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REVIEW

Integrated Management Systems: their organizational impacts

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In the past few decades, many organizations are implementing management systems. The similarities between them allowed the integration of different models. The main purpose of this article was to map and analyse the literature on the impacts of Integrated Management Systems (IMS) on organizational performance. The methodology used followed the guidelines of the Preferred Report Items for Systematic Reviews and Meta-analyses – PRISMA, based on a sample of scientific articles extracted from the Web of Science and Scopus data bases. The results revealed important benefits of the IMS (such as improving operational performance, reducing costs, sustainable development, stakeholder satisfaction, reduction of occupational risks, etc.) and a wide willingness to integrate them. The researched systems were the Quality Management System – QMS, the Environmental Management System – EMS, and the Occupational Health and Safety Management System – OHSMS. Many studies have ratified the benefits of the IMS. However, no quantitative research was found in the articles’ sample measuring the proportion of impacts that each of the three management systems offers with the integration amongst them. In this way, future research was evidenced according to the investigation of the gains provided by the systems’ integration and due to the identified gap.

Keywords: Integrated Management Systems; Quality management; Environmental management; Health and Safety Management

1 Introduction

According to a survey carried out by López-Fresno (2010), a debate has begun in the 90s about Integrated Management Systems – IMS. It was found that the main discussion on the integration of management systems is mainly directed to standards related to quality management (suitable with ISO 9001), environment (suitable with ISO 14001) and occupational health and safety (suitable with ISO 45001/BS OSHAS 18001) (Von Ahsen, 2014). The IMS are characterized for a loss of the unique identity of the subsystems and can be defined as a set of interconnected processes that share human information, materials, infrastructure and financial resources, in order to achieve satisfaction goals from a variety of stakeholders (De Nadea & De Carvalho, 2019; Nunhes et al., 2017).

As a result, organizations started to implement more than one management system simultaneously and, therefore, started to seek their integration to avoid repetition of similar measures, increasing the efficiency and adding value to the companies (Jørgensen et al., 2006; Karapetrovic & Casadesús, 2009). There is no specific certification for IMS. Yet,

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there are different certifications for the other management systems separately. However, these management systems implemented according to different standards can be integrated (Bernardo et al., 2009).

In order to add value to the corporation, the IMS have the role of improving interaction between the various processes and sectors of the company in order to improve them in general or specifically. IMS make the implementation of policies, objectives, procedures and practices more efficient than if it were only through individual management systems (separately) for each process of an organization (Labodová, 2004; Masuin et al., 2020). In this sense, the theme of this research gains importance since IMS are management tools that assist organizations reassessing their management models and creating new references consistent with the current standard. They have systemic characteristics, bringing continuous improvement of the performance level by reducing the negative impacts for both business and employees (Ofori et al., 2002).

Therefore, due to the broad purpose and the increasing implementation of IMS in companies, it is necessary to study the impacts of the integration of these systems, especially regarding the benefits of implementation, with the perspective of providing information and solutions on how to improve organizational quality; how to live sustainably with the work environment; how to prevent, eliminate or minimize the risks of accidents and occupational diseases, thus improving people's health and life quality; and how to know how much the IMS are able to act as instrument that promotes improvements. Thus, there is a need to better understand the organizational impacts derived by the integration of management systems considering that integration brings many benefits.

This research did not find in the analysed articles studies conducting quantitative analysis of the proportion of the impacts on organizational performance that each of the three management systems presents with their integration. Part of what was found in the RSL were research that points out the benefits, the maturities and the levels of integration, as mentioned by the studies carried out by Domingues et al. (2016) that refer to a 6-level hybrid IMS maturity model that allows comparison between systems as to their relative stage of evolution; by Cabecinhas et al. (2018) that dissects the dissemination of the number of organizations that have implemented multiple management systems in the countries of Southern Europe and assesses the extent to which multiple certifications should occur in each country studied; and by Cabecinhas et al. (2020) that updates and reports the models of diffusion and forecasting of IMS in Portuguese companies. In the case of integration levels, the paper by Jørgensen et al. (2006) only checks whether the systems are partially or fully integrated.

In this sense, the main objective of this paper was to map and analyse the literature on the organizational performance impacts provided by IMS. To achieve the proposed objective the research addressed the following research questions:

- (1) What are the main characteristics of the literature on IMS (annual evolution, main areas of study, most cited articles, published magazines, among others)?
- (2) What are the main subjects addressed by the IMS literature?
- (3) What are the main impacts of IMS on organizational performance addressed by the literature?

To answer the research questions presented, this study is based on a Systematic Literature Review – SLR, showing studies that deal with the advantages and maturity of management systems, as evidenced by studies of Bernardo et al. (2015), Ionescu et al. (2018), Moumen and Elaoufir (2018).

2 Methodology

The study was carried out with the support of a SLR, using the methodology of Preferred Reporting Items for Systematic Reviews and Meta-Analysis – PRISMA. The PRISMA methodology is a guideline that aims to support scholars to improve the quality of the research data exposure, as well as to guide the critical evaluation of published papers review (Moher et al., 2010).

As a basis for this SLR, two scientific knowledge bases were used: The Web of Science (WoS) and Scopus, in order to identify articles about the management systems addressed in this study (integrated management, quality management, environmental management or health and safety management). The quality level and the number of publications were the criteria of choice for these two databases: the Web of Science to be able to cover the indexed journals with an impact factor calculated as the JCR (Journal Citation Report) (Carvalho et al., 2013). The Scopus was chosen because it is the largest scientific knowledge base in the peer-reviewed literature (Morioka & De Carvalho, 2016). Another factor also considered was that both databases provide ‘metadata’ compatible with the Mendeley software, used to support the bibliometric analysis, encompassing the respective abstracts, references, citation indexes, authors, years of publication, areas of study, institutions, countries, among others (Carvalho et al., 2013).

The strategy used to choose the articles was to filter by specific search terms. The first analysis used the terms ‘Integrated Management System*’ or ‘Management system* Integration’, applied as ‘Topic’ in the WoS database and as ‘Article title, Abstract, Keywords’ in the Scopus database, resulting in 935 and 1504 documents respectively, with a total of 2439 articles.

Subsequently, the first exclusion criterion was a refinement applied as ‘Document type’ on both databases by selecting only ‘Article’ and ‘Review’, sample’s results reduced to 490 works in WoS and 867 works in Scopus, totalizing 1357 papers. The ‘metadata’ were stored in an electronic spreadsheet (Microsoft Excel 2019). The second elimination criterion was the study area (in this case, the databases themselves indicated to which field of study the scientific articles referred). Researches that did not address engineering and environmental scopes were withdrawn, resulting in the exclusion of 734 articles, 224 of WoS and 510 of Scopus. Therefore, samples were reduced to 266 documents in WoS and 357 documents in Scopus. Then, an analysis of duplicate titles was carried out as a third exclusion criterion, indicating 217 duplicate works, which were removed from the WoS database, leaving 49 articles (exclusive from this database) and keeping 357 articles from Scopus. Following exclusion criterion was the titles and abstracts analysis using the PRISMA methodology to identify the most relevant researches on the proposed theme. Studies that did not show agreement with the research, that is, that did not address integrated management, quality management, environmental management or health and safety management were eliminated. Thus, 49 papers from WoS and 92 papers from Scopus remained in the paper sample, after eliminating no papers from WoS and 265 papers from Scopus. This resulted in a paper sample 141 publications. The next step was to import the paper sample in ‘pdf’ reading format, from both scientific bases. Full paper of 23 articles of the WoS base was not accessible for the researches, causing the last exclusion criterion. Thereby, the consolidated sample includes 118 articles, 26 WoS surveys and 92 Scopus studies, until June 2020, as shown in Figure 1. The percentages correspond to the number of articles after each exclusion criterion in both scientific bases.

Based on the final sample obtained and with the aid of the VOSviewer software (free software whose function is to support bibliometric analysis by providing visualization of

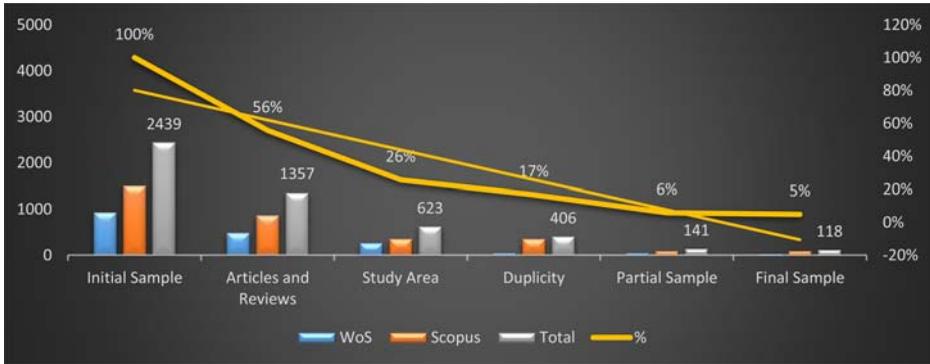


Figure 1. Refinement for paper selection.
Source: Web of Science and Scopus.

similarities among paper sample), a network analysis was carried out to highlight groups of bibliographic data. In an expanded way, the points from the bibliographic network are applied in such a way that the spacing between them recommends an association according to specific aggregation criteria, forming a map (Sarkodie & Strezov, 2019).

The next step was the content analysis of the paper sample full texts to identify the main factors affecting the IMS, the drivers for its implementation, the benefits of integration and the focus of the organizations' interest (customer, company, society and worker). Regarding the focus, the analysis served to support the management of suppliers, customers, products, employees and the social role of the company.

3 Results and discussion

3.1 General overview of the paper sample

To answer the first research question (What are the main characteristics of the literature on IMS?), Figure 2 shows the number of publications per year in the last 20 years, of the chosen sample, in both scientific knowledge bases. The percentages correspond to the number of articles published per year of the defined sample.

Over the years, there has been a growth in studies related to IMS. Characteristics similar to what occurs with the interest of organizations in implementing the integration of management systems (Trierweiler et al., 2016).

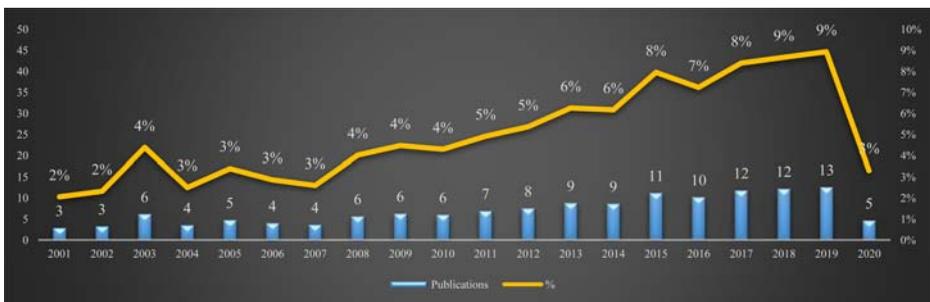


Figure 2. Number of articles published per year of the SLR sample.
Source: Web of Science and Scopus.

Still answering the first question of the objectives, Table 1 shows the articles from the selected paper sample, which have more than 100 citations in the scientific database Scopus and classified by the most relevant authors.

The research by Asif et al. (2013), stands out for having been published in 2013 and has 162 citations, which gives an average of 23 citations per year.

Figure 3 shows the main journals that appeared more than once in the paper sample.

The main topics covered by the paper sample (information provided by the two scientific knowledge bases), which already starts the answer to the second research question (How does the literature address the IMS and their impact on organizational performance?) are the Engineering and Environmental Science areas of study, as shown in Figure 4.

Figure 4 shows both the absolute number of papers related to each area of study and the corresponding percentages value. It is worth noting that the same paper can be allocated to more than one area of study.

Figure 5 shows, through VOSviewer analysis, the relationship between the keywords used at least four times by the papers in the sample. This cluster analysis allows a better clarification of the existing convergence between the terms found, as well as facilitating to distinguish that there are sets entirely associated with their operational factors. Four clusters of keywords were identified that contain the term 'Integrated Management System'. In addition to this term, groups 1 and 2 are the groups that are most associated with aspects of quality, environmental and occupational health and safety management. The groups 3 and 4 tend more to the characteristics of environmental management and occupational health and safety management, respectively.

Thus, this graphic provides an idealization of more recurrent content in the literature, providing a better understanding of the connection between them.

Table 1. Number of citations per article.

Reference	Citations	Year	Citations/ Year	Research area
Asif, M., Searcy, C., Zutshi, A., Fisscher, O.A.M.	162	2013	23	Engineering & Environmental
Zeng, S.X., Shi, J.J., Lou, G.X.	199	2007	15	Engineering & Environmental
Jørgensen, T.H., Remmen, A., Mellado, M.D.	213	2006	15	Engineering & Environmental
Santos, G., Mendes, F., Barbosa, J.	128	2011	14	Engineering & Environmental
Bernardo, M., Casadesus, M., Karapetrovic, S., Heras, I.	154	2009	14	Engineering & Environmental
Salomone, R.	167	2008	14	Engineering & Environmental
Karapetrovic, S., Casadesús, M.	135	2009	12	Engineering & Environmental
Zutshi, A., Sohal, A.S.	166	2005	11	Engineering
Gapp, R., Fisher, R., Kobayashi, K.	127	2008	11	Business
Labodová, A.	146	2004	9	Engineering
York, K.M., Miree, C.E.	104	2004	7	Business
Karapetrovic, S., Jonker, J.	106	2003	6	Business
Beckmerhagen, I.A., Berg, H.P., Karapetrovic, S.V., Willborn, W.O.	105	2003	6	Engineering

Source: Scopus.

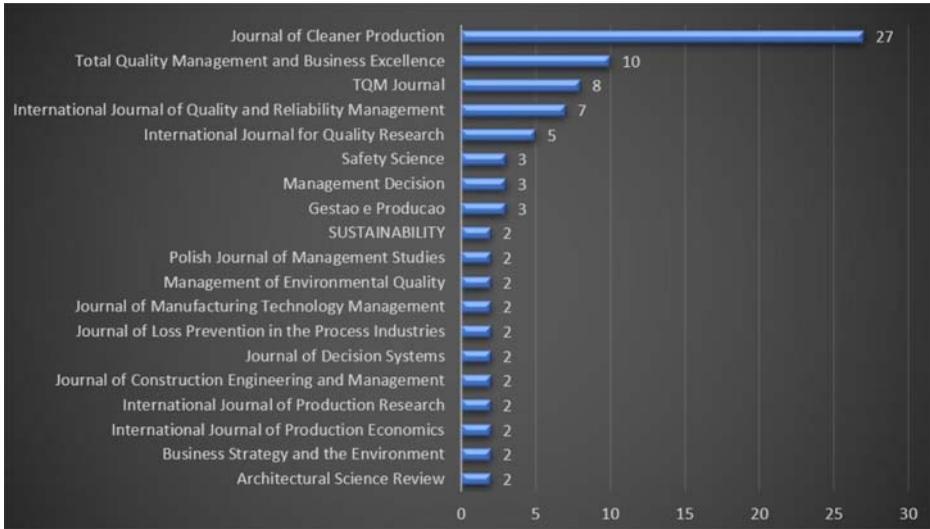


Figure 3. Number of publications per Journal.
Source: Web of Science and Scopus.

3.2 Content analysis of the paper sample

To address the second research question (How does the literature address IMS and its impact on organizational performance?), content analysis of the full texts of the sample articles was carried out. It was found that only seven studies on IMS refer quantitatively (which corresponds to 5.93% of the studies), but none of them performs a mapping and analysis of the proportion of impacts that each of the three management systems provides to the organizations, when implemented in an integrated manner.

For example, the article by Zeng et al. (2011), which uses structural equation modeling to empirically exam benefits obtained with the implementation of IMS. In this study, structural equation modeling, a multivariate statistical technique, is used to analyse the data. It is

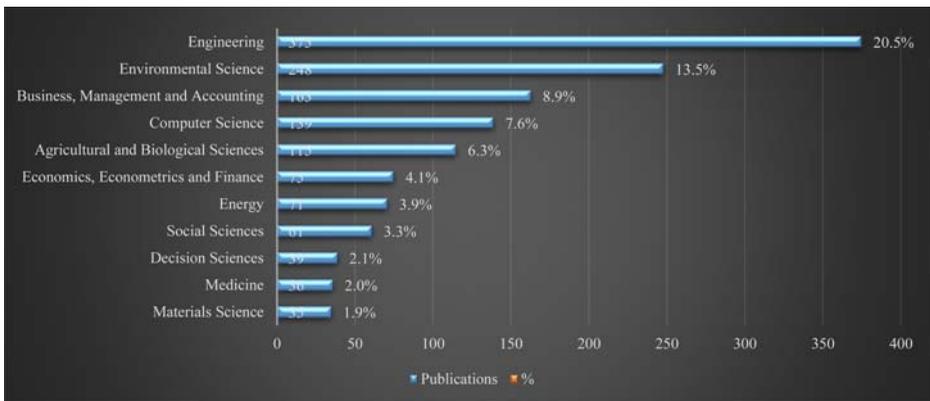


Figure 4. Percentage of articles by area of study.
Source: Web of Science and Scopus.

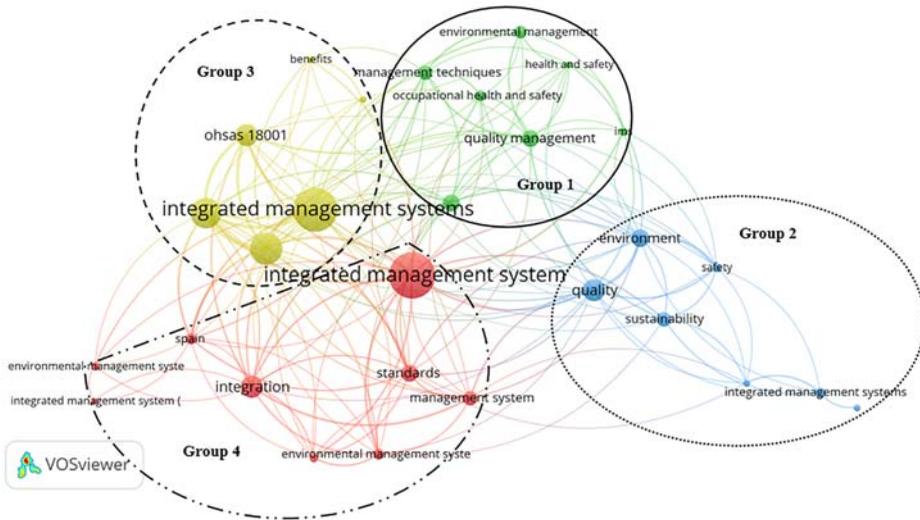


Figure 5. Network analysis of keywords.
Source: Web of Science and Scopus.

suitable for data on which a series of regressions is being performed. The dependent variable for a regression analysis is also the independent variable for the other. Essentially, structural equation modeling consists of two components: (1) the measurement model, which reduces the observed variables to a smaller number of latent factors; and (2) the structural equation model, which defines causal relationships between these latent factors (Hussey & Eagan, 2007).

Another example is Masuin and Latief (2019), which deal with the implementation of integrated risk management, with the aim of improving the organization's performance. The results of this study were investigated through quantitative analysis using the Analytic Hierarchy Process (AHP) method and Failure Mode and Effect Analysis (FMEA). They verified variables with the greatest impact and frequency to increase the organization's performance, specifically in a construction company.

The study conducted by Kruse et al. (2019) used the quantitative analysis of the variation in related data to investigate the variability within the company and between companies on the motivating factors for adopting integrated systems and methods used to implement integrated systems.

Another example is the paper of Ikram et al. (2019), which assessed whether adopting an environmental management system, as part of an IMS, would help improving business sustainability. Through descriptive testing and exploratory factor analysis to test the hypothesis and internal reliability, they used structural equation modeling in their study to measure a corporate social responsibility performance index in relation to the environment, weighted by the stakeholders and companies participating in the study, evaluating the various useful links between latent variables observed.

The other 111 articles, which correspond to 94.07% of the studies, deal in a qualitative way on maturity, the benefits of integration, points of improvement and levels of integration. Regarding integration levels, the work found is limited to observing whether the IMS are partially or fully integrated.

Regarding maturity of IMS, Poltronieri et al. (2017) developed an instrument to assess in a qualitative way the degree of maturity of IMS in order to improve organizational performance, identifying strengths and weaknesses, thus contributing for comparative evaluation. The maturity representation used the number of cumulative stages to facilitate visualization where the company is and the extent to which best practices must be achieved, with the lower stages serving as support to achieve the requirements of the upper stages.

Regarding IMS integration levels, Muthusamy et al. (2018) used a comprehensive model and a holistic perspective to exemplify how the elements of the existing management systems can be integrated into different levels, reflecting better the significant integration through a four-stage approach: awareness, cooperation, consonance and combination. Moreover, the declared holistic vision serves as a process-based strategy for configuration, implementation and institutionalization of the management systems, taking into account their level analysis.

Although the contribution of all articles is desirable, a summary of the 118 articles divided by subthemes covered by the research was carried out with the main findings. The most mentioned subthemes were ‘Conceptual Proposal’ and ‘Integration Models’. Table 2 shows the main highlights which answers the second research question (What are the main subjects addressed by the IMS literature?).

In addition, several researchers found similarities when raising the significant impacts of integration of management systems regarding the performance of companies. The articles are distributed according to the focus and impacts presented in their research. Table 3 shows the results which answers the third research question (What are the main impacts of IMS on organizational performance addressed by the literature?).

Figure 6 shows the most mentioned impacts addressed by the paper sample, presented in Table 2. The three most important were: the improvement in operational performance (which should be a continuous search for every manager) was the most referenced; the reduction of organizational costs (which is closely related to organizational efficiency), the second most mentioned, makes the company leaner and consequently more profitable; and sustainable development (which meets the needs of the current generation, without compromising the ability to meet the needs future generations), one of the most relevant concerns of companies, being the third most cited impact.

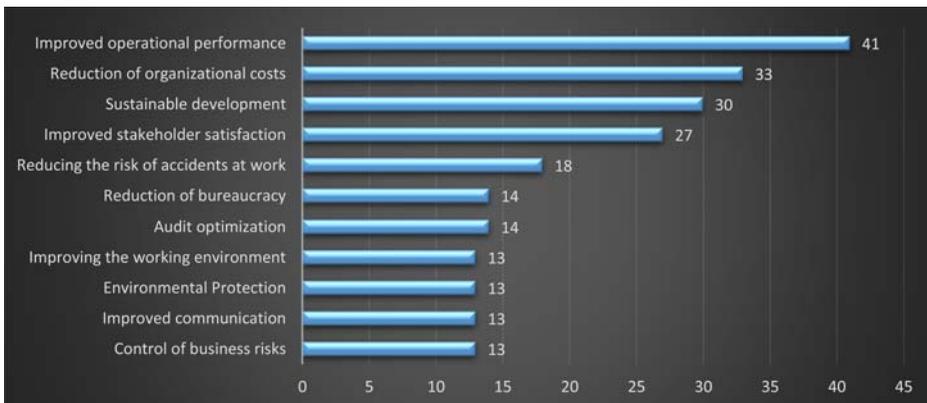


Figure 6. Impacts most cited in the articles of the delimited sample.

Source: Table 3.

Table 2. Main highlights.

Subthemes	Authors	Highlights
Audit	(Laal et al., 2019)	The annual implementation of audits at the IMS has had a significant impact on reducing accident rates and improving occupational safety.
	(Domingues et al., 2015)	Possibility to distinguish types of audit and the adoption of these types must consider the availability of resources and the knowledge of the audit team.
	(Simon et al., 2011)	How companies with more than one standardized management system conduct audits and the extent to which they integrate audit elements to benefit from the advantages of having a single, integrated audit system.
	(Savino & Mazza, 2014)	Methodical approach to integrate the development of environmental and quality audits, prioritizing corrective actions.
	(Simon & Douglas, 2013)	Differences in relation to the practices of integration between organizations in the audit process and the difficulties and benefits encountered during the implementation of IMS.
Benefits	(Mora-Contreras, 2019)	The implementation methodology favours the fulfillment of the organizational model, the reduction of inefficient bureaucracy and offers specific performance benefits.
	(Bağ & Nowak, 2019)	IMS implementation contributes to a more harmonious functioning of the company and to the elimination of recurring activities in the areas related to individual systems and, therefore, to the optimization of costs related to its implementation and maintenance.
	(Ramos et al., 2020)	Understanding how the implementation of IMS influences the improvement of the occupational health and safety risk management process in companies.
	(Santos & Carvalho, 2019)	Important and interesting benefits offered by IMS and broad scope of integration.
	(Moumen & El Aoufir, 2017)	Most experienced benefits and difficulties during IMS implementation.
	(Nunhes et al., 2017)	Main difficulties and challenges faced during the IMS implementation process.
	(Bernardo et al., 2015)	Benefits of IMS, comparing them with the benefits obtained from individual implementation.
	(Rebelo et al., 2014b)	An IMS tends to integrate some or all components of the business, maximizing its integration is increasingly a strategic priority and constitutes an opportunity for companies to be more competitive.
	(Zeng et al., 2011)	Benefits obtained with the implementation of an integrated management system for companies.
	(Blasco-Torregrosa et al., 2019)	Main benefits and difficulties encountered during the process of integrating management systems.
	(Nadae et al., 2019)	The impact of integrating management systems that include economic, social and environmental standards on economic performance.
	(Casadesús et al., 2011)	Organizations with more than one management system really see more benefits from implementing ISO 9001.
	Conceptual proposal	(Trierweiler et al., 2016)
(Jain et al., 2016)		The integration of multidisciplinary approaches and the collaborative model of central and peripheral industries to protect safety risks in the workplace.
(Yazdani & Wells, 2012)		Techniques for preventing Musculoskeletal Disorders in Occupational Health and Safety Management Systems and Integrated Management Systems.
(Masuin & Latief, 2019)		Strategy to improve the performance of the organization through the risk management of the IMS implementation.
(Kruse et al., 2019)		Lean IMS structure and available strategies to simultaneously protect workers, the environment and support corporate results.
(Chountalas & Tepaskoualos, 2019)		Factors that can lead an organization to consciously choose not to integrate all of its management systems.
(De Nadae & De Carvalho, 2019)		Conceptual structure that relates management systems to sustainability, defining the variables and presenting four relational propositions among the main variables.
(Muhamad Khair et al., 2018)		Strategy for an IMS to improve the adoption and implementation of the Responsible Care program.
(Majerník et al., 2017)	Innovative model concept for IMS implementation and maintenance.	

(Continued)

Table 2. Continued.

Subthemes	Authors	Highlights
	(Manzanera et al., 2014)	Guidelines and recommendations for the creation of an IMS adapted to small and compact administrative organizations that operate with different perspectives and interests.
	(López-Fresno, 2010)	Model based on a systemic approach that has proved successful for the design and implementation of an IMS.
	(Asif et al., 2009)	The main processes are integrated with the main individual management systems to form a composite and holistic management system.
	(Salomone, 2008)	The potential for integrating management systems based on an analysis of common aspects.
	(Gapp et al., 2008)	The importance of the technical (visible) and philosophical (invisible) approaches necessary for an integrated management approach.
	(Milliman et al., 2005)	Overall assessment of the applicability of the 'SEH & S' approach integrated with security and risk management.
	(Beckmerhagen et al., 2003)	Meaning of IMS implementation for existing organizational structures.
	(Rebelo et al., 2014a)	Generic IMS model for eliminating conflicts between individual management systems with resource optimization.
	(Ribeiro et al., 2017)	The future of Integrated Management Systems encompasses the full integration of Management Systems.
	(Drozyner, 2020)	Perception of a company's operational services changes depending on whether the company has an IMS.
	(Zaloga et al., 2019)	The implementation of IMS allows you to control the process and make appropriate decisions to improve organizational performance.
	(Souza & Alves, 2018)	Innovative IMS model to improve corporate sustainability aimed at cleaner production.
	(Simon et al., 2013)	How management system standards can be integrated into a single system across organizations.
	(Gangolells et al., 2013)	Innovative model to improve the integration of management systems.
	(Botta et al., 2013)	Theoretical framework for the development of an Environmental and Social IMS.
	(Jaroenroy & Chompunth, 2019)	Conceptual framework for an alternative integrated management system.
	(Algheriani et al., 2019)	Integrated risk management model for management systems.
	(Barbosa et al., 2018)	Propositions that assist the alignment of IMS as a business strategy.
Integration level	(Muthusamy et al., 2018)	Holistic approach and the implementation of IMS at different levels.
	(Tepaskoualos & Chountalas, 2017)	The company's dedication to meeting critical success factors and the identical structure of management systems facilitated the result on the level of integration achieved.
	(Luo et al., 2015)	IMS from different perspectives: system level and operational level.
	(Bernardo et al., 2009)	Level of integration of management systems in relation to documentation and human resources, in addition to procedures.
	(Jørgensen et al., 2006)	The trend towards greater compatibility between management systems and how to understand the different aspects of integration.
	(Dahlin & Isaksson, 2017)	The effects of an IMS, scope, level and extent of integration.
	(Simon et al., 2012)	Level of integration of different elements of management systems.
	(Bernardo et al., 2012)	Difficulties encountered in the process of integrating management systems and the level of integration achieved.
Integration models	(Hernandez-Vivanco et al., 2019)	The IMS model can be a relevant factor to improve the company's performance.
	(Majerník et al., 2017)	Innovative model concept for implementing and maintaining integrated management systems.
	(Del Prado Martínez & Navarro, 2016)	IMS model of documents and information for organizations with a process-focused approach.
	(Alvarado Rueda & Perez Gomez, 2016)	Model that contributes to the design and integration of management systems.
	(Rebelo et al., 2015)	Model to support organizations in the development and structuring of the integration process of their management systems.
	(Binięcka et al., 2005)	IMS to control safety and environmental health monitoring processes.
	(Labodová, 2004)	Effective forms of IMS currently separated for quality management, environmental management and health and safety.

(Continued)

Table 2. Continued.

Subthemes	Authors	Highlights
	(Holdsworth, 2003)	Practical applications to design, develop and implement an integrated management system.
	(Vulanovic et al., 2020)	General model for the design of an IMS based on the risk assessment of the organization's processes.
	(Ikram et al., 2020)	Strategy to manage various systems, meeting the needs and expectations of stakeholders.
	(Abisourour et al., 2020)	It allows a company to ensure proper alignment between IMS policy and business operations and to identify loss categories.
	(Ćwiklicki et al., 2019)	The Quality Management System is dominant in Polish local government institutions.
	(Moumen & Elaoufir, 2018)	IMS concept and define the different approaches.
	(El Yacoubi El Idrissi et al., 2014)	Usefulness and scope for the potential development and adoption of a single IMS model.
	(Walker & McAleer, 2014)	An IMS needed to be appropriate for accreditation and integrated with an emerging corporate management framework.
	(Von Ahsen, 2014)	IMS are considered to be more effective and more efficient than separate and distinct management systems.
	(Hamidi et al., 2012)	The definition of indexes can be useful for the effectiveness of IMS and its continuous improvement.
	(Karapetrovic & Casadesús, 2009)	The importance of the different possibilities that organizations can choose when considering the implementation of a management system.
	(York & Miree, 2004)	The relationship between Total Quality Management (TQM) and financial performance.
	(Karapetrovic & Jonker, 2003)	The 'ingredients' and 'recipe' for the integration of standardized internal management systems.
	(Wright, 2000)	For any organization that intends to implement management systems, the simplest route is via integration, using existing systems as a base.
	(Zeng et al., 2006)	An IMS with a combination of standards provides a possible solution for effective and efficient management.
	(Chan et al., 1998)	An IMS serves to increase the company's competitiveness, successfully meeting its rapidly changing needs.
	(Bereznyuk et al., 2017)	The integration of management systems is a necessary condition for the management of industrial security.
	(Mariouryad et al., 2015)	Improvement trend after the establishment of an IMS for health, safety and environment indicators.
	(Azadeh et al., 2012)	Integrated approach to performance evaluation and optimization of the management system based on the analysis of diffuse data.
	(Sampaio et al., 2012)	Different strategies to achieve integration, with various levels of intensity, depth and authenticity between the different management subsystems.
	(Nunhes et al., 2019)	Guiding principles of IMS and the essential elements for its development and maintenance.
Limitations	(Llonch et al., 2018)	Simultaneous implementation of an integrated management system.
	(Taylor, 2002)	Differences in the scope of management systems will give rise to different subcultures that will make integration difficult, and scope and culture are more important than compatibility.
	(Abad et al., 2016)	The integration of management systems is conditioned by the sequence of systems integration, the level of integration achieved and the structure of the new integrated system.
	(Al-Darrab et al., 2013)	Although the implementation of individual management systems is generally unproductive and the concept of integration has not gained much acceptance.
	(Simon et al., 2012)	Model of the difficulties related to the integration of systems that affect the level of integration of several specific items of the management systems involved.
	(Zeng et al., 2007)	The main problems for companies to operate multiple management systems in an integrated manner.
Maturity	(Gianni & Gotzamani, 2015)	Possibility of failure of an IMS.
	(Poltronieri et al., 2017)	An instrument that assesses the degree of maturity of IMS can be used in organizations to improve integration.

(Continued)

Table 2. Continued.

Subthemes	Authors	Highlights
Social responsibility	(Dragomir et al., 2017)	Instrument developed to assess and communicate the maturity reached by an IMS.
	(Ionescu et al., 2018)	There is a direct correlation between the implementation of integrated management systems and the existence of corporate social responsibility initiatives and the increase in companies' market value.
	(Carvalho et al., 2020)	The nature of the content disclosed and the profile of a company that disseminates information about IMS.
	(Asif et al., 2013)	Design business processes to accommodate the social requirements of stakeholders in an integrated manner.
	(Mežinska et al., 2015)	The IMS must be designed so that it can be used to build a socially responsible organization that contributes to sustainable development.
Structure	(Silva, 2020)	Implementation of the GIS contributed to the transparency and rationalization of research spaces and came to be seen as a strategic asset in asset management.
Sustainable development	(Fonseca & Carvalho, 2019)	Organizations with certified management systems can play a significant role in advancing Sustainable Development.
	(Carvalho et al., 2019)	Commitments to customers and human resources fit properly with the premises of stakeholders and, in turn, the commitment to continuous improvement and sustainable development.
	(Savino & Shafiq, 2018)	Environmental Management and Safety Management result in the strategic use of resources to improve production performance.
	(Holm et al., 2015)	As an integration of process and procedure structures, they can be used to promote sustainable development.
	(Muthu Samy et al., 2015)	The identification of the main factors that affect the implementation of IMS and the benefits of integration for sustainable development.
	(Abouettahir et al., 2013a)	Evaluation of the commitment to sustainable development, considering the Occupational Health and Safety management system as the basis for this approach.
	(Fresner & Engelhardt, 2004)	IMS is an effective way to begin to understand sustainable development and develop sustainable strategies in companies.
	(Ikram et al., 2019)	The adoption of an environmental management system as part of an IMS helps to improve corporate sustainability.
	(Siva et al., 2016)	Quality management is considered adequate as a support for the integration of sustainability considerations.
	(Poltronieri et al., 2018)	Instrument to assess the integration of different management systems and their effects on sustainable performance.
Certification	(Bevilacqua et al., 2016)	The certification of management systems has a positive correlation with the success factors necessary for the implementation of the standard and are fundamental for the improvement of the company.
	(Abad et al., 2013)	The effect of the OHSAS 18001 standard on safety performance and work productivity, paying special attention to the returns from certified safety experience.
	(Sui et al., 2018)	Implementation of an IMS.
	(De Oliveira, 2013)	The integration of certifiable management systems is an effective alternative for companies operating in turbulent environments characterized by intense competitiveness.
	(Santos et al., 2011)	Main benefits that companies obtained with the certification of management systems.
	(Pheng & Kwang, 2005)	The costs and benefits of implementing IMS and the significant improvements in IMS certification.
	(Ofori et al., 2002)	The perceptions and expectations of companies regarding the certification of management systems.
	(Domingues et al., 2017)	Evidence of an effective integration of policies and the existence of a system manager integrated in the organizational structure of companies.
	(Pheng & Pong, 2003)	Compatible requirements that justify the integration of management systems.
	(Abouettahir et al., 2013b)	Commitments to sustainable development, considering the Occupational Health and Safety management system.

(Continued)

Table 2. Continued.

Subthemes	Authors	Highlights
	(Chaudhuri & Jayaram, 2019)	Social and technical integration is in fact a significant facilitator for positive relationships on sustainable quality performance.
	(Marinkovic et al., 2016)	Certified management systems support companies to improve the business environment and the sustainability of management.
	(Rebello et al., 2016)	Proactive approach and commitment to cleaner production, supported by an IMS, brings relevant savings to organizations.
	(Escorcía et al., 2018)	Relationship and points of convergence between management system standards.

Source: Own author.

4 Conclusions

The main objective of this paper was to map and analyse the literature on impact on organizational performance provided by integration of management systems (see Table 3). For this purpose, a SLR was carried out using the PRISMA methodology that allowed selection of the most relevant papers for this research. The SLR showed an increase in the number of publications on IMS, in the Journals with the most significant impacts. In 2007, there were only 4 published works. In 2019, this number increased to 13 manuscripts, also expanding the number of citations of the predominant authors. The most studied areas were engineering and environment (20.5% and 13.5% of searches, respectively). This study also revealed that the quantitative approach of the articles was only 5.93%, while the qualitative approach was 94.07%.

The contribution of this research is in the aspect of guiding the corporations with regards to understanding how the integration of management systems can positively impact the organization's performance, providing the optimization of investments and a better business planning. Another important contribution of this article was the identification of a low number of studies using a quantitative approach on measuring benefits derived from IMS. In particular, no researches were identified that quantitatively mapped and analysed the impacts' intensity of each management system (quality, environmental, and occupational health and safety) when implemented in an integrated manner. This indicates opportunities for further studies.

Also, some important conclusions related to the IMS can be obtained. It was observed that many companies, regardless of nationality, follow the guidelines of management systems' integration and such a procedure brings many benefits, such as: to improve the organization's image to stakeholders; to increase the corporation's competitiveness; to promote sustainable development; to improve health of the workplace; to improve quality of life at work, among others.

Based on several bibliographic references, Figure 6 (Section 3) synthesized the main benefits identified in the literature that companies may aim at implementing a process for integrating management systems. The benefits can be internal or external. Internal benefits are those that can improve performance and reduce organizational costs, as well as improving the work environment and stakeholder satisfaction. While the external advantages improve the interaction between the company and the entities (government, competitors, society).

The limitations of this article include bibliometric criteria, that is, some relevant articles were not considered eligible due to the inclusion criteria adopted. Other approaches could have been explored in bibliometrics, as well as the choice of other scientific databases.

Table 3. Impacts of the integration of management systems.

Integrated Management Systems – IMS		References	
Focus	Positive Impacts	Authors	
Client	Improve the company's image	(Bernardo et al., 2015; Blasco-Torregrosa et al., 2019; Nunhes et al., 2017; Rebelo et al., 2014b; Salomone, 2008; Sampaio et al., 2012; Santos & Carvalho, 2019; Santos et al., 2011)	8
	Improve the quality of goods and services	(Bernardo et al., 2015; Bevilacqua et al., 2016; Drozdyner, 2020; Fresner & Engelhardt, 2004; López-Fresno, 2010; Majermík et al., 2017; Manzanera et al., 2014; Moumen & El Aoufir, 2017; Nunhes et al., 2017; Rebelo et al., 2014a; Sampaio et al., 2012; Santos & Carvalho, 2019)	12
	Improve stakeholder satisfaction	(Algheriani et al., 2019; Alvarado Rueda & Perez Gomez, 2016; Asif et al., 2009; Barbosa et al., 2018; Bernardo et al., 2015; Carvalho et al., 2019; Casadesús et al., 2011; Dahlin & Isaksson, 2017; Dragomir et al., 2017; Drozdyner, 2020; Fresner & Engelhardt, 2004; Holdsworth, 2003; Ikrum et al., 2020; Ionescu et al., 2018; Jaroenroy & Chompunth, 2019; Jørgensen et al., 2006; Karapetrovic & Jonker, 2003; Kruse et al., 2019; López-Fresno, 2010; Manzanera et al., 2014; Marinkovic et al., 2016; Rebelo et al., 2016, 2014b, 2015; Siva et al., 2016; Zeng et al., 2006; Zeng et al., 2007)	27
Company	Increase organizational competitiveness	(Alvarado Rueda & Perez Gomez, 2016; Bernardo et al., 2015; Chan et al., 1998; De Oliveira, 2013; Escorcía et al., 2018; Jørgensen et al., 2006; Majermík et al., 2017; Manzanera et al., 2014; Muthusamy et al., 2018; Rebelo et al., 2014b; Santos & Carvalho, 2019; Zeng et al., 2011)	12
	Control business risks	(Algheriani et al., 2019; Azadeh et al., 2012; Blasco-Torregrosa et al., 2019; Holdsworth, 2003; Ikrum et al., 2020; Labodová, 2004; Masum & Latief, 2019; Milliman et al., 2005; Ramos et al., 2020; Rebelo et al., 2015, 2014a; Sampaio et al., 2012; Simon et al., 2012)	13
	Improve communication	(Abad et al., 2016; Asif et al., 2013; Blasco-Torregrosa et al., 2019; Carvalho et al., 2020; Del Prado Martínez & Navarro, 2016; Domingues et al., 2015; Dragomir et al., 2017; El Yacoubi El Idrissi et al., 2014; López-Fresno, 2010; Nunhes et al., 2017; Rebelo et al., 2014b; Santos & Carvalho, 2019; Simon et al., 2012)	13
	Improve decision making	(Azadeh et al., 2012; Blasco-Torregrosa et al., 2019; Gapp et al., 2008; Ikrum et al., 2020; Nunhes et al., 2017; Poltronieri et al., 2017; Rebelo et al., 2015; Santos & Carvalho, 2019; Zaloga et al., 2019; Zeng et al., 2011)	10
	Improve operational performance	(Abad et al., 2013; Abisourour et al., 2020; Algheriani et al., 2020; Alvarado Rueda & Perez Gomez, 2016; Bæk & Nowak, 2019; Barbosa et al., 2018; Beckmerhagen et al., 2003; Bernardo et al., 2009, 2012, 2015; Binięcka et al., 2005; Casadesús et al., 2011; Chaudhuri & Jayaram, 2019; Cwiklicki et al., 2019; Dahlin & Isaksson, 2017; De Oliveira, 2013; Hamidi et al., 2012; Hernandez-Vivanco et al., 2019; Ikrum et al., 2019; Ikrum et al., 2020; Jaroenroy & Chompunth, 2019; Jørgensen et al., 2006; Karapetrovic & Casadesús, 2009; Llonch et al., 2018; Majermík et al., 2017; Moumen & Elaoufir, 2018; Muthusamy et al., 2018; Nunhes et al., 2019; Nunhes et al., 2017; Ramos et al., 2020; Rebelo et al., 2014a, 2016, 2015; Savino & Shafiq, 2018; Simon & Douglas, 2013; Simon et al., 2012, 2012; Sui et al., 2018; Vulanovic et al., 2020; Walker & Mcaleer, 2014; Yazdani & Wells, 2012; Zeng et al., 2011)	41
	Improve strategic planning	(Abad et al., 2016; Algheriani et al., 2019; Blasco-Torregrosa et al., 2019; Holdsworth, 2003; Luo et al., 2015; Nunhes et al., 2019; Sampaio et al., 2012; Santos & Carvalho, 2019; Trierweiler et al., 2016)	9
	Audit optimization	(Beckmerhagen et al., 2003; Blasco-Torregrosa et al., 2019; Domingues et al., 2015; Dragomir et al., 2017; Jaroenroy & Chompunth, 2019; Laal et al., 2019; Nunhes et al., 2017; Rebelo et al., 2014a; Santos & Carvalho, 2019; Savino & Mazza, 2014; Simon et al., 2011; Simon et al., 2012; Wright, 2000; Zeng et al., 2011)	14
	Time optimization	(Bernardo et al., 2015; Blasco-Torregrosa et al., 2019; Moumen & El Aoufir, 2017; Moumen & Elaoufir, 2018; Sampaio et al., 2012; Simon et al., 2013)	6

Management standardization	(Ikram et al., 2020; Nunhes et al., 2019; Ribeiro et al., 2017; Santos & Carvalho, 2019; Simon & Douglas, 2013)	5
Organizational policy	(Abisourour et al., 2020; Domingues et al., 2017; El Yacoubi El Idrissi et al., 2014; Muhamad Khair et al., 2018; Ofori et al., 2002; Pheng & Pong, 2003; Santos & Carvalho, 2019)	7
Reduction of bureaucracy	(Beckmerhagen et al., 2003; Bernardo et al., 2009, 2015; Del Prado Martínez & Navarro, 2016; Holdsworth, 2003; Ikram et al., 2020; Mora-Contreras, 2019; Muthu Samy et al., 2015; Nunhes et al., 2017; Ribeiro et al., 2017; Simon et al., 2012; Souza & Alves, 2018; Vulcanovic et al., 2020; Zeng et al., 2011)	14
Reduction of redundant activities	(Bak & Nowak, 2019; Domingues et al., 2015; Ikram et al., 2020; Poltronieri et al., 2017; Santos & Carvalho, 2019; Souza & Alves, 2018; Trierweiler et al., 2016)	7
Reduction of organizational costs	(Abisourour et al., 2020; Asif et al., 2009; Bak & Nowak, 2019; Beckmerhagen et al., 2003; Bernardo et al., 2015; Biniecka et al., 2005; Casadesús et al., 2011; Dahlin & Isaksson, 2017; Domingues et al., 2015; Escorcia et al., 2018; Fresner & Engelhardt, 2004; Llonch et al., 2018; López-Fresno, 2010; Milliman et al., 2005; Moutmen & El Aoufir, 2017; Moutmen & Elaoufir, 2018; Muthu Samy et al., 2015; Muthusamy et al., 2018; Nadæ et al., 2019; Ofori et al., 2002; Pheng & Kwang, 2005; Poltronieri et al., 2018; Rebelo et al., 2014b; Ribeiro et al., 2017; Salomone, 2008; Santos et al., 2011; Simon et al., 2013; Souza & Alves, 2018; Tepasakoualos & Chountalas, 2017; Wright, 2000; York & Miree, 2004; Zaloga et al., 2019; Zeng et al., 2011)	33
Sustainable development	(Abouettahir et al., 2013b, 2013a; Bernardo et al., 2015; Carvalho et al., 2020; Chaudhuri & Jayaram, 2019; De Nadæ & De Carvalho, 2019; De Oliveira, 2013; Drožynier, 2020; Fonseca & Carvalho, 2019; Fresner & Engelhardt, 2004; Holm et al., 2015; Ikram et al., 2019; Jørgensen et al., 2006; Mežinska et al., 2015; Muhamad Khair et al., 2018; Muthu Samy et al., 2015; Muthusamy et al., 2018; Nadæ et al., 2019; Ofori et al., 2002; Poltronieri et al., 2018; Poltronieri et al., 2017; Rebelo et al., 2014a, 2016, 2014b, 2015; Savino & Shafiq, 2018; Simon et al., 2012; Silva et al., 2016; Souza & Alves, 2018; Zeng et al., 2011)	30
Improve social responsibility	(Asif et al., 2013; Bevilacqua et al., 2016; Botta et al., 2013; Carvalho et al., 2020; Fresner & Engelhardt, 2004; Ikram et al., 2019; Ionescu et al., 2018; Karapetrovic & Jonker, 2003; Mežinska et al., 2015; Poltronieri et al., 2018; Rebelo et al., 2014b; Von Ahsen, 2014)	12
Environmental protection	(Bak & Nowak, 2019; Bereznyuk et al., 2017; Blasco-Torregrosa et al., 2019; Botta et al., 2013; Gangolells et al., 2013; Jaroenroy & Chompunth, 2019; Kruse et al., 2019; Labodová, 2004; Mariouryad et al., 2015; Milliman et al., 2005; Pheng & Kwang, 2005; Santos & Carvalho, 2019; Von Ahsen, 2014)	13
Waste reduction	(Biniecka et al., 2005; Fresner & Engelhardt, 2004; Ramos et al., 2020; Rebelo et al., 2014a; Santos & Carvalho, 2019)	5
Improve working environment	(Bevilacqua et al., 2016; Biniecka et al., 2005; Casadesús et al., 2011; Jain et al., 2016; Labodová, 2004; Marinkovic et al., 2016; Moutmen & El Aoufir, 2017; Moutmen & Elaoufir, 2018; Santos & Carvalho, 2019; Silva et al., 2020; Siva et al., 2016; Zeng et al., 2006; Zeng et al., 2007)	13
Improve employee satisfaction	(Bernardo et al., 2015; Fresner & Engelhardt, 2004; Ikram et al., 2019; Ionescu et al., 2018; López-Fresno, 2010; Manzanera et al., 2014; Moutmen & El Aoufir, 2017; Muthu Samy et al., 2015; Muthusamy et al., 2018; Ramos et al., 2020; Rebelo et al., 2014b)	11
Changing the company's culture	(Alvarado Rueda & Perez Gomez, 2016; Biniecka et al., 2005; Gianni & Gotzamani, 2015; Holdsworth, 2003; Holm et al., 2015; Jørgensen et al., 2006; Ramos et al., 2020; Taylor, 2002; Wright, 2000; Zeng et al., 2006; Zeng et al., 2007)	11
Optimization of the organizational structure	(Alvarado Rueda & Perez Gomez, 2016; Chountalas & Tepasakoualos, 2019; Gapp et al., 2008; Kruse et al., 2019; Pheng & Kwang, 2005; Santos & Carvalho, 2019; Santos et al., 2011; Souza & Alves, 2018; Sui et al., 2018; Zeng et al., 2006; Zeng et al., 2007)	11
Training optimization		9

(Continued)

Table 3. Continued.
Integrated Management Systems – IMS

Focus	Positive Impacts	Authors	References
		(Abouettahir et al., 2013a; Berezyuk et al., 2017; Domingues et al., 2017; Labodová, 2004; Nunhes et al., 2017; Santos & Carvalho, 2019; Santos et al., 2011; Yazdani & Wells, 2012; Zeng et al., 2007)	
Qualification of labour		(Blasco-Torregrossa et al., 2019; Karapetrovic & Jonker, 2003; Manzanera et al., 2014; Sampaio et al., 2012; Santos & Carvalho, 2019; Zeng et al., 2006; Zeng et al., 2007)	7
Reducing the risk of accidents at work		(Abad et al., 2013; Abouettahir et al., 2013b; Al-Darrab et al., 2013; Bak & Nowak, 2019; Bevilacqua et al., 2016; Fresner & Engelhardt, 2004; Gangolells et al., 2013; Hamidi et al., 2012; Jain et al., 2016; Jaroenroy & Chompunth, 2019; Kruse et al., 2019; Laal et al., 2019; Labodová, 2004; Mariouryad et al., 2015; Milliman et al., 2005; Pheng & Kwang, 2005; Ramos et al., 2020; Yazdani & Wells, 2012)	18

Source: Own author.

Regarding the direction of future research, other SLR can be performed with a different sample of studies from this article, considering other interest management systems, such as Social Responsibility Management System and Risks Management System, among others. This would allow to confirm, in a more comprehensive way, the positive impacts generated by the IMS.

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