Standardized Augmentative Subsystems in Serbian Industry

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Abstract

Since there seem to be no studies in Serbia regarding standardized augmentative systems, this paper presents certain related results from a survey of 50 Serbian organizations that were registered to ISO 9001 and ISO 14001. The examined topics include the integration of three elements of internal audits against these management system standards with an industry sector breakdown, four issues regarding the usage of augmentative standards, and a comparison of organizations that applied Customer Satisfaction Standards (CSSs) and the ones that did not with respect to internal audit integration, as well. About half of the service organizations had their internal audit plans and reports integrated and conducted their function-specific internal audits simultaneously. Augmentative standards were mostly implemented at the same time as, or after, ISO 9001 and/or ISO 14001, but only less than one tenth of all the organizations surveyed conduct audits of these standards. A smaller percentage of companies that had implemented CSSs had the same internal auditors or audit teams than the organizations which had not used CSSs.

Keywords: Management System Standards; Serbia; Integration; Audit; Customer Satisfaction Standards; ISO 10000

1. Introduction

During the 19th Toulon-Verona "Excellence in Services" gathering in Huelva two years ago, ISO 10000 systems, which can not only be used as subsystems to augment the overarching quality and/or other management systems (MSs), but can also be integrated themselves, were already discussed. Namely, Karapetrovic (2016) outlined both of these ISO 10000 application contexts at the beginning of the conference, while towards its end, Zayas et al. (2016) presented empirical results from Spain mostly related to the former (i.e., subsystem) setting. This time, in Paris, and perhaps starting with a reference to tennis and football on July 15 for interest, we will focus on such individual and integrative augmentation in Serbia, through a survey of ISO 9001 and ISO 14001 – registered companies. Specifically, auditing subsystems, augmentative standards in general, and Customer Satisfaction Standards (CSSs) in particular, are emphasized.

Augmentative subsystems, for instance the ones for auditing and customer satisfaction, are necessary in related standardized MSs (see, sub-clauses 9.2 and 9.3 of ISO 9001: 2015 / ISO 14001: 2015 / ISO 45001: 2018 as well as sections 9.1.2, 9.3.2 and Table B.1 of ISO 9001: 2015, for respective examples). Furthermore, about a month before this conference, new revisions of five related standards (ISO 19011 for auditing and ISO 10001/2/3/4 for customer satisfaction) will become available (ISO, 2018). Looking at Serbia explicitly, although from 2013 to 2016 there were increases of 28% and 49% in the number of organizations registered to ISO 9001 and ISO 14001, respectively (ISO, 2018), Karapetrovic and Spasojevic-Brkic (2014) showed that organizations with these two certificates and headquartered in the country were not aware of augmentative and customer satisfaction standards.

Only a limited number of internal audit – related empirical studies exist (e.g., Karapetrovic et al., 2006; Salomone, 2008; Bernardo et al., 2010; and Simon et al., 2014). In addition, many of the studies on the auditing and integration of standardized management systems (MSs) or even augmentative standards were done in Spain (e.g. Karapetrovic & Casadesus, 2009; Bernardo et al., 2011; and Simon et al., 2012). Only one study regarding integration was found in Serbia (Rajkovic, 2010). Examples of empirical research on augmentative standards include Karapetrovic and Spasojevic-Brkic (2014), Nowicki et al. (2014) and Selakovic (2016). Thus, more research on standardized augmentative systems, and especially in Serbia, is needed.

After an illustration of the methodology in section 2, the results regarding the integration of internal audit plans, time, and reports are presented in section 3. Subsequently, section 4 shows an analysis of the integration of augmentative subsystems into ISO 9001, ISO 14001 and/or integrated MSs, the order of augmentative standards implementation, auditing of the related subsystems, and the usage of two of these standards. Differences between the organizations that did not apply CSSs and those that did are illustrated in section 5, followed by the conclusions in section 6.

2. Methodology

As a part of a study of ISO 9001 and ISO 14001 registrants in several countries, and using a 2006 survey as the basis (e.g., see Karapetrovic et al., 2006), a survey on the integration and augmentation of standardized management systems was done in Serbia (Selakovic, 2016). According to ISO (2014), in the same time period when this investigation was conducted (from September to December 2013), Serbia had 2,366 and 762 ISO 9001 - and ISO 14001 - registered organizations, respectively.

The survey, containing a cover letter and a questionnaire, was performed using *Google Docs*, with a link to it emailed to 320 organizations registered to ISO 9001 and ISO 14001 according to the Serbian Chamber of Commerce (2012) data. Once an organization received the survey, the questionnaire needed to be filled out by the person responsible for quality and/or environmental management systems. The response rate was 15.6%. Therefore, 50 Serbian companies participated.

These 50 organizations belonged to three groups according to the industry sector. The first group comprised 46% of the sample and contained the organizations that selected the "manufacturing" option in the questionnaire. 30% of the respondents choosing the fields such as "science / technology", "health", "transport / distribution", "energy / utilities", "wholesale / retail trade", "information technology" and "education" were categorized into the "service" sector. Finally, the third group, classified as "other" contained the remaining 24% of the sample, and included the mining, construction and all other companies that selected the "other" option in the questionnaire.

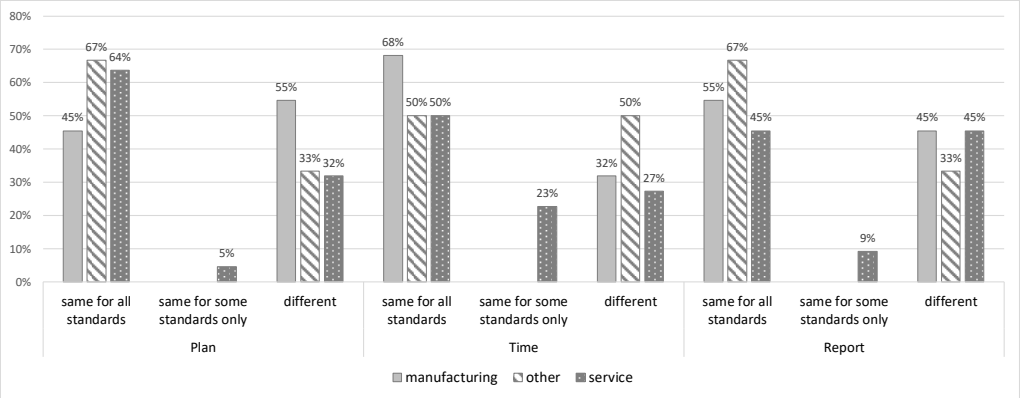
3. Auditing subsystems

Integration of three main elements of internal audits, namely audit goals, processes and resources, is characterized through an analysis of one selected audit item related to each element, namely audit plan, time, and report, respectively. With respect to the goals, 56% of the surveyed organizations had a single internal audit plan for all standards they implemented, while 42% had separate such plans. Concerning the processes, 68% conducted simultaneous internal audits for all or some Management System Standards (MSSs). Finally, 44% used different reports for different MSSs applied as internal audit resources.

These results are similar to Karapetrovic et al. (2006), Bernardo et al. (2010), Simon et al. (2011) and other such studies. They reported that internal audits were performed at the same time, as well as with integrated audit plans and reports, for all MSSs in more than a half of observed companies in the various regions of Spain. For instance, Simon et al. (2014) found that close to 60% of organizations in Catalonia had integrated audit plans, time and reports. For Canada, Durdevic et al. (2013) found slightly lower fractions (e.g., 50% for simultaneity and 38% for plans / reports).

Since this conference is centered on services, Figure 1 also presents a sector breakdown for internal audit plans, time and reports.

Figure 1: Industry sector categorization of the integration of internal audit plans, time, and reports



It is noticeable on the figure that the results with respect to the goals (i.e., plan) and resources (i.e., report) are quite different than the ones for the processes (i.e., time), especially for the manufacturing sector. The largest percentage of service organizations had the internal audit plan integrated for all MSSs (64%), compared to 50% that conducted audits at the same time and 45% that had a single report for all MSSs. Another finding is that still a large fraction of companies did not integrate these auditing elements. For example, 45%, 50% and 55% of "service", "other" and "manufacturing" organizations had different internal audit reports, performed function-specific audits at different times, and had different plans, respectively. These different MSSs were most frequently ISO 9001, 14001 and 18001.

The highest percentage displayed in Figure 1 was for simultaneous internal audits for all MSSs at 68% in the manufacturing sector. In addition, it is interesting that almost a quarter of the service organizations undertook internal audits in a simultaneous matter "for some standards" only.

4. Augmentative standards

Augmentative standards could be applied to any industry sector (e.g., Karapetrovic et al., 2006, Karapetrovic, 2007 and Nowicki et al., 2014), but they are extremely useful in services (Dee et al., 2004).

A few studies related to these standards are Karapetrovic & Spasojevic-Brkic (2014), where preliminary results of this survey were presented, and Salerno-Kochan & Salerno-Kochan (2015), who noticed that a very small percentage of organizations were familiar with the customer satisfaction standards.

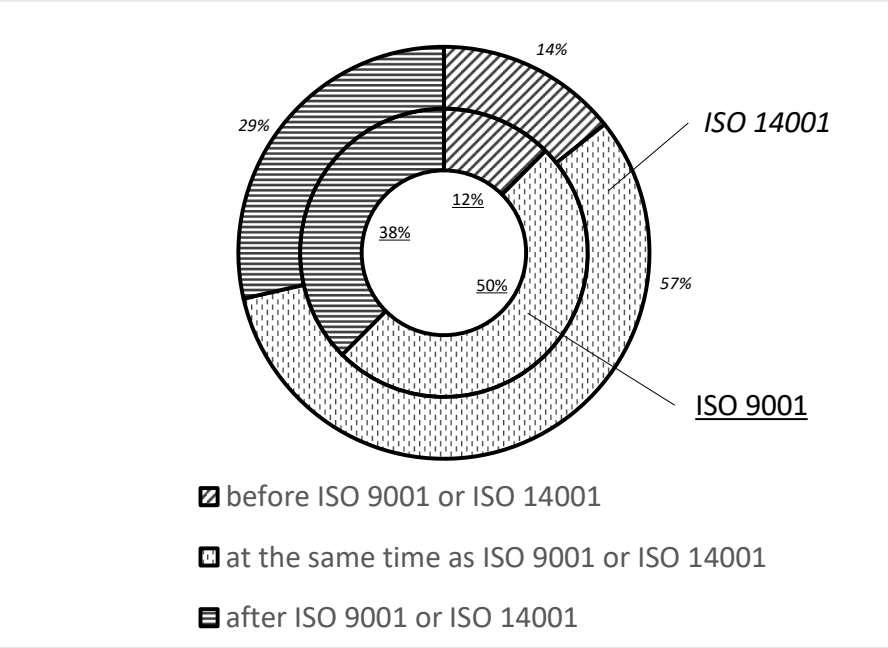
In this paper, relationships of augmentative standards with the overall MSSs, such as ISO 9001 and ISO 14001, are examined first, through an analysis of their individual or integrated application and the sequence of implementation. Subsequently, internal audits against, and the usage of, these standards are analyzed. Responses of organizations using one of eight augmentative standards listed in the survey, namely ISO 10001/2/3/4, ISO 10005, ISO 10012, ISO 19011 and ISO 14031 are used in the investigation.

About half of the Serbian organizations registered to ISO 9001 and ISO 14001 had an augmentative standardized subsystem as a part of another system (50% as a component of their Quality and Environmental MSs, while 54% as an element of an Integrated MS). The other half of the responders did not integrate augmentative systems into the other MSs.

Regarding the order of the implementation of augmentative standards, it seems that about half or more of the organizations applied them at the same time as ISO 9001 or ISO 14001 (Figure 2), which is plausible. For example, a simultaneous implementation with ISO 9001 makes sense, since quality MSs and seven of the eight examined augmentative standards have the same focus. Furthermore, ISO 10001, ISO 10002, ISO 10003 and ISO 10004 *"[…] can be used as an element of a quality management system"* (e.g., ISO, 2007). In addition, 38% and 29% implemented one of the eight listed standards after ISO 9001 and ISO 14001, respectively, which is also logical due to their augmentative character. However, a very small sample size gathered from these questions needs to be noted.

The third issue studied was whether or not organizations conducted internal audits against an augmentative standard they had implemented. Only 8% of the surveyed Serbian organizations used such internal audits, perhaps because they were not aware of the possibility, or the related benefits, of auditing against these "guidance"- labelled augmentative standards.

Figure 2: Order of implementation of augmentative standards vs. ISO 9001 and 14001



Finally, it is interesting to survey the implementation of specific augmentative standards. The majority of studies show that ISO 19011 for auditing is the most-widely applied such standard (e.g., Karapetrovic et al., 2006, Karapetrovic & Spasojevic-Brkic, 2014, and Salerno-Kochan & Salerno-Kochan, 2015). To follow up on the related analysis in Serbian ISO 9001 and ISO 14001-registered organizations, available in Karapetrovic & Spasojevic-Brkic (2014), a comparison of the usage of ISO 19011 and another augmentative quality MSS, namely ISO 10012 for measurement, is given here. 42% of the responding organizations implemented ISO 19011, but only 10% did so for ISO 10012. The Z test shows that the usage of ISO 19011 is significantly higher than of ISO 10012, since the right-tailed test calculated value of 3.65 was higher than the critical value of 1.96.

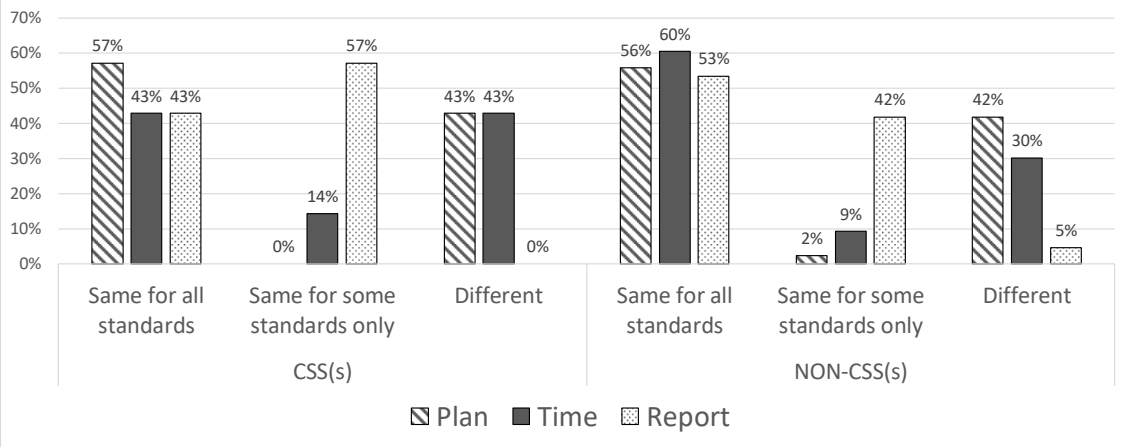
5. Customer satisfaction standards

Touching upon the issues discussed in the two preceding sections is the following analysis of the differences between the organizations that implemented customer satisfaction standards (CSSs) and the ones that did not with respect to internal audits. Only seven organizations belonged to the former group (called "CSS(s)" in this paper), whereas 43 did not apply CSSs (thus labelled as "NON-CSS(s)").

As in section 3 above, integration of internal audit objectives, processes and resources is examined. However, an item related to the audit process, namely the integration of quality, environmental and other auditors or audit teams, is added to the analysis. Figure 3 illustrates the percentages of organizations that implemented one or more CSSs and whether they integrated or separated their internal audit plans, time and reports on the left-hand side, as well as the corresponding statistics for the organizations that did not apply any of these standards on the right.

It is evident from the figure that the CSS(s) and NON-CSS(s) groups have almost identical percentages for both the integration (57% vs. 58%) and separation (43% vs. 42%) of internal audit plans. With respect to the audit process, it seems that a higher fraction of NON-CSS(s) companies (60%) conducts simultaneous internal audits against all implemented MSSs than the CSS(s) ones (43%). This is even amplified for the integration of audit teams, where 49% of NON-CSS(s) organizations have the same auditors / audit team for all MSSs, compared to 29% of the CSS(s) group. The majority (57%) of companies with CSS(s) use "different auditors / audit teams for different standards" (vs. 40% in the opposing group). Overall, these internal audit team integration fractions are more than a quarter lower than in the Simon et al. (2013) and Zayas et al. (2016) studies in Catalonia and Murcia, respectively. Finally, regarding the internal audit reports, a similar pattern exists in CSS(s) and NON-CSS(s) organizations, with a very high percentage exhibiting integration across all or some MSSs (100% and 95%, respectively).

Figure 3: Comparison of "CSS(s)" and "Non-CSS" organizations on the integration of internal audit items



5. Conclusions

Standardized augmentative systems or subsystems are rarely surveyed generally, and in Serbia in particular, so this paper, although based on a relatively small sample, covers the related gap. The survey of 50 organizations registered to both ISO 9001 and ISO 14001 standards and headquartered in Serbia was used to focus on internal auditing, augmentative MSSs in general and CSSs in particular.

The results with respect to the "goals", "processes" and "resources" elements of auditing subsystems respectively indicate that internal audits were conducted with an integrated plan, at the same time, and with a single report for all MSSs, in slightly more than half of the surveyed companies, similarly to the research done in other countries, such as Canada and Spain. Service organizations had the lowest percentage of internal audit report integration, but conversely also the minimum fraction for using different plans and performing audits at varied times, compared to the "manufacturing" and "other" sector companies.

About half of ISO 9001 and ISO 14001 – registered Serbian organizations that implemented one of eight augmentative standards listed in the survey did so simultaneously with ISO 9001 and had augmentative standardized subsystems. Nevertheless, only 8% of them conducted internal audits against augmentative standards.

Overall, seemingly a higher percentage of organizations that did not apply CSSs integrated internal audit plans, time, teams and reports than the ones that used CSSs. However, a small sample (7 for CSS(s) organizations and 50 for all) demands further research, both in Serbia and elsewhere, as well as hopefully more augmentative standards practice.

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