prudent and healthy manner, and provide mechanisms that companies can implement to monitor improvement in working conditions. OHSAS 18001 is an option of the OHSMS that is employed more frequently for this purpose (Mearns and Håvold, 2003; Hughes and Kornowa-Weichel, 2004; Nivolianitou et al., 2004; Attwood et al., 2006; WHO, 2007; Bottani et al., 2009).

OHSAS 18001 involves a generic specification for all companies, regardless of type, size and geographical, cultural and social conditions that comply with the requirements of an OHSMS. The objective of this standard is to establish components for the construction of an effective OHSMS that are aimed at minimizing accident risk and assuring protection of human resources. This standard is effective in ensuring that companies meet their legal, contractual, social, and financial requirements associated with occupational health and safety. Similar to ISO 14001 and ISO 9001, the OHSAS 18001 is also based on the PDCA cycle.

OHSAS 18001 enables the strengthening of the company's image as perceived by employees, customers and the general public, and highlights the company's commitment and respect for people, which results in a competitive advantage (Oliveira and Oliveira, 2008).

The main recurrent challenges for implementing the OHSMS, especially for OHSAS 18001, include the following: low educational