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Integration of standardized environmental and quality management systems audits

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Abstract

In the last few years, many organizations have chosen to implement standardized Management Systems (MSs), such as the ones based on ISO 14001 and ISO 9001. However, few studies exist on how firms carry out the process of auditing these MSs.

Our goal is to study how companies with more than one standardized MSs conduct the audits and to which extent they integrate the audit elements in order to benefit from the advantages of having a sole, integrated audit system.

We provide four case studies and confirm the idea that firms with more than one MS integrate their audits. However, the degree and specific characteristics of this integration vary in the different companies analyzed.

This paper contains one of the first empirical studies regarding the integration of MSs audits. The study provides an original contribution to the understanding of whether and how the four case study organizations have integrated certain aspects of the audit systems, for instance, human resources, time, audit inputs and outputs).

Keywords: Integrated Management Systems; Integrated Audit Systems; ISO 9001; ISO 14001; ISO 19011; Spain

1. Introduction

The implementation of Management Systems Standards (MSSs), for example ISO 9001 and ISO 14001 (see ISO 2010), has increased in recent years. The proliferation of new MSSs, such as the ones for occupational health and safety (e.g., OHSAS 18001 and CSA Z1000), for corporate social responsibility and accountability (e.g., SA 8000 and AA 1000), for security of information systems (ISO 27001) or for supply chains (ISO 28000), gives the option that firms integrate the corresponding Management Systems (MSs) into a single system (Labodova, 2004; Zutshi and Sohal, 2005).

Many studies exist about the integration of standardized MSs. These studies focus on different topics, such as the integration advantages, methodologies, and degrees (see, for example, Karapetrovic and Willborn, 1998a; Karapetrovic, 2003; Zeng et al., 2007; Bernardo et al., 2009; Khanna et al., 2010; López-Fresno, 2010; Asif et al., 2010; Leopoulos et al., 2010). However, little empirical research has been done on how organizations that integrated their standardized MSs actually carry out their audit process.

Organizations with more than one implemented MS, can integrate the audits against the corresponding MSs (Karapetrovic and Willborn, 2001; Karapetrovic and Jonker, 2003; Power and Terziovski, 2005; Kraus and Grosskopf, 2008; Bernardo et al., 2010). Guidance on the process of audit integration is currently provided by ISO 19011 (ISO 2002).

Many benefits and efficiencies are related to the integration of audits. For instance, the optimised use of resources is mentioned by Karapetrovic and Willborn, 1998b; Douglas and Glen, 2000; Karapetrovic, 2002; Zeng et al., 2005; Zeng et al., 2007; Zutshi and Sohal, 2005; Pojasek, 2006; Salomone, 2008 and the establishment of auditor competence for different MSSs is considered by Douglas and Glen, 2000; De Moor and De Beelde, 2005; Kraus and Grosskopf, 2008. Moreover, *"the process under review, along with all their controls (environmental, health, safety, and quality) has to be evaluated only once"* and there is less duplication of effort during the planning, execution, and even follow-up phases of the audit (Kraus and Grosskopf, 2008).

However, some problems arise regarding the integration of audits. Beckmerhagen et al. (2003) state that, due to the lack of experience for auditing IMS, audit resources and auditor competence,

knowledge and expertise need to be extended. Similarly, Krauss and Grosskopf (2008) argue that one of the bigger obstacles to auditing an IMS is finding auditors with sufficient knowledge, capabilities, and experience in auditing multiple systems, especially simultaneously. Bernardo et al. (2010) mention the difficulty in the formation of a single audit team for different MSSs and the related MSs. Therefore, Renzi and Capelli (2000) argue that it *"would be better to keep the two jobs (quality and environmental auditors) separate, due to the peculiar skills of each system".* One particular problem regarding external audits, which are usually undertaken by large organizations, is that registrars may require more time to adapt to the changes in the environment or to the auditees' integrated management systems (Kraus and Grosskopf, 2008).

To provide solution to some of these challenges, audit systems can be developed and implemented according to specific auditing models in a similar way to standardized MSs (Karapetrovic et al. 2006). The most recent step realized regarding auditing standards was the integration into a single standard, in 2002, of the guidelines for auditing quality and environmental management systems, a standard named ISO 19011 (ISO 2002). The standard explains "*the principles of management system auditing and offers advice on evaluating auditors and assessing their competence, guidance on managing audit programs, and guidance on conducting internal and external audits*" (Kraus and Grosskopf, 2008). This standard is currently under revision in order to provide more generic guidance and allow auditing of all standardized MSs (ISO 2008c).

There are a limited number of empirical studies regarding the integration of MS audits (e.g. Karapetrovic et al., 2006, Salomone, 2008, Kraus and Grosskopf, 2008, Bernardo et al., 2010). Therefore, the objective of this research is to study how firms with more than one standardized MS conduct the audits and to which extent they integrate the audit elements in order to profit from the advantages of having a sole, integrated audit system.

2. Literature review and propositions development

2.1. Integration of Management Systems

The proliferation of new standards leads to the question of whether these standards should be managed individually or jointly in order to benefit from existing synergies among them. Addressing the question about the convenience of having an integrated management system as well as considering the benefits and costs of such integration is of particular importance for the purpose of this study as all firms with two or more management systems find themselves involved in the need to address such questions (Zeng 2007; Bernardo, 2009).

Research studies have been carried out to examine the ways in which organisations have addressed the introduction and integration of environmental management systems (EMS) and occupational health and safety management systems (OH&SMS) with their quality management system (QMS) (Labodova 2004; Salomone, 2008; Bernardo et al., 2009; Karapetrovic and Casadesus, 2009). Empirical investigations on the integration of standardized management systems are increasing, namely Baldi (1999), Douglas and Glen (2000), Renzi and Cappelli (2000), Fresner and Engelhardt (2004), Zeng et al. (2005, 2007), Zutshi and Sohal (2005), Jørgensen et al. (2006), Jørgensen (2008), Karapetrovic et al. (2006), Salomone (2008), Karapetrovic and Casadesús (2009), Bernardo et al. (2009, 2010), Asif et al. (2010), Leopoulos et al. (2010).

Moreover, empirical studies regarding the scope of integration confirm the idea that firms prefer integration over desintegration (Douglas and Glen, 2000; Karapetrovic et al., 2006; Zeng et al. 2007; Salomone, 2008; Karapetrovic and Casadesús, 2009 or Bernardo et al., 2009).

At the same time, there has been a growing recognition of the value that IMS can bring to the business (Karapetrovic and Willborn, 1998; Wilkinson and Dale, 1999; Douglas and Glen, 2000; Renzi and Cappelli, 2000; Zutshi and Sohal, 2005; Zeng et al., 2007; Salomone, 2008; Asif et al., 2009; Karapetrovic and Casadesus, 2009; Khanna, 2010 and Asif et al., 2010). These authors present improvements related to having an integrated system such as costs savings, operational benefits, better external image, improved customer satisfaction and enhanced employee motivation.

In order to avoid the failure of MS integration, it is important that firms manage the difficulties associated to the implementation and maintenance of an IMS (López-Fresno, 2010). These challenges are numerous and involve aspects such as the lack of human resources, the lack of government support, departmentalization of functions and individual concerns of the people involved (Karapetrovic and Willborn, 1998a; Karapetrovic, 2003; Zutshi and Sohal, 2005; Karapetrovic et al., 2006; Zeng et al., 2007; Salomone, 2008; Asif et al., 2009; Karapetrovic and Casadesus, 2009 and Asif et al., 2009).

2.2. Management Systems Audits Integration

Since audit integration is the main topic of this paper, it is important to define some relevant concepts related to the auditing of standardized MSs. An 'audit' is defined in ISO 19011: 2002 and in the ISO 9000: 2005 vocabulary standard as a *'systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled'* (ISO 2002, 2005).

It is also important to explain what an integrated audit means. Karapetrovic and Willborn (1998c), Karapetrovic (2002) and Karapetrovic (2003) state that*"full audit integration necessitates the establishment of a single audit system across all functions and hence a complete amalgamation of all cross-functional goals, processes and resources"*. This means that integrated audits need to involve the sharing of all the components among cross-functional audits, for instance quality, environmental and safety audits, namely they need to share the time when the audit is conducted, the audit team, the plan and the report. However, practically, the integration of quality, environmental, safety and other kinds of audits can be reduced to involve the sharing of only a selected number of the above mentioned components among cross-functional audits (Karapetrovic et al., 2006). For example, firms have the option to conduct simultaneous audits of quality and environmental MSs, which are separate systems, conducted by separate audit teams, under separate management. When two or more MSs are audited together, this is termed a combined audit (ISO 2002). "*A joint audit is conducted when two or more auditing organizations cooperate to audit a single auditee*" (ISO 2002).

Unfortunately, empirical investigations on the integration of audits are few. Namely Baldi (1999); Douglas and Glen (2000); Beckmerhagen et al. (2003); Bamber et al. (2004); Rajendran and Devadasan (2005); Karapetrovic et al. (2006); Salomone (2008); Kraus and Grosskopf, (2008) and Bernardo et al. (2010) study in detail the integration of internal auditing subsystems or external function-specific audits, like the ones performed against a QMSS or an EMSS. Additionally, several studies exist on the integration of MSs, i.e. Zeng et al. (2005); Zeng et al. (2007); Zutshi and Sohal (2005); Bernardo et al. (2010); Khanna et al. (2010); López-Fresno (2010); Asif et al. (2010); Leopoulos et al. (2010).

In a detailed study on audit integration, Baldi (1999) identified four types of integrated audits namely fully integrated, simultaneous, overlapping, and sequential. In firms with a fully integrated audit, one multidisciplinary audit team conducts the audit at one point in time. In the case of a simultaneous audit, the management system elements are audited separately, but at the same time. Overlapping audits cover separate aspects of the integrated management system, but may overlap in

terms of scheduling and areas audited. Finally, sequential audits entail auditing one management system first, followed by the next one at another point in time Baldi (1999).

The study of Beckmerhagen et al. (2003) focuses on audits as a supporting structure for system integration. They claim that auditors must possess expertise to assist the management for integrating the functions of an MS and present a procedure for attaining continuous improvement using audits.

Rajendran and Devadasan (2005) recognise the need of adopting an integrated standard for auditing QMSs along with EMSs and Safety Management Systems (SMSs) while Bamber et al. (2004) discuss the significant role of the maintenance function in an IMS in order to add value to the third party assessment process.

Douglas and Glen (2000) found in an investigation of 28 companies that had implemented ISO 9001 and ISO 14001 in the UK, that 71% of the companies had integrated the audits of both standards.

The research of Salomone (2008), with a sample of 103 organizations registered to ISO 9001, ISO 14001 and OHSAS 18001, found that the unification and simplification of the procedure of conducting internal and external audits were two of the benefits obtained from the implementation of an IMS.

Krauss and Grosskopf (2008) provide some considerations and practice tips for organizations and auditors to update their auditing skills and increase their capabilities to audit IMS.

Karapetrovic et al. (2006) obtained responses from 176 Catalan organizations with multiple cross-functional certificates like ISO 9001 or ISO 14001. They found that a large majority of respondents conducted their audits in a simultaneous manner (73% for external audits against 68% for the internal ones). Namely, they had unified auditors and audit teams and shared audit resources meaning that the different audits contain a single plan and a single final report.

The above reviewed empirical studies confirm the idea that organizations have their audits integrated. The first and the second propositions to be examined in our study are therefore:

P1: Case study organizations integrate internal audits against quality and environmental management system standards.

P2: External audits against quality and environmental management system standards are integrated by case study organizations.

Karapetrovic et al. (2006) also found that the use of ISO 19011 as the auditing guideline was more prevalent in the case of external audits while *"auditing procedures tailored to the needs and situations of a particular company"* were more used for internal audits. Namely, ISO 19011 was used by 34% of the firms in internal audits respectively while 36% of the organizations used other guidelines in internal audits. The rest of respondends did not use a particular guideline for internal audits (14%) or did not know which guidelines were used (16%) (Karapetrovic et al., 2006). The third proposition to be tested in the following is therefore:

P3: Case study organizations use ISO 19011 in their internal audits.

In an empirical study of 435 companies, three distinct levels of audit integration were identified in Bernardo et al. (2010), namely 'low level of integration', 'medium level of integration' and 'high level of integration'. The study of Bernardo et al. (2010) could not identify a group of any significance that did not integrate quality, environmental and other MS audits to a certain degree.

Therefore, as contemplated in the related literature (e.g., Karapetrovic and Willborn, 1998a; Wilkinson and Dale, 1999b; Douglas and Glen, 2000; Karapetrovic and Jonker, 2003; Zutshi and Sohal, 2005; Karapetrovic and Casadesus, 2009), organizations prefer integration of MS audits to managing and conducting them separately.

Secondly, the results of Bernardo et al. (2010) show that there are significant parallels between internal and external audits (e.g., Cortemanche, 1989). The fourth proposition to be tested differs in some ways with the work of Karapetrovic et al. (2006) who found that some components of the external audits were more integrated than the internal ones. For example, they found that more firms conduct audits in a simultaneous manner during external audits than during internal ones. However, it is coherent with the results found by Bernardo et al. (2010) who state that some components of the audit system, for instance the internal audit teams, are integrated at a much higher level than the corresponding external audit components, and Salomone (2008) who found that 78% of the studied companies integrated their internal audits, while this fraction was 65% in the case of external audits. Therefore, internal audits usually have a lead in most of the aspects studied, which could be related to the level of integration of the overall MSs, as pointed out previously. The fourth proposition to be examined in our study is therefore:

P4: Specific audit components are more integrated in internal than in external audits in case study organizations.

The studies reviewed in this section provide an overview on some aspects of the integration of audits. However, as can be seen from the above literature review, there are limited studies into the practice of the integration of audits of standardized MSs. This is perhaps because such audits, regardless of whether they are integrated or not, are not widely researched in general, or because many MSSs against which they are conducted are new (Bernardo et al. 2010).

Therefore, the investigation illustrated here is focused on studying the possible existence of distinctive practices with respect to the integration of internal and external MS audits in organizations registered to multiple MSSs. In the following section, the methodology applied in the study will be described.

3. Methodology

This research involves in-depth case studies of four specific organizations in order to study how these companies conduct their audits and to which extent they integrate the audit elements of their MSs.

This qualitative approach is often used in the analysis of processes within organizations because the main goal is to know what the entrepreneurs and managers' point of view is (Eisenhardt, 1989).

A case study approach has been adopted *"to allow causes, processes and consequences of behaviour to be investigated"* (Yin, 2009). In this research, a case study is defined as an empirical inquiry that investigates a contemporary phenomenon within its real-life context in which multiple sources of evidence are used (Yin, 2009).

The approach is useful in such exploratory modes of research and can *"provide detailed understanding of particular situations which may then be utilized inductively to create better theory by pointing to gaps and beginning to fill them"* (Siggelkow, 2007). One such gap contours around qualitative research in the field of integration of MS audits. We aim to build on existing theory, mainly focusing on auditing integration, and especially on the nature and reasons of differences for integrating audit systems in the firms.

3.1. Selection of cases and procedure

We selected the four case studies focusing on organizations registered at least to ISO 9001: 2000 and ISO 14001: 2004 standards to ensure they were companies that could have integrated their management systems. The companies were selected from 179 Catalan organizations that had responded to a mail survey on the integration of management systems in a previous empirical study in 2006 (Karapetrovic et al., 2006; Bernardo et al., 2009; Bernardo et al. 2010). We chose the four companies of our study based on the results of Bernardo et al. (2009) who found three groups of companies with some level of integration and one with no integration. The companies for the case studies were chosen following the criteria of diversity, as we chose firms that in the 2006 survey had different levels of integration, taking one company from each of the four groups identified by Bernardo et al. (2009).

The methodological process included various steps such as initial contact, sending out the presentation letter and interview guidelines, visit and transcription of the interview, coupled with the information from company websites. According to Eisenhardt (1989) a few case studies are generally sufficient. We visited the four firms and interviewed the persons responsible for MSs for about one hour. Eisenhardt (1989) suggested that a researcher should have a well-developed interview protocol before making site visits. We used a structured interview protocol in all site visits. The protocol covered a number of topics such as important changes in the organization, introduction and maintenance of MSs, integration, internal and external audits and future plans. On the interviewing side, we assured two interviewers in all the cases. Each interview resulted in a case study that was sent to the organization in order to validate the content.

3.2. Data analysis

In the first step, a within-case data analysis, which involves “detailed case study write-ups for each site”, was conducted by analyzing in detail the company answers (Eisenhardt, 1989). We analyzed and organized the cases according to a limited number of concepts such as the company characteristics, their management systems and integration, internal and external audits and future plans.

The second step was a cross-case search for patterns, looking for similarities and differences among the four cases (Eisenhardt, 1989). The main criterion to analyse our cases was the level of audit integration, as presented in the following section. We found two out of the four categories described in Bernardo et al. (2009): medium and high level of integration. Two other categories which we label “no integration” and “low integration”, although present in the sample of firms chosen in 2006, are not represented in our case studies as our four firms have decided at one point in time to integrate their MSs and their audits. This is consistent with the findings of Douglas and Glen (2000), Karapetrovic et al. (2006) or Bernardo et al. (2010) who state that the majority of companies integrate audits.

4. Findings

In order to analyze the aspects previously mentioned in the methodology, four different organizations, all with multiple registered MSs, have been selected.

The data analysis reveals responses regarding the conduct of internal and external audits, and it is particularly focused on the main elements of the audit system, i.e. audit processes, including the corresponding input (audit plan) and output (audit report), and audit resources (Karapetrovic and Willborn, 2000).

This study also reveals different combinations of audit elements such as the people, the processes involved or the audit plans and reports, which can lead to different levels of integration and can be classified into one of the three levels detected in Bernardo et al. (2010).

These four cases constitute an important contribution of this study, as we have been able to find only one paper using case analysis in the field of management system audit integration. Beckmerhagen et al. (2003) study how audits can help in the integration of quality and safety MSs based on the experiences of a nuclear waste disposal facility in Germany.

The case studies and their corresponding analysis are presented in the following subsections. First, an overview of the organization is presented. Then we proceed to describe the management systems and the integration status of each organization. Finally, we present how the firms perform their audits.

4.1. Firm 1

4.1.1. The organization

Firm 1 is a small firm located in Terrassa (Barcelona) with 31 employees dedicated to the manufacture of chemicals for process improvement in the paper and pulp industry. Its specialties and market segments include paper making, the production of cellulose, coated fine paper and recycling.

Currently, Firm 1 has two fully integrated standardized MSs, the quality MS certified to ISO 9001:2008 and the environmental MSs certified to ISO 14001:2004. In the future, the firm intends to continue renewing the certificates of the two MSs.

4.1.2. Audits

The internal audits are performed annually at Firm 1 by an external company which audits the complete integrated system. To integrate the audits of each system, the company followed two steps. Since the firm saw that many audit procedures were duplicated for Environment and Quality MSSs, and the first step was to combine them. Then, the firm made a common manual to audit the systems together. The third step is to coordinate the audit objectives of each management system in order to verify that the systems are working properly and that they meet the requirements of each of the standards.

Apart from improving efficiency in the control of documentation and the synergies created between the two systems, another benefit of having integrated the audits of the two systems is the opportunity in the future to integrate OHSAS 18001 into the whole system. However, some difficulties have arisen during the process of audit integration. The main challenge to integrate the MSs has been to simplify all the audit documentation of the non-integrated systems and to accomplish all the requirements of the standards.

Audit teams are the same and simultaneously audit against both standards. The audit is performed following the guidelines proposed by ISO 19011 using a single plan and a single report for audit results. The auditors use the audit manual to audit all the procedures and documents of the company. Because the firm is from the chemical sector, a very important part of the audit process is that the auditors review the issue of legal compliance. They also make a tour of the facilities to see the storage of waste, labeling and monitoring of the traceability of the production process.

A significant aspect of internal audits is the requirement by the firm that the audit team which performs the internal audit changes regularly (every three years). This is done to receive more and better feedback and recommendations in the final report to continuously improve the integrated system. For example, a remarkable improvement arising from the recommendations of the auditors during the last internal audit was the improvement in the calibration of the laboratory equipment. Another opportunity for improvement suggested by the auditors several times is to certify against OHSAS 18001 and integrate the three systems.

About the findings of the audits, the company answered that the audit suggests opportunities for improving the implementation of each MS individually, as well as for improving the integration of the system as a whole.

Regarding external audits, the auditor organization first sends to the firm the audit plan and then performs the audit during two days through some parts of the system. The organization only receives information about the audit plan, but has no knowledge about the tools or processes that will be used during the external audit. The results of the external audit consist of a report containing opportunities for improvement, observations and nonconformities. Regarding the non-conformities, the firm resolves them with preventive and corrective actions, having meetings in which these actions are discussed. Like in the internal audit, the external audit report audit suggests opportunities for improving the implementation of each MS individually as well as for improving the integration of the system as a whole.

4.2. Firm 2

4.2.1. The organization

Firm 2, located in Santa Perpetua de la Mogoda (Barcelona) has 33 employees. It is dedicated to the manufacture and marketing of plastic vinyl compounds. In the last two years the firm has added a new business line dedicated to the production of rigid PVC by extrusion for electrical cables and moulds, for instance.

Currently, the firm has two implemented MSs, ISO 9001:2008 and ISO 14001:2004 and the quality manager is responsible for both MSs. In the future, the company plans to renew the existing certificates.

4.2.2. Audits

Internal audits are conducted annually using the company's own system, as they have their own procedures for the audits, which are not based on ISO 19011. The firm does not consider the fact this standard is currently under revision as a motivation to implement new systems. The firm thinks that, although it would be easier to audit multiple systems, it would not help the implementation of new MSs. During the last four years, the organization has moved from having a partially-integrated system for internal audits to have a fully integrated system, which has increased the efficiency of the audits.

Having already integrated all the other elements of audits, such as the audit plan and the audit report, in 2010, the firm has increased the integration of the audit team, which is now the same for both standards. The audits are performed simultaneously.

The organization followed two steps to integrate the audits of the system. They first introduced ISO 9001 and then ISO 14001. In 2010, they already audited the two systems at once. Two auditors go to the firm and theoretically, one is the expert who audits the QMS and the other audits the EMS. However, in practice, they both audit both systems and share tasks according to their availability, in order to increase the efficiency of the audit.

To coordinate the objectives of the audit, the firm aims to integrate the three systems implemented: Quality, Environmental and Occupational Health and Safety. However, currently the auditors audit only the first two each year. Their Occupational Health and Safety system is audited by a team from their firm apart from the other two systems.

The main benefit of having integrated the audits is "*not suffer two different audits. Simplification, simplification and simplification"*. The company does not consider that there were any specific challenges for having the audits integrated.

The external audits are conducted following ISO 19011 guidelines. The company stresses that the audit team changes every two or three years so that new ideas are added continuously to the system. As in the internal audits, the audit plan and report are totally integrated and the audit also finds opportunities for improvement of the implementation of each standard and of the integrated system. The audit report includes the executive summary of the audit (previous changes/conclusions about the effectiveness of the system, improvement possibilities, strengths and observations), non-compliance table, next audit planning matrix, final provisions and annexes (centers, participants and data sheet). Regarding the non-conformities, if they are simple they are solved during the audit process, if not, the appropriate corrective actions are undertaken.

4.3. Firm 3

4.3.1. The organization

Firm 3, with 135 employees and located in Castellbisbal (Barcelona), manufactures lubricants. The firm has an extensive product range including hydraulic fluids, anticorrosive products, laminating oil and biodegradable lubricants.

The firm has implemented ISO 9001:2008 and ISO 14001:2004 MSs, which have been integrated fully. Regarding the future of the certifications, the company plans to renew them.

4.3.2. Audits

Internal audits are performed using a standard plan, with annual audits of all requirements of the integrated system. Internal audits are performed using a standard plan, with annual audits of all requirements of the integrated system. The audit goals have been coordinated, basically checking first the process goals and then verifying the compliance with their procedures. Although the auditors are the same for both systems and a single audit plan and report are used, the firm considers the two systems as interrelated and not fully integrated because some specific processes of each system (quality and environmental) are audited separately.

The following steps are taken for conducting the internal audit. First, the audit plan is determined including the audit team, the points of the standards that need to be audited and those responsible for the processes involved. This plan is communicated to all the affected process staff. Second, the audit is performed. During the audit, the correct implementation of the corrective actions of the previous audit are checked while taking notes of the new non-conformities and observations that appear: "*It is always good to keep convincing the staff of the importance to continuously find improvement areas and to fix non conformities the very moment they are found"*. As the result of the internal audit, a report containing non-conformities and observations is produced. It includes the improvement actions, with the corresponding staff responsible to perform them and dates of execution. Generally, proposals of improvements aimed at increasing the interaction between processes are derived from the final report. The non-conformities are resolved with corrective actions, always checking the effectiveness of these actions. The report is then transmitted to the management of the company. Then, the staff responsible for each process documents the corrective actions and deadlines for implementation. Finally, the audit team verifies with the corresponding evidence, compliance with the corrective actions and deadlines for implementation.

The part of the process that the company stresses the most is the detection of weaknesses that become opportunities for improvement. The main benefit of having integrated audits is basically the avoidance of duplicated audits for the processes and the extensive knowledge of the requirements and the experience they have gained.

The main challenge during the integration of audits was to understand the benefits that this could bring to the company. It was very important to coordinate the team responsible for the audits and to receive support from the management of the company.

Internal audits are performed annually and cover all the requirements of ISO 9001 and ISO 14001, which is very beneficial for the firm, as it creates synergies to audit the standards at the same time.

The firm does not use ISO 19011, as the audit plan is very similar to the one used by their certification company. The firm believes that the fact this standard is currently under revision to increase the number of systems to audit is a clear motivation for new systems implementation.

External audits are conducted as follows. First, the company receives the audit plan and the audit begins with a preliminary meeting between the audit team and the process owners in order to determine the order of the actions to undertake during the audit. The auditors then review the system. The completion of the audit produces one report that contains the evaluated points of the standards, the non-conformities, observations and opportunities for improvement and the people involved. The audit system plan and audit reports are fully integrated and the audit finds opportunities for improvement of the implementation of each standard separately and for the integrated system.

4.4. Firm 4

4.4.1. The organization

Firm 4 has nine employees. It is located in Banyoles (Girona). The company is dedicated to road transport and operates within the national territory and the European Union. In recent years, there has been no major organizational change in the company.

The firm is certified against two standardized MSs, a QMS certified to ISO 9001 and the environmental management system certified to ISO 14001. The two systems have the same scope as they cover all business processes. The company has implemented a system for occupational health and safety that is not certified or integrated with the other two systems. Currently, they do not intend to certify or integrate it with the rest of the systems. In the future, the firm is not planning to implement new MSs, models or other certification standards.

4.4.2. Audits

Initially, the quality and the environmental systems were audited separately, but the firm realized that they were working in a very similar way, so the company decided to integrate them. At the same time, the audit team changed and the new staff responsible for the internal audits started their job having an integrated system to audit. Internal audits are now performed by an external company and they are audited annually and simultaneously under the guidance of ISO 19011. The company does not consider that the fact this standard is currently under revision to increase the number of systems to audit is a motivation to implement new systems in the firm. The auditors, who are the same for the different standards, audit them as integrated systems covering all the processes that take place in the organization and provide a single report for all the systems.

The audit suggests opportunities to improve the implementation of each of the standards individually and to improve the integrated system. The audit team detects improvement opportunities by observing the functioning and the documentation of the MSs. Analysing them, they detect improvement opportunities, observations and non-conformities during the audit. Some improvement comments made to the firm during the last few audits have been the need to add new control indicators in the trucks, to promote training on ecological driving and to code all the documents related to the MSs. The non-conformities are resolved via immediate actions and corrective actions.

With regard to external audits, when the certification needs to be renewed, the audit team audits all the requirements of the standards that affect the firm. When it is a follow-up audit, only a part of the requirements are audited. The company receives information daily on how the audits are performed

since the responsible people for the MSs accompany the auditors during the process. Additionally, the company is given the information on the audit results through the final report. The auditors, which change every two or three years, suggest many opportunities for improvement that the company subsequently applies.

The firm refers to the reduced time to do the audits as the main benefit of having them integrated. They also refer to the easiness to control the electronic documentation, as they are now the same for the two systems.

Regarding the system for occupational health and safety that is not certified or integrated with the other two systems, it is controlled, but not audited, by an external firm. This firm, annually inspects the firm facilities, does the medical tests of the staff, carries out training courses on health hazard issues and controls the documentation related to that system.

4.5. Discussion

Several relevant considerations can be drawn from the research carried out. The four case studies involve firms considered as SMEs according to their number of employees.

As it was a prerequisite for choosing the companies, the two standardized MSs implemented in all the companies are QMS and EMS. None of the companies has implemented any other MS. Regarding the integration of the systems, three of them have a fully integrated system, meaning that the personnel responsible for the MSs, the documentation and the processes are the same for the QMS and the EMS.

The scope of the internal audits involves all the processes of the organization in the four cases. Moreover, three of the respondents answered that their internal audits are conducted as an integrated system. However, the other firm considers the two MSs as distinct and separated so the audit is carried out considering these two systems only as interrelated systems and not as fully integrated systems. Thus, we could state that three of the four firms have fully integrated audits while the fourth organization has partially integrated the internal audit. This partially matches with the findings of Bernardo et al. (2010) who found three types of firms with different levels of audit integration. The group with the highest level of integration was the most numerous one with a high integration of human resources, inputs and outputs involved during the audit process. Proposition 1 is therefore accepted as our results confirm the idea that the four case study organizations have integrated their internal audits.

The internal audits are carried out in two cases by a team formed with auditors of the same firm. In the other two cases, the auditors are external to the firm. Regarding the audit team in both the internal and the external audits, they audit the QMS and the EMS as a single system. Therefore, in line with Karapetrovic et al. (2006) and Bernardo et al. (2010), we can say that the audit human resources are highly integrated in the four cases.

The audits are carried out simultaneously for the MSs implemented in all four firms and the audit plan and the audit report are the same as well. Therefore, like in Karapetrovic et al. (2006), we can consider that the all the audit components are integrated both for the internal and the external audits. Similarly, the results of the audits suggest opportunities to improve the implementation of each of the standards individually and to improve the integrated system as a whole. Particularly, the firms resolve nonconformities for all the MSs together with corrective actions, detailing the responsible people and dates for their execution and checking the efficiency of each of the action afterwards. However, whereas three firms state that their audits are fully integrated, one of the firms considers that the two systems as interrelated and not fully integrated because some specific processes of each system are audited separately.

In two of the cases, the firms use ISO 19011 to carry the internal audit. The two remaining firms use their own procedures to carry out the process. In all cases except one, the external auditors use

ISO 19011 to audit the system. We therefore partially accept proposition 3 as two of the companies analyzed use internal guidelines and two use ISO 19011 for the internal audit, although ISO 19011 is used for external audits in three of the cases similarly to the results found by Karapetrovic et al. (2006).

Specifically with respect to the external audits, the four firms state that their external audits cover all the process of the organization and are fully integrated. Therefore, we confirm proposition 2, as in all four firms the external audits are integrated. However, the interviewees of all four companies receive little information about how the process will be carried out, as the interviewees usually receive only the final report. However, feel satisfied with the process and would not introduce changes to it. It is worth to mention that two of the three firms ask the certifying company to change the audit team every two or three years in order to receive new and better feedback and improvement comments from them.

Regarding the differences among internal and external audits, the main difference found among the four firms is the use of ISO 19011 to carry out the audits, which is more used in the external audits. We find no differences regarding the human resources, the inputs or the outputs of the audit process. This slightly differs from the results found by Karapetrovic et al. (2006), who find differences between the integration of the different components of the internal and the external audits. The results found by Bernardo et al. (2010) also state that some components of the audit system, such as the internal audit teams, are integrated at a much higher level than the corresponding external audit teams. We cannot thus accept proposition 4 as case study firms do not show a higher level of integration of internal audits compared to the external audits.

Table 1. Overview of propositions and findings

Propositions		**Findings**
P1:	Case study organizations integrate internal audits against quality and environmental management system standards.	Supported
P2:	Case study organizations integrate external audits against quality and environmental management system standards.	Supported
P3:	Case study organizations use ISO 19011 in their internal audits.	Partially supported
P4:	Specific audit components are more integrated in internal than in external audits in case study organizations.	Rejected

5. Conclusions

This research has addressed the question of how firms with more than one standardized management system conduct the audits and to which extent they integrate the audit elements in order to profit from the advantages of having a sole, integrated audit system. In order to answer this question, one of the first empirical studies on the integration of management system audits was undertaken, with four detailed case studies.

In the first place, this research confirms the notion that firms with more than one MS integrate their audits. We could not identify any firm that did not integrate QMS and EMS audits to a certain degree. Therefore, as contemplated in the related literature (e.g., Karapetrovic and Willborn, 1998a; Wilkinson and Dale, 1999b; Douglas and Glen, 2000; Karapetrovic and Jonker, 2003; Zutshi and Sohal, 2005; Karapetrovic and Casadesus, 2009), our four organizations prefer integration of MS audits to managing and conducting them separately.

However, an interesting finding was that, despite all of the firms interviewed stating that their MSs and their audits are fully integrated, when asked more specifically on the different processes, the

results vary. For example, while three of the respondents answered that their internal and external audits are conducted as integrated systems, one of the firms audits the two MSs implemented as interrelated systems because some of the processes of the company are audited separately for the quality and the environmental system. However, the four companies state that the auditors and audit teams, plans and reports are the same for the different MSs. A high level of integration therefore seems to have been achieved by the four organizations, similarly to the results found by Bernardo et al. (2010).

Secondly, the results show that there are significant parallels between internal and external audits (e.g., Cortemanche, 1989). For instance, in the four organizations studied, the levels of integration of the audit systems of both types are fairly similar. Therefore, in line with Bernardo et al. (2010), a high level of integration seems to have been achieved for the human resources that undertake both the internal and external audit processes as well as for the time for conducting the audits, the audit inputs, i.e. the audit plans, and its outputs, i.e. the audit reports. In all the case study organizations, the audit findings suggest opportunities to improve the implementation of each of the standards individually and to improve the integrated system as a whole.

One of the most interesting contributions of this article is related to the numerous benefits that firms perceive of having an integrated system for their audits (Karapetrovic and Willborn, 1998c; Karapetrovic, 2002 and 2003; Zeng et al, 2007; Bernardo et al, 2009). All of the firms interviewed highlight that integration of MSs promotes synergism and cost savings for the firm as well as a reduction of the time spent when managing the systems. Integration also allows the organizations interviewed to minimize duplication and redundancy of effort, to eliminate overlapping roles and responsibilities and to increase the efficiency of resource management. All these benefits of having integrated MSs, are the translated to a higher efficiency when carrying out their audits. Particular benefits mentioned by some of the organizations are simplification of audits and the opportunity in the future to integrate other MSSs into the whole system.

Some challenges regarding the process of audit integration were also outlined, such as the difficulties arose when simplifying all the audit documentation of the non-integrated systems and the efforts made to accomplish all the requirements related to internal audits.

One particular concern expressed by one of the companies is the lack of involvement of the rest of departments in the firm regarding quality and environmental matters. Promoting the involvement of the rest of the company increases objective and process alignment (Kraus and Grosskopf, 2008). This facilitates coordinated decision making and encourages the identification of coordinated solutions for deficiencies and promote multidisciplinary approaches to preventive and corrective actions for those deficiencies (Kraus and Grosskopf, 2008).

The study has implications for quality and environmental managers and auditors as it reveals different possibilities regarding the level of audit integration which organizations can reach, namely partial and full integration. It also uncovers some of the benefits of having integrated audit systems such as, the optimized use of resources or the synergies created among the audit systems.

The major limitation of this empirical study is that the case studies analyzed only reflect the points of view of the company managers and not of other involved actors such as the auditors of both internal and external audits. If this had been the case, the richness of the data gathered would have been higher and therefore, the conclusions drawn for the study would have been more representative of the reality of these organizations.

Another limitation of this paper is the focus on a single region in Spain, Catalonia. However, it should be noted that Spain is one of the leading countries in terms of management systems certifications in the world (see ISO, 2010) and Catalonia one of the leading Spanish regions regarding certification intensity (Heras and Casadesús, 2006). Therefore, we believe that our results can be highly significant for future studies in other places.

The study provides an original contribution to the understanding of whether and how the four case study organizations have integrated certain aspects of the audit systems (e.g., human and time resources and audit inputs and outputs). The case analysis detailed in this paper shows that MS audits have reached a very high level of integration. These findings urge scholars to further develop on these exploratory results in order to test the benefits of complete audit integration as a way to efficiently manage the auditing processes in organizations. Hence, a future line of research can be directed to the empirical analysis of the importance of the role of internal (as opposed to external) auditing, as well as to test whether augmenting the number of MSs in the integrated system increases or hinders the efficiency of the audits.

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