Integration of certifiable management systems in industrial companies: challenges and opportunities

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Abstract
This paper aims to identify challenges and opportunities in the integration process of certifiable management systems through 14 case studies in industrial companies. The main result is the proposition of guidelines for integrating these systems. They are structured in three main groups: planning, execution and control / improvement.

Keywords: Integrated management system, Certifiable management systems, ISO 9001, ISO 14001, OHSAS 18001.

Introduction
The globalization has increased the companies competitiveness, which has encouraged them to engage in new projects such as the integration of certifiable management systems in order to differentiate them positively (RAYMOND; BERGERON, 2008; LOPEZ-FRESNO, 2010).

The organizations operate in a turbulent environment characterized by intense competition, constant technological progress, new market requirements and resources increasingly scarce. This scenario requires the continued need for change in the way its operate and manage businesses to adapt them these new conditions and become or remain competitive (BAYRAKTAR et al., 2007).

In this context, quality management systems (QMS), environmental (EMS) and safety and occupational health (OHSMS) become increasingly important as customers are demanding high quality standards, commitment with good environmental practices and operations that do not expose employees to work illegal and unsafe.

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Theoretical reference
Faced the emphasis placed by stakeholders in certifiable management systems as a means of demonstrating the level of commitment to quality, environment and occupational health and safety, and increasing importance of international standards, there is a new direction for organizational management, which begins to seek a integrated and systemic approach (BAMBER; SHARP; HILDES, 2002).
Integration is the alignment and harmonization among management systems in an organization, tuning hierarchical levels and different sectors, facilitating the use of the same language in pursuit of common goals to improve the satisfaction of stakeholders (BERNARDO et al., 2009).

Besides the Integrated Management System (IMS) to enable synergistic gains by executing common tasks, significantly reducing production costs due to the reduction of waste and improve the company's image, its development in a separate and inconsistently way increases the probability of failures, induces duplication and create unnecessary bureaucracy (BECKMERHAGEN et al. 2003).

The standards that are subject of this study (ISO 9001, ISO 14001 and OHSAS 18001), with greater or lesser extent, directly or indirectly, include process control systems, human resources, information, documents, design, production and distribution of products and services to meet customer and company needs (MAGD; CURRY, 2003). These similarities make them amenable to integration and synergistic.

The methodology used in the integration is a very important aspect for the performance of the systems and the company as a whole, which depends on its own decision and also on the characteristics of each organization. Currently there is no unique accepted worldwide reference for systems integration certifiable management (BERNARDO et al., 2009).

Bernardo et al. (2009) discuss three integration strategies certifiable management system according to the sequence of implementation:
- Implementation of a QMS first and then an EMS or OHSMS (situation most common);
- Implementation of the EMS first and then the QMS or OHSMS;
- Implementation of OHSMS first and then the QMS or EMS, and
- Simultaneous implementation of two or three systems.

For these authors, the decision of which strategy to adopt will depend on the needs and characteristics of each organization. Elements such as pressure from customers, marketing, legislation and strategic planning, among others, directly influence this decision-making process.

However, as the standards have been developed based on each other and them use a compatible framework and some similar tools, any of the systems will create the minimum conditions for the implementation of other and consequently for its integration.

Zutshi and Sohal (2005) warn that the degree of integration depends on which systems are being considered, the organizational culture, and the nature and size of the company. They also recommend attention to the following aspects when integrating certifiable management systems: real commitment from top management, availability of sufficient resources, role of communication, emphasis on training, and development of integrated audits.

These authors also highlight some items that can be integrated: processes related to procurement (purchasing, receiving, planning and management of accounts payable, including suppliers and subcontractors), training and development of implementation team, documentation, responsibilities, and identification of customer requirements.
Overall, the integration must be planned and implemented in a structured manner. Many companies have adopted certifiable management systems as a result of external pressures, such as customers who demand the implementation of quality standards or minimum requirements for safety and health. However, it does not apply to integration, which is usually done for the benefit of the organization. Therefore, an important step in this direction should be the identification of business needs.

**Research method**

The theme of this study, its research question and its purpose were established on the basis of needs identified in the literature and the perception of the authors in their classes and field studies related others researches. The theoretical framework was made in order to base the case studies and proposal guidelines.

The main function of the case studies was to identify the quality, environment and occupational health and safety management systems features and the main integration aspects in each of the fourteen companies studied, identifying its key aspects.

The companies studied were selected by the following criteria: having ISO 9001, ISO 14001 and OHSAS 18001 in newer standards version, have some kind of integration among these systems and agreeing to participate in this study. In order to increase the chances of acceptance by enterprises, is contacted first and preferably those who had participated or were participating in any other research related to the authors of this research.

Data collection in these companies, according to Yin (2009), occurred on multiple evidence sources: semi-structured interviews with Management Representatives and, in some cases, with some production managers and key employees; on-site observation, especially in sectors that manage the systems, in the meeting rooms of quality teams, factory-floor, etc.; and documents analysis, mostly manuals IMS (Integrated Management System) and / or manuals for each system separately, work instructions and records.

**Case studies summary**

Among the fourteen industrial companies studied, eleven are large and three are midsize. Thirteen of them have annual revenues in excess of $ 30,000,000.00 annually. Only two do not export. The average age of the companies studied is 49 years.

It was found that certifiable management systems have many elements in common, and complementary, it are supported and / or interdependent. Its systemic management and joint enables numerous gains for companies, which are consistent with the theoretical framework.

The integrated management enables various procedures are no longer duplicated (inspections, audits, training, records, etc), generating considerable savings. These factors enable the organization achieves significant competitive advantages, beyond the benefits that each of these systems generates individually.

Regarding the benefits of integration, in all companies studied was verified improvement of the operations and internal communication efficiency, better decision making, increased quality of goods and services and increased the reliability of products and processes.
The main difficulties experienced by organizations in the integration process, which in general were low, relate to the compatibility of standards and the complexity of the integration process.

Although the standards have been intentionally developed to be compatible and present its interrelationships in the annexes, there was some difficulty in interpretation and in alignment and clustering of integration activities.

In most companies the implementation of the three systems occurred at different times and was guided by different consulting firms. These features, combined with the need for adequate financial and human factors, become systems integration quite complex.

From a general analysis of the data presented in this section, it was found that the studied companies have quality, environment and health and safety management systems well individually developed, but only some of them have effectively integrated.

However, some procedures were checked integrated, which also served as inputs for the preparation of guidelines that will be presented in the next section.

It is noteworthy that the weaknesses and the main difficulties of these companies were also considered for the formulation of guidelines in order that they are feasible and avoid negative experiences are replicated.

**Guidelines for certifiable management systems integration**

The proposed guidelines have been divided into three main groups with their subitems, as follows:

*a) Integration Planning Phase*

- **Consulting external** - the integration process can developed with own resources if there is people with the profile and training required, or can hire a consulting firm. In the latter case, you need to check your previous experience with the subject;

- **Study of the interrelationships among standards** - it should create an internal committee to make a theoretical study about the potential integration points, which will be further developed in practice;

- **Diagnosis** - based on the results of this study it can perform a verification of current situation in the company processes under integration point of view;

- **Management representative** - it should appoint a unique management representative (MR) with knowledge and experience to all systems rather than one MR for each of them;

- **Integration team** - led by management representative it must create a multidisciplinary team with representatives from all sectors to be motivators and replicators of the concepts and tools necessary to the integration process;

- **Integration plan** - the integration team must devise a plan that included activities, responsible and resources forecasting (time, human resources, financial resources, equipment, etc) for the systems integration;

- **Infrastructure** - it must provide classrooms, office supplies, computers and other infrastructure resources for proper execution of the work of integration;
b) Integration development phase

- **Human Resources** - highlights the importance of the selection process and training. Both should consider the experience and potential of human resources with integrated management systems. The human resources department should have direct involvement in this process;

- **Integration of the basic elements** - the first elements to be integrated are: scope, policy, objectives and responsibilities. These elements will guide the other elements to be integrated;

- **Documents and communication** - documental integration is fundamental to give robustness to fusion systems process. This process should begin with the manuals junction;

- **Internal and external clients** - the expectations and needs of internal and external customers for items related to systems integration must be carefully determined;

- **Operational control** - integration will have significant impact on the processes, especially those directly related to production, but will also be strongly influenced by them. Aiming at a consistent operational control, it should prioritize the preparation and dissemination of the work instructions and the establishment and monitoring of performance indicators;

- **Procedures and processes** - it should be introduced in the procedures for preventive action, control of inspection, equipments measuring and test, and treatment nonconformity elements that include systems integration;

- **Suppliers and supply chain** - it should consult and involve suppliers and distributors in the systems integration process because it can assist in key elements such as product development, specification, purchasing, delivery, etc.;

c) Integration control and improvement phase

- **Perception of key elements by customers** - it is important to check with internal and external customers satisfaction with elements direct or indirect related with the systems integration, i.e, verify that their perception of the basic elements of quality environment and safety have changed;

- **Monitoring, measuring and improving each system separately and its integration** - the indicators that monitor the integration will enable the control of the integrated processes and assist in identifying improvement opportunities. These can be achieved through increasing the intensity of integration and intensify its growing through new processes addition;

- **Internal and external audit** - audits are procedures for verifying of three standards requirements compliance in a simultaneously way or individually. In order to intensify the interrelation between these systems, it is suggested that these audits are performed simultaneously in order to verify both its elements, including especially its integrable aspects;

- **Top management review** - at regular intervals, top management shall review the integrated system to ensure its relevance to organizational objectives, efficiency, effectiveness and opportunities for improvement;

- **Corrective actions** - actions of this type must be developed to eliminate the causes of nonconformities existing or even undesirable situations related to the three certifiable management systems to prevent its future recurrence;
- **Integration with other systems** - it is believed that after the systems integration, processes are properly documented, controlled and continuously improving in quality, environment and safety terms. Thus, there are basis for its integration with other programs and systems, such as lean production, BSC, six sigma, cleaner production, etc.

**Conclusion**

The certifiable management systems integration is an interesting opportunity to generate competitive advantage for businesses of all kinds. This process is already being developed by companies around the world, but still needs further strengthening, developing new methodologies and dissemination of good practices.

Highlights are two main contributions of this work: one academic and one applied. Academically an analysis of the theoretical framework was done in order to support the formulation of guidelines for the integration of certifiable management systems. Moreover, these guidelines have applied characteristics since it can be effectively applied by industrial companies.

Finally, it is suggested that more studies like this are carried out in other realities so as to expand and deepen the guidelines presented in this work.

**References**


